

EML4501 Mechanical Engineering Design 2

Spring 2022 Syllabus

M, W, F: 9:35-10:25am (In Person), 1:55-2:45pm (In Person), & 4:05-4:55pm (Online)

Updated 1/4/2022

Modifications to this syllabus may be required during the semester.

Any changes to the syllabus will be posted on the course website and announced in class.

Teaching Team

Instructors: Carol C. Chesney, Ph.D.

Office Hours: TBA

Email: irenec@ufl.edu

Matthew J. Traum, Ph.D.

Office Hours: Wednesdays during Open Lab Hours or by appointment

Email: mtraum@ufl.edu

Course PM Jenna Ajello

& Fellow: Email: jajello@ufl.edu

Instructional: Noel Thomas

Technician: Email: noel.thomas@ufl.edu

Co-PM: Sydney Voorberg

& LA: Email: svoorberg@ufl.edu

Learning Devangi Gaikwad

Assistants Email: devangi.gaikwad@ufl.edu

Damir Fayzulaev

Email: fayzulaevd@ufl.edu

Dana Kendall

Email: dana.kendall@ufl.edu

James Riggins

Email: jamesriggins@ufl.edu

Sophia Ruckle

Email: sophiaruckle@ufl.edu

April Sebok

Email: a.sebok@ufl.edu

Catalog Description

Integrated design and presentation of a mechanical system. Credits: 3

Prerequisites: EGN 3353C, EML 2322L, and EML 3005 & EGM 3401 with minimum grade of C.

Corequisites: EML 4321 & EML 4507 [Corequisites Are Not Enforced, but Subject Matter Mastery is Assumed]

Course Materials and Fees

Course Fee: \$49

Course Objectives & Relation to Program Outcomes (ABET)

Students who successfully complete this course demonstrate the following outcomes in the context of mechanical engineering design theory and application:

Outcome	Coverage*
1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	High



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.	High
3. An ability to communicate effectively with a range of audiences.	High
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.	High
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.	High
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.	Low
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.	Low



*Coverage is given as high, medium, or low. An empty box indicates that this outcome is not covered or assessed in the course.

Required Computer

Students must have their own computer whose specifications meet or exceed the capabilities required by the College (<https://www.eng.ufl.edu/students/resources/computer-requirements/>) and MAE Department (<https://mae.ufl.edu/academics/prospective/undergraduate/computer-requirements/>).

Required Textbooks and Software

- Engineering Capstone Design, M. J. Traum, S. R. Niemi, et al., University of Florida, 2020
Free OER Download: <https://merge.mae.ufl.edu/outreach/textbook/> [Chapters posted when assigned]
- Multimedia Engineering Fluid Mechanics, C. C. Ngo and K. C. Gramol, University of Oklahoma Engineering Media Lab, 2019
Free OER Access: <http://www.ecourses.ou.edu/cgi-bin/ebook.cgi?doc=&topic=fl>
- Multimedia Engineering Mechanics of Materials, Kurt Gramoll, University of Oklahoma Engineering Media Lab, 2019
Free OER Access: <http://www.ecourses.ou.edu/cgi-bin/ebook.cgi?doc=&topic=me>
- Multimedia Engineering Dynamics, Kurt Gramoll, University of Oklahoma Engineering Media Lab, 2019
Free OER Access: <http://www.ecourses.ou.edu/cgi-bin/ebook.cgi?topic=dy>
- Multimedia Engineering Thermodynamics, Kurt Gramoll and Meirong Huang, University of Oklahoma Engineering Media Lab, 2019
Free OER Access: <http://www.ecourses.ou.edu/cgi-bin/ebook.cgi?doc=&topic=th>
- A Heat Transfer Textbook, 5th ed, J. H. Lienhard IV & J. H. Lienhard V, Phlogiston Press, Cambridge, MA, 2020. ISBN: 9780486837352
Free OER Access: <https://ahtt.mit.edu/>
- SolidWorks 2021 and SolidWorks PDM
Available through UF. Installation instructions will be provided the first week of class.

