Mechanical Engineering Design 2

EML4501

Academic Term: Fall 2022

Class Periods: MWF Period 3 (9:35 AM - 10:25 AM) in Larsen Hall – Room 0239
MWF Period 7 (1:55 PM - 2:45 PM) in McCarthy Hall A - Room 1142
MWF Period 9 (4:05 PM - 4:55 PM) Online via Zoom

Instructor:

Matthew J. Traum, Ph.D
mtraum@ufl.edu
Office Hours: Wednesday during Open Lab Hours or by appointment

Teaching Team:
Bios published online:
https://merge.mae.ufl.edu/about/people/eml4501-teaching-team/

- Course Program Manager & Fellow: Sydney T. Voorberg, svoorbeg@ufl.edu
- Learning Assistant & Webmaster: Juliana Mishur, jmishur@ufl.edu
- Learning Assistant: Ria M. Fettig, pendonr@ufl.edu
- Learning Assistant: Jeremy E. Rutenberg, jrutenberg@ufl.edu
- Learning Assistant: April Sebok, a.sebok@ufl.edu
- Graduate Grader: Evan Lynch, evanlynch@ufl.edu

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

Course Pre-Requisites / Co-Requisites
Prereq: EGN 3353C and EML 2322L and EML 3005 and (EGM 3401 with a minimum grade of C).

Course Objectives
1. Solve engineering problems by applying STEM principles [Reverse Engineering Report]
2. Apply engineering design to produce solutions that meet specified needs with consideration of public health and economic factors [Preliminary Design Report]
3. Communicate effectively with a range of audiences [CDR, PDR, FDR, Final Oral Presentation]
4. Function effectively on a creating, collaborative, and inclusive team that establishes goals, plans tasks, and meet objectives [CDR, PDR, & FDR Peer Evaluation]

Materials and Supply Fees
Course Fee: $50.00

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 2022-2023 and SolidWorks PDM
  Available through UF. Installation instructions will be provided the first week of class.

Recommended Materials

- 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
- Shigley's Mechanical Engineering Design, 10th Ed., R. G. Budynas and K. J. Nisbett, McGraw-Hill, 2015
  ISBN: 9780073398204
- Materials Selection in Mechanical Design, 5th Ed., Michael F. Ashby, Butterworth-Heinemann, 2016
  ISBN: 0081005997
- Dimensioning for Interchangeable Manufacture, Earlwood T. Fortini, Industrial Press, 1967
  ASIN: B0006BQNRC
- Machinery's Handbook, E. Oberg, 30th Edition (or later), ISBN-13: 978-0831130916
- Roark's Formulas for Stress and Strain, 7th Edition, W. C. Young, R. G. Budynas, McGraw-Hill, 2002
  ISBN 007072542X
- Good to Great: Why Some Companies Make the Leap and Others Don't, J. Collins, Harper Business, 2001, ISBN: 9780066620992
- Free Culture, L. Lessig, Penguin Books, 2005
  ASIN: 0143034650
  Free OER Download: https://www.researchgate.net/publication/28802969_Free_Culture

Course Schedule

See appended schedule.

Attendance Policy, Class Expectations, and Make-Up Policy

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.

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. Check-in all your files on PDM before the end of the semester so they can be used by future classes. Any group that fails to check in all PDM files will receive irrevocable D- grades in the course.

3. 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/Teams/PDM, will earn a failing grade in EML4501 regardless of points accumulated in the class.

4. 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.

5. If an individual or group has as assignment grading dispute, the issue must first be addressed with the Teaching Team member 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 Teaching Team member 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
   - Sanitizing supplies are available in the lab to wipe down desks prior to sitting and at the end of class if needed.
   - Eye protection is required in the laboratory for proximity to hands-on activities.

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 Teaching Team members immediately of injury or exposure.

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies. Click here to read the university attendance policies: https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/

Evaluation of Grades

This course is graded. Grades are earned based on 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.

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).

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	80	20.0
Fluids Review Quiz	Individual	10	2.5
Thermodynamics Review Quiz	Individual	10	2.5
Dynamics Review Quiz	Individual	10	2.5
Mechanical Design Review Quiz	Individual	10	2.5
Concept Design Report	Group	50	12.5
Concept Design Report Peer Evaluation	Individual	0	var.
IP Movie Screening Commentary	Individual	9	2.3
Preliminary Design Report	Group	60	15.0
Preliminary Design Report Peer Evaluation	Individual	0	var.
Exit Resume + Resume Worded Score	Individual	0	0.0
Final Oral Presentation	Group	60	15.0
90-Second Final Presentation Pitch Video	Group	20	5.0
Project Abstract	Group	0	0.0
Final Oral Presentation Slides	Group	0	0.0
Oral Presentation Synchronous Interaction	Individual	9	2.3
Final Design Report	Group	72	18.0
Design Review 1 Feedback Resolution	Group	0	0.0
Design Review 2 Feedback Resolution	Group	0	0.0
Final Design Report Peer Evaluation	Individual	0	var.
Exit Skill Set Inventory Survey	Individual	0	0.0
	TOTAL	**400**	**100.0**