Recommended Materials

1. Introduction to Mechanics of Materials, 2nd Ed, Madhukar Vable, Expanding Educational Horizons, 2009
Free OER Download: <http://madhuvable.org/wp-content/uploads/2016/04/Entire%20Book%202018.pdf>
2. Shigley's Mechanical Engineering Design, 10th Ed., R. G. Budynas and K. J. Nisbett, McGraw-Hill, 2015
ISBN: 9780073398204
3. Materials Selection in Mechanical Design, 5th Ed., Michael F. Ashby, Butterworth-Heinemann, 2016
ISBN: 0081005997
4. Dimensioning for Interchangeable Manufacture, Earlwood T. Fortini, Industrial Press, 1967
ASIN: B0006BQNRD
5. Machinery's Handbook, E. Oberg, 30th Edition (or later), ISBN-13: 978-0831130916
6. Roark's Formulas for Stress and Strain, 7th Edition, W. C. Young, R. G. Budynas, McGraw-Hill, 2002
ISBN 007072542X
7. Good to Great: Why Some Companies Make the Leap and Others Don't, J. Collins, Harper Business, 2001
ISBN: 9780066620992
8. Free Culture, L. Lessig, Penguin Books, 2005
ASIN: 0143034650
Free OER Download: https://www.researchgate.net/publication/28802969_Free_Culture

Evaluation of Grades

This course is graded. Grades are earned based on the following individual and group deliverables. Further descriptions will be given when assignments and assessments are announced in class. Additional resources supporting these assignments will be posted on the course Learning Management System as needed.

Assignment/Assessment	Type	Points	%
Entry Resume + Resume Worded Score	Individual	0	0.0
Entry Skill Set Inventory Survey	Individual	0	0.0
Reverse Engineering Report	Individual	100	20.0
Fluids Review Quiz	Individual	12.5	2.5
Thermodynamics Review Quiz	Individual	12.5	2.5
Dynamics Review Quiz	Individual	12.5	2.5
Mechanical Design Review Quiz	Individual	12.5	2.5
Concept Design Report	Group	55	11.0
<i>Concept Design Report Peer Evaluation</i>	Individual	0	var.
IP Disclosure	Group	10	2.0
IP Movie Screening Commentary	Individual	15	3.0
Preliminary Design Report	Group	70	14.0
<i>Preliminary Design Report Peer Evaluation</i>	Individual	0	var.
90-Second Final Presentation Pitch Video	Group	20	4.0
Poster Session Synchronous Interaction	Individual	10	2.0
Exit Resume + Resume Worded Score	Individual	0	0.0
Final Poster Presentation	Group	40	8.0
<i>Project Abstract</i>	Group	0	0.0
<i>Final Design Poster</i>	Group	0	0.0
Final Oral Presentation	Group	50	10.0
<i>Final Oral Presentation Slides</i>	Group	0	0.0
Final Design Report	Group	80	16.0
<i>Design Review 1 Feedback Resolution</i>	Group	0	0.0
<i>Design Review 2 Feedback Resolution</i>	Group	0	0.0
<i>Final Design Report Peer Evaluation</i>	Individual	0	var.
Exit Skill Set Inventory Survey	Individual	0	0.0
TOTAL		500	100.0

Any changes will be posted on the CANVAS page and announced in class

Explanation of Peer Evaluation:

Although working in groups, **each student will receive an individualized grade commensurate with their effort invested in the project.** With each group report submission, all group members submit peer feedback reflecting on their own contributions and the contributions their group members.

Peer evaluations are an important part of your (and your teammates') growth as engineers. Be honest when evaluating your teammates' performance on assignments. Giving overly positive peer evaluations will hurt your own grade! Moreover, evaluations submitted with every group member having perfect scores will be discarded as attempted grade inflation (see honor code section of the syllabus).

Grading Policy

A: 93-100	A-: 90-92.99
B+: 87-89.99	B: 83-87.99
B-: 80-82.99	C+: 77-79.99
C: 73-76.99	C-: 70-72.99
D+: 67-69.99	D: 63-66.99
D-: 60-62.99	E: 0-59.99

More information on UF grading policy may be found at:

<https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/>

Grade Definitions

- A : Student demonstrated course mastery in all regards and with distinction.
- A- : Student performed outstandingly in all regards and is exceptional.
- B+ : Student performed with excellence in the course.
- B : Student showed high command of course content.
- B- : Student has done a commendable job with course content.
- C+ : Student demonstrated ample grasp of course content.
- C : Student demonstrated adequate grasp of course content.
- C- : Student demonstrated fair grasp of course content.
- D+ : Student met fair course expectations.
- D : Student attained below average expectations.
- D- : Student met minimal expectations to pass.
- E : Student failed to meet minimal expectations to pass.