Any changes will be posted on the CANVAS page & MS Teams site and announced in class

Grading Policy

Percent	Grade	Grade Points
93.0 - 100	A	4.00
90.0 – 92.99	A-	3.67
87.0 - 89.99	B+	3.33
83.0 – 86.99	B	3.00
80.0 – 82.99	B-	2.67
77.0 – 79.99	C+	2.33
73.0 - 76.99	C	2.00
70.0 – 72.99	C-	1.67
67.0 - 69.99	D+	1.33
63.0 - 66.99	D	1.00
60.0 – 62.99	D-	0.67
0 - 59.99	E	0.00

More information on UF grading policy may be found at:
https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

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 curse expectations.
D : Student attained below average expectations.
D- : Student met minimal expectations to pass.
E : Student failed to meet minimal expectations to pass.

Students Requiring Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting https://disability.ufl.edu/students/get-started/. It is important for students to share their accommodation letter with their instructor and discuss their access needs, 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 https://gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/.

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. Matthew J. Traum holds copyright to all course material.

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 (https://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 or TAs in this class.

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 like 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 Graduate 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 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. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy
There are federal laws protecting 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:

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: https://counseling.ufl.edu, 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/.

Academic Resources

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

Career Connections Center, Reitz Union, 392-1601. Career assistance and counseling; https://career.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://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/;https://care.dso.ufl.edu.

On-Line Students Complaints*: https://distance.ufl.edu/state-authorization-status/#student-complaint*.

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

--R. W. Emerson

Updated 8/23/2022

Module	Meeting #	Week #	Date	Day	Instructor	Synchronous Content	Asynchronous Content	Suggested Reading	Deliverable Assigned	Deliverable Due
#1: Course Intro	1	1	8/24/2022	W	Traum	Course Introduction Navigating the Canvas Site The Design Process	1. Review of Syllabus & Expectations 2. R. Dam & T. Siang, "Design Thinking: A Quick Overview," Interaction Design Foundation, 2018	1. Resume Worded Assignment Walkthrough	Entry Resume + Resume Worded Score Entry Skill Set Inventory Survey Reverse Engineering Report	
#2 Tolerance & Dimensioning	2	1	8/26/2022	F	Traum	Introducing the Reverse Engineering Report (RER) Functional Surfaces	1. M. J. Traum, S. R. Niemi, et al., Engineering Capstone Design, Ch 14: RC Car Shock Absorber - A Case Study, OER Textbook, University of Florida, 2020 2. R. F. Dam & T. Y Siang, "What is Design Thinking and Why Is It So Popular?," Interaction Design Foundation, 2020 3. Vector Math Underpinning Tolerance Loops	1. M. J. Traum, et al, "Implementing an Effective Large-Enrollment Engineering Capstone Design-and-Build Program," Proc. ASEE SE Section Conf., Auburn, AL, USA, March 8-10, 2020.		
#2 Tolerance & Dimensioning	3	2	8/29/2022	M	Mishur	Tolerance Loops	1. Science of Small Distances 2. Distributing Tolerances 3. ANSI, "An Introduction to Standards: Why, where and how are they developed?"	1. E. T. Fortini, Dimensions for Interchangeable Manufacture, Ch 8: Length Fits, Industrial Press, Inc. New York, NY, 1967		Entry Resume + Resume Worded Score Entry Skill Set Inventory Survey
#2 Tolerance & Dimensioning	4	2	8/31/2022	W	Teaching Team	Open Lab Hours	1. Tolerance Loops 2 2. SolidWorks & PDM Onboarding	1. S. R. Niemi, et al, "Industry Product Data Management (PDM) Tool Integration into Undergraduate Engineering Design Courses," Proc. ASEE SE Section Conf., Auburn, AL, USA, March 8-10, 2020.		
#3 Insertion & Handling Time	5	2	9/2/2022	F	Traum	Timed Manual Assembly Activity	1. S. R. Niemi, "Leveling Up Project-Based Learning," Teaching Beyond the Podium Podcast, UF Center for Teaching Excellence, 2019 2. M. Clayton, "Project Management in Under 5: What is a Gantt Chart?"	1. Boothroyd & Dewhurst, Product Design for Manufacture & Assembly, 3rd Ed., Ch 3: Product Design for Manual Assembly, CRC Press, 2011		
	6	3	9/5/2022	M		No Class: Labor Day				
#3 Insertion & Handling Time	7	3	9/7/2022	W	Teaching Team	Open Lab Hours	1. Boothroyd & Dewhurst Estimation Technique 2. Pencil-Top Focus Toy Assembly Time Example	1. M. J. Traum, S. L. Karackattu, "The Pencil-Top Fidget: Reinventing Shop (Metal Drilling and Tapping) in High School Science Classrooms," Proc. 126th ASEE Conf., Tampa, FL, USA, June 16-19, 2019.		
#4: Prerequisite Review	8	3	9/9/2022	F	Traum (Thermo!!)	Thermodynamics [EML3100] Review Fluid Mechanics [EGN 3353C] Review	1. Thermodynamics [EML3100] Review 2. Fluid Mechanics [EGN 3353C] Review	1. K. Gramoll & M. Huang, Multimedia Engineering Thermodynamics, U. Oklahoma Eng. Media Lab, 2019 http://www.ecourses.ou.edu/cgi-bin/ebook.cgi?doc=&topic=th 2. Excel in Mechanical Engineering - Thermodynamics (https://www.me.ua.edu/ExcelinME/thermo.htm) 3. C. C. Ngo & K. C. Gramoll, Multimedia Engineering Fluid Mechanics, U. Oklahoma Eng. Media Lab, 2019 http://www.ecourses.ou.edu/cgi-bin/ebook.cgi?doc=&topic=fl	Fluids Review Quiz Thermodynamics Review Quiz	
#4: Prerequisite Review	9	4	9/12/2022	M	Banks	Intuitive Surgical Creative Design Activity [Wertheim 4th Floor Faculty Commons]	1. Dynamics [EGM3401] Review Lecture 2. Dynamics [EGM3401] Review	1. K. Gramoll, Multimedia Engineering Dynamics, U. Oklahoma Eng. Media Lab, 2019 http://www.ecourses.ou.edu/cgi-bin/ebook.cgi?topic=dy		
#4: Prerequisite Review	10	4	9/14/2022	W	Teaching Team	Open Lab Hours Pop-In career Advising Session [2-4pm]	1. Adam Grant TED Talk - Secret Weapon for Best Teams	1. A Heat Transfer Textbook, 5th ed, J. H. Lienhard IV & J. H. Lienhard V, Phlogiston Press, Cambridge, MA, 2020		Fluids Review Quiz Thermodynamics Review Quiz
#4: Prerequisite Review	11	4	9/16/2022	F	Traum	Design & Manufacturing [EML2322L] Review Mechanical Design [EML3005] Review	1. DML [EML2322L] Review 2. Mech 1 [EML3005] Review	1. K. Gramoll, Multimedia Engineering Mechanics of Materials, U. Oklahoma Eng. Media Lab, 2019 http://www.ecourses.ou.edu/cgi-bin/ebook.cgi?doc=&topic=me	Mechanical Design Review Quiz Dynamics Review Quiz	
#5 Creative Ideation	12	5	9/19/2022	M	N/A	No Class Meeting : Major Assignment Due	1. Adam Grant TED Talk - Original Thinkers	1. Traum et al, Capstone Design Text, Ch1-Customer Needs, 2020	Concept Design Report (CDR)	
#5 Creative Ideation	13	5	9/21/2022	W	Teaching Team	Open Lab Hours	1. Hummer Commercial: "The Big Race" 2. J. Robert - ASME FutureME, "Project Success Defining the Problem"	1. Traum et al, Capstone Design Text, Ch2-Researching the Problem, 2020		Mechanical Design Review Quiz Dynamics Review Quiz
#5 Creative Ideation	14	5	9/23/2022	F	Generale	Major Project Customer Guest Lecture 1	1. Literature Review & Patent Search [Amy Buhler - UF MAE Librarian] 2. Tim Harford TED Talk: A Powerful Way to Unleash Your Natural Creativity	1. Traum et al, Capstone Design Text, Ch3a-Quantifying Customer Needs, 2020		Reverse Engineering Report (RER) (by 10pm)
	15	6	9/26/2022	M		No Class: Showcase				
	16	6	9/28/2022	W		No Class: Showcase				
	17	6	9/30/2022	F		No Class: Showcase				
#5 Creative Ideation	18	7	10/3/2022	M	Traum	Customer Needs to Quantitative Metrics Guilford's Alternative Uses Test Activity