Attendance

While attendance is not strictly monitored, it is extremely important to attend class regularly. If you miss a class, **you** are responsible for acquiring notes or other resources covered. The teaching team will endeavor to make all course materials available through the Learning Management System. However, some experiences cannot be replicated asynchronously. Students are held responsible for knowledge of all scheduling and policy announcements made in class. Excused absences must be consistent with university policies in the undergraduate catalog (<https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/>) and require appropriate documentation and advance communication with the instructor.

COVID-19 Protocols

1. You are requested and expected to wear approved face coverings at all times during class and within buildings even if you are vaccinated.
2. If you are sick, stay home and self-quarantine. Please visit the UF Health Screen, Test & Protect website about next steps, retake the questionnaire and schedule your test for no sooner than 24 hours after your symptoms began. Please call your primary care provider if you are ill and need immediate care or the UF Student Health Care Center at 352-392-1161 (or email covid@shcc.ufl.edu) to be evaluated for testing and to receive further instructions about returning to campus.

3. If you are withheld from campus by the Department of Health through Screen, Test & Protect, you are not permitted to use any on campus facilities. Students attempting to attend campus activities when withheld from campus will be referred to the Dean of Students Office.

4. UF Health Screen, Test & Protect offers guidance when you are sick, have been exposed to someone who has tested positive or have tested positive yourself. Visit the [UF Health Screen, Test & Protect website](#) for more information.

5. Please continue to follow healthy habits, including best practices like frequent hand washing. Following these practices is our responsibility as Gators.

In-Class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

Online Course Recording & Copyright Policy

Class sessions may be audio-visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the “chat” feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited. Unless stated otherwise, Dr. Carol C. Chesney and Dr. Matthew J. Traum hold copyright to all their respective course material.

Policies on Clear Communication, “Ghosting”, Sources of Truth, and Assignment Grade Disputes

1. Once students are assigned into groups, all Emails to the EML4501 Teaching Team related to group business must clearly identify the group’s number. Each time any member of a group fails to identify the group by number in a communication to the Teaching Team, the group loses 1 point.

2. Individuals who fail to support their group or “ghost” the course, as demonstrated by peer evaluation scores, group feedback/emails, and/or low participation tracked in Canvas/PDM, will earn a failing grade in EML4501 regardless of points accumulated in the class.

3. Online platforms, notably GroupMe, provide venues for course discussion that exclude the instructor and EML4501 Teaching Team. Discussion platforms beyond UF-sanctioned Learning Management Systems will not be monitored or curated by the instructor. **Thus, information propagated through these platforms is often incorrect.** It is each student’s responsibility to verify information obtained from these external discussion services with reputable reference sources or UF-affiliated subject matter experts. Erroneous information obtained from external discussion platforms used in EML4501 will be marked incorrect on graded assignments and assessments.

4. If an individual or group has an assignment grading dispute, the issue must first be addressed with the Instructional Fellow or Learning Assistant who did the grading. If individuals/groups can show where grading errors occurred, Teaching Team members will correct grades accordingly. Only after communication with a Fellow or Learning Assistant fails to resolve a grading dispute may the individual/group bring the dispute to an instructor.

Laboratory Safety

EML4501 is a laboratory course. To ensure safety of all participants appropriate attire, personal protective equipment (PPE), and behavior are always required in the lab. Failure to follow lab safety rules will result in students’ immediate removal from the lab and forfeiture of course points at the instructor’s discretion.

1. Lab Attire

- No open-toed shoes are permitted in the lab.
- No shorts are permitted in the lab.

2. PPE

In response to COVID-19, the following face-to-face instructional policies and requirements are in place to maintain a safe learning environment and enhance the safety of in-person interactions.

- Everyone in the lab is required to wear approved face coverings at all times during class
- Sanitizing supplies are available in the lab to wipe down desks prior to sitting and at the end of class
- Eye protection is always required in the laboratory

3. Behavior

- Disruptive or destructive behavior will not be tolerated.
- No food or drink is allowed in the machine shop, 3D print farm, or metrology areas of the lab.
- Food & drink are allowed at work desks, in conference rooms, at the coffee bar, and in the adjoining kitchen area

4. Emergencies

- Inform Instructors, Instructional Technicians, or Learning Assistants immediately of injury or exposure.

Students Requiring Accommodations

Students with disabilities requesting accommodations should first register with the Disability Resource Center [(352) 392-8565, <https://disability.ufl.edu/students/get-started/>] by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Course Evaluation

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <http://gatorevals.aa.ufl.edu/students/> . Students will be notified when the evaluation period opens, and they can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <http://ufl.bluera.com/ufl/> . Summaries of course evaluation results are available to students at <http://gatorevals.aa.ufl.edu/public-results/> .

University Honesty Policy

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code.” On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code (<http://sccr.dso.ufl.edu/process/student-conduct-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor.

Commitment to a Safe and Inclusive Learning Environment

The Herbert Wertheim College of Engineering values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

If you feel your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:

- Your academic advisor or Undergraduate Program Coordinator
- Jennifer Nappo, Director of Human Resources, 352-392-0904, jpennacc@ufl.edu
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.ufl.edu
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, nishida@eng.ufl.edu

Software Use

All faculty, staff, and students of the University of Florida are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate.

Student Privacy

Federal laws protect your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: <https://registrar.ufl.edu/ferpa.html>

Campus Resources

See appended pages.

Schedule of Topics, Assignments, & Assessments

See appended schedule.

“Treat a person as they should be, and they will become what they could be.”

--R. W. Emerson

Campus Resources:

Health and Wellness

U Matter, We Care:

Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Counseling and Wellness Center: <http://www.counseling.ufl.edu/cwc>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Discrimination, Harassment, Assault, or Violence

If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the [Office of Title IX Compliance](#), located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, title-ix@ufl.edu

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/>.

COVID-19

- You are expected to wear approved face coverings at all times during class and within buildings even if you are vaccinated.
- If you are sick, stay home and self-quarantine. Please visit the UF Health Screen, Test & Protect website about next steps, retake the questionnaire and schedule your test for no sooner than 24 hours after your symptoms began. Please call your primary care provider if you are ill and need immediate care or the UF Student Health Care Center at 352-392-1161 (or email covid@shcc.ufl.edu) to be evaluated for testing and to receive further instructions about returning to campus.
- If you are withheld from campus by the Department of Health through Screen, Test & Protect, you are not permitted to use any on campus facilities. Students attempting to attend campus activities when withheld from campus will be referred to the Dean of Students Office.
- UF Health Screen, Test & Protect offers guidance when you are sick, have been exposed to someone who has tested positive or have tested positive yourself. Visit the UF Health Screen, Test & Protect website for more information.
- Please continue to follow healthy habits, including best practices like frequent hand washing. Following these practices is our responsibility as Gators.
- Consistent with UF policy: "If a student is absent from classes or examinations because of illness, they should contact their instructors."
- If you contract Covid-19 during the semester, the instructor pledges to help you to the extent possible, to help you learn and manage your assignments. Letting the instructor know is step one.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. <https://lss.at.ufl.edu/help.shtml>.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling. <https://www.crc.ufl.edu/>.

Library Support, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. <https://teachingcenter.ufl.edu/>.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. <https://writing.ufl.edu/writing-studio/>.

Student Complaints Campus: https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf.

On-Line Students Complaints: <http://www.distance.ufl.edu/student-complaint-process>.

Module	Meeting #	Week #	Date	Day	Delivery Mode	Location	Instructor	Activities	Assessments	Availability	Suggested Reading	Deliverable Assigned	Assessment / Assignment Due
#1 Course Intro	1	1	1/25/2022	W	In-Person	Classroom	Chesney / Train	1. Welcome to the course. 2. Review of the course syllabus. 3. Review of the course objectives. 4. Review of the course schedule.	1. Entry Resume - Resume Worked Score 2. Skill Set Inventory #1 Group Creation	1. M. J. Train et al. "Implementing an Effective Large Enrollment Program," Proc. ASME SE Section Conf., Auburn, AL, USA, March 4-6, 2020.	1. Entry Resume - Resume Worked Score 2. Skill Set Inventory #1 Group Creation	1. Entry Resume - Resume Worked Score	
#2 Pre-quiz Review	2	1	1/27/2022	F	In-Person	Classroom	Train	1. Pre-quiz Review. 2. Review of the course objectives. 3. Review of the course schedule.	3. Review Engineering Report (RER)	1. C. C. Ng & K. C. Gramoll, "Mechanical Design of a Hydraulic Pump," U.S. Patent 7,887,301 B2, 2010.	3. Review Engineering Report (RER)		
#3 Pre-quiz Review	3	2	1/30/2022	M	In-Person	Classroom	Train	1. Pre-quiz Review. 2. Review of the course objectives. 3. Review of the course schedule.	4. Fluid Review Quiz	1. K. Gramoll & M. Huang, "Mechanical Design of a Hydraulic Pump," U.S. Patent 7,887,301 B2, 2010.	4. Fluid Review Quiz		
#4 Pre-quiz Review	4	2	1/32/2022	W	In-Person	MAIL-G-010	Train	1. Pre-quiz Review. 2. Review of the course objectives. 3. Review of the course schedule.	5. Thermodynamics Review Quiz	1. K. Gramoll & M. Huang, "Mechanical Design of a Hydraulic Pump," U.S. Patent 7,887,301 B2, 2010.	5. Thermodynamics Review Quiz		
#5 Pre-quiz Review	5	2	1/14/2022	F	In-Person	Classroom	Chesney	1. Pre-quiz Review. 2. Review of the course objectives. 3. Review of the course schedule.	6. Mechanical Design Review Quiz	1. K. Gramoll & M. Huang, "Mechanical Design of a Hydraulic Pump," U.S. Patent 7,887,301 B2, 2010.	6. Mechanical Design Review Quiz		
#6 Pre-quiz Review	6	3	1/19/2022	M	N/A	MAIL-G-010	N/A	1. Mechanical Design Review Quiz	7. Dynamics Review Quiz	1. M. J. Train, S. E. Nemi, et al., "Engineering of a Race Study, ZDR, Technical, University of Florida, 2020.	7. Dynamics Review Quiz		
#7 Pre-quiz Review	7	3	1/21/2022	F	In-Person	Classroom	Chesney	1. Mechanical Design Review Quiz	8. Concept Design Report (CDR)	1. S. E. Nemi, et al., "Industry Product Data Management (PDM) Tool for Engineering Design," Proc. ASME SE Section Conf., Auburn, MA, USA, March 4-6, 2020.	8. Concept Design Report (CDR)		
#8 Pre-quiz Review	8	4	1/24/2022	M	N/A	Shower	N/A	8. Concept Design Report (CDR)	9. Peer Evaluation for CDR	1. M. J. Train, S. L. Karanik, "The Process of Design Remanufacturing: A Case Study of a High School Science Classroom," Proc. 126th ASME Conf., 2011.	9. Peer Evaluation for CDR		
#9 Pre-quiz Review	9	4	1/26/2022	F	N/A	Shower	N/A	9. Peer Evaluation for CDR	10. IP Design	1. R. D. Danz & T. Y. Sung, "What is Design Thinking and Why is it so Popular?", Interaction Design Foundation, 2021.	10. IP Design		
#10 Pre-quiz Review	10	4	1/28/2022	W	N/A	Shower	N/A	10. IP Design	11. Peer Evaluation for IP Design	1. K. Gramoll & M. Huang, "Mechanical Design of a Hydraulic Pump," U.S. Patent 7,887,301 B2, 2010.	11. Peer Evaluation for IP Design		
#11 Pre-quiz Review	11	5	1/31/2022	M	In-Person	Classroom	Train	11. Peer Evaluation for IP Design	12. Final Design Report (FDR)	1. J. H. Dong, "Product Design for Manufacture & Assembly," Int. Ed., Ch. 3: Product Design for Manual Assembly, CRC Press, 2011.	12. Final Design Report (FDR)		
#12 Pre-quiz Review	12	5	2/2/2022	W	In-Person	MAIL-G-010	Chesney	12. Final Design Report (FDR)	13. Review Engineering Report (RER)	1. C. Ober-Lands, "Kano Model - Ways to use it and NOT use it," BMA Design, MechForum, 2017.	13. Review Engineering Report (RER)		
#13 Pre-quiz Review	13	5	2/4/2022	F	In-Person	Classroom	Chesney	13. Review Engineering Report (RER)	14. Final Design Report (FDR)	1. Train et al. (2020) Capstone Design Text, Ch. 1: Customer Needs.	14. Final Design Report (FDR)		
#14 Pre-quiz Review	14	6	2/7/2022	M	In-Person	Classroom	Train	14. Final Design Report (FDR)	15. Peer Evaluation for FDR	1. Train et al. (2020) Capstone Design Text, Ch. 2: Researching the Problem.	15. Peer Evaluation for FDR		
#15 Pre-quiz Review	15	6	2/9/2022	W	In-Person	MAIL-G-010	Chesney	15. Peer Evaluation for FDR	16. Final Design Report (FDR)	1. Train et al. (2020) Capstone Design Text, Ch. 3: Analyzing Customer Needs.	16. Final Design Report (FDR)		
#16 Pre-quiz Review	16	6	2/11/2022	F	In-Person	Classroom	Chesney	16. Final Design Report (FDR)	17. Dynamics Review Quiz	1. Train et al. (2020) Capstone Design Text, Ch. 4: Designing the Solution.	17. Dynamics Review Quiz		
#17 Pre-quiz Review	17	7	2/14/2022	M	In-Person	Classroom	Chesney	17. Dynamics Review Quiz	18. Peer Evaluation for Dynamics Review Quiz	1. J. J. Diemer, "2021 Ford F-150 Hybrid Big Data: The 7.2kW Pre-Obtained Generators," TechCrunch, Feb. 6, 2021.	18. Peer Evaluation for Dynamics Review Quiz		
#18 Pre-quiz Review	18	7	2/16/2022	W	In-Person	MAIL-G-010	Chesney	18. Peer Evaluation for Dynamics Review Quiz	19. Peer Evaluation for FDR	1. E. T. Fother, "Dimensions for Interchangeable Manufacture: D, B, Length, Fit, Material, Price, Inc.," New York, NY, 1907.	19. Peer Evaluation for FDR		
#19 Pre-quiz Review	19	7	2/18/2022	F	In-Person	Classroom	Chesney	19. Peer Evaluation for FDR	20. Final Design Report (FDR)	1. M. F. Ashby, "Materials Selection in Mechanical Design," 4th Ed., Ch. 4: Material Property Charts, Butterworth-Heinemann, 2011.	20. Final Design Report (FDR)		
#20 Pre-quiz Review	20	8	2/21/2022	M	In-Person	Classroom	Chesney	20. Final Design Report (FDR)	21. Peer Evaluation for FDR	1. M. F. Ashby, "Materials Selection in Mechanical Design," 4th Ed., Ch. 5: Materials Selection - The Index, Butterworth-Heinemann, 2011.	21. Peer Evaluation for FDR		
#21 Pre-quiz Review	21	8	2/23/2022	W	In-Person	MAIL-G-010	Chesney	21. Peer Evaluation for FDR	22. Final Design Report (FDR)	1. M. F. Ashby, "Materials Selection in Mechanical Design," 4th Ed., Ch. 6: Case Studies: Materials Selection, Butterworth-Heinemann, 2011.	22. Final Design Report (FDR)		
#22 Pre-quiz Review	22	8	2/25/2022	F	In-Person	Classroom	Chesney	22. Final Design Report (FDR)	23. Review Engineering Report (RER)	1. M. F. Ashby, "Materials Selection in Mechanical Design," 4th Ed., Ch. 6: Case Studies: Materials Selection, Butterworth-Heinemann, 2011.	23. Review Engineering Report (RER)		
#23 Pre-quiz Review	23	9	2/28/2022	M	In-Person	Classroom	Chesney	23. Review Engineering Report (RER)	24. Peer Evaluation for RER	1. J. J. Diemer, "2021 Ford F-150 Hybrid Big Data: The 7.2kW Pre-Obtained Generators," TechCrunch, Feb. 6, 2021.	24. Peer Evaluation for RER		
#24 Pre-quiz Review	24	9	3/2/2022	W	N/A	Spring Break	N/A	24. Peer Evaluation for RER	25. Final Design Report (FDR)	1. L. Thompson, "What to do with your problem team member?," 6th Ed., Ch. 3: Engineering Materials & Their Properties, Butterworth-Heinemann, 2014.	25. Final Design Report (FDR)		
#25 Pre-quiz Review	25	9	3/4/2022	F	N/A	Spring Break	N/A	25. Final Design Report (FDR)	26. Peer Evaluation for FDR	1. L. Thompson, "What to do with your problem team member?," 6th Ed., Ch. 3: Engineering Materials & Their Properties, Butterworth-Heinemann, 2014.	26. Peer Evaluation for FDR		
#26 Pre-quiz Review	26	10	3/14/2022	M	In-Person	Classroom	Chesney	26. Peer Evaluation for FDR	27. Peer Evaluation for FDR	1. E. T. Fother, "Dimensions for Interchangeable Manufacture: D, B, Length, Fit, Material, Price, Inc.," New York, NY, 1907.	27. Peer Evaluation for FDR		
#27 Pre-quiz Review	27	10	3/16/2022	W	In-Person	MAIL-G-010	Chesney	27. Peer Evaluation for FDR	28. Final Design Report (FDR)	1. M. F. Ashby, "Materials Selection in Mechanical Design," 4th Ed., Ch. 4: Material Property Charts, Butterworth-Heinemann, 2011.	28. Final Design Report (FDR)		
#28 Pre-quiz Review	28	11	3/21/2022	F	Online	Classroom	Chesney	28. Final Design Report (FDR)	29. Peer Evaluation for FDR	1. M. F. Ashby, "Materials Selection in Mechanical Design," 4th Ed., Ch. 5: Materials Selection - The Index, Butterworth-Heinemann, 2011.	29. Peer Evaluation for FDR		
#29 Pre-quiz Review	29	11	3/23/2022	W	In-Person	MAIL-G-010	Chesney	29. Peer Evaluation for FDR	30. Final Design Report (FDR)	1. M. F. Ashby, "Materials Selection in Mechanical Design," 4th Ed., Ch. 6: Case Studies: Materials Selection, Butterworth-Heinemann, 2011.	30. Final Design Report (FDR)		
#30 Pre-quiz Review	30	11	3/25/2022	F	In-Person	Classroom	Chesney	30. Final Design Report (FDR)	31. Peer Evaluation for FDR	1. J. J. Diemer, "2021 Ford F-150 Hybrid Big Data: The 7.2kW Pre-Obtained Generators," TechCrunch, Feb. 6, 2021.	31. Peer Evaluation for FDR		
#31 Pre-quiz Review	31	12	3/28/2022	M	Online	Conference Room	Chesney	31. Peer Evaluation for FDR	32. Review Engineering Report (RER)	1. L. Thompson, "What to do with your problem team member?," 6th Ed., Ch. 3: Engineering Materials & Their Properties, Butterworth-Heinemann, 2014.	32. Review Engineering Report (RER)		
#32 Pre-quiz Review	32	12	3/30/2022	W	Online	Conference Room	Chesney	32. Review Engineering Report (RER)	33. Peer Evaluation for RER	1. L. Thompson, "What to do with your problem team member?," 6th Ed., Ch. 3: Engineering Materials & Their Properties, Butterworth-Heinemann, 2014.	33. Peer Evaluation for RER		
#33 Pre-quiz Review	33	12	3/31/2022	F	Online	Conference Room	Chesney	33. Peer Evaluation for RER	34. Final Design Report (FDR)	1. L. Thompson, "What to do with your problem team member?," 6th Ed., Ch. 3: Engineering Materials & Their Properties, Butterworth-Heinemann, 2014.	34. Final Design Report (FDR)		
#34 Pre-quiz Review	34	12	4/1/2022	F	Online	Conference Room	Chesney	34. Final Design Report (FDR)	35. Peer Evaluation for FDR	1. L. Thompson, "What to do with your problem team member?," 6th Ed., Ch. 3: Engineering Materials & Their Properties, Butterworth-Heinemann, 2014.	35. Peer Evaluation for FDR		
#35 Pre-quiz Review	35	13	4/5/2022	M	Online	Conference Room	Chesney	35. Peer Evaluation for FDR	36. Final Design Report (FDR)	1. L. Thompson, "What to do with your problem team member?," 6th Ed., Ch. 3: Engineering Materials & Their Properties, Butterworth-Heinemann, 2014.	36. Final Design Report (FDR)		
#36 Pre-quiz Review	36	13	4/6/2022	W	Online	Conference Room	Chesney	36. Final Design Report (FDR)	37. Peer Evaluation for FDR	1. L. Thompson, "What to do with your problem team member?," 6th Ed., Ch. 3: Engineering Materials & Their Properties, Butterworth-Heinemann, 2014.	37. Peer Evaluation for FDR		
#37 Pre-quiz Review	37	13	4/8/2022	F	Online	Conference Room	Chesney	37. Peer Evaluation for FDR	38. Final Design Report (FDR)	1. L. Thompson, "What to do with your problem team member?," 6th Ed., Ch. 3: Engineering Materials & Their Properties, Butterworth-Heinemann, 2014.	38. Final Design Report (FDR)		
#38 Pre-quiz Review	38	14	4/11/2022	M	In-Person	Classroom	Chesney	38. Final Design Report (FDR)	39. Peer Evaluation for FDR	1. L. Thompson, "What to do with your problem team member?," 6th Ed., Ch. 3: Engineering Materials & Their Properties, Butterworth-Heinemann, 2014.	39. Peer Evaluation for FDR		
#39 Pre-quiz Review	39	14	4/13/2022	W	In-Person	Classroom	Chesney	39. Peer Evaluation for FDR	40. Final Design Report (FDR)	1. L. Thompson, "What to do with your problem team member?," 6th Ed., Ch. 3: Engineering Materials & Their Properties, Butterworth-Heinemann, 2014.	40. Final Design Report (FDR)		
#40 Pre-quiz Review	40	14	4/15/2022	F	Online	Virtual Symposium	Chesney	40. Final Design Report (FDR)	41. Peer Evaluation for FDR	1. L. Thompson, "What to do with your problem team member?," 6th Ed., Ch. 3: Engineering Materials & Their Properties, Butterworth-Heinemann, 2014.	41. Peer Evaluation for FDR		
#41 Final Deliverables	41	15	4/18/2022	M	Online	Virtual Conference Room	Chesney	41. Peer Evaluation for FDR	42. Final Design Report (FDR)	1. L. Thompson, "What to do with your problem team member?," 6th Ed., Ch. 3: Engineering Materials & Their Properties, Butterworth-Heinemann, 2014.	42. Final Design Report (FDR)		
#42 Final Deliverables	42	15	4/20/2022	W	Online	Virtual Conference Room	Chesney	42. Final Design Report (FDR)	43. Peer Evaluation for FDR	1. L. Thompson, "What to do with your problem team member?," 6th Ed., Ch. 3: Engineering Materials & Their Properties, Butterworth-Heinemann, 2014.	43. Peer Evaluation for FDR		
#43 Final Deliverables	43	15	4/22/2022	Th	Online	Virtual Conference Room	Chesney	43. Peer Evaluation for FDR	44. Final Design Report (FDR)	1. L. Thompson, "What to do with your problem team member?," 6th Ed., Ch. 3: Engineering Materials & Their Properties, Butterworth-Heinemann, 2014.	44. Final Design Report (FDR)		
#44 Final Deliverables	44	15	4/22/2022	F	Online	Virtual Conference Room	Chesney	44. Final Design Report (FDR)	45. Peer Evaluation for FDR	1. L. Thompson, "What to do with your problem team member?," 6th Ed., Ch. 3: Engineering Materials & Their Properties, Butterworth-Heinemann, 2014.	45. Peer Evaluation for FDR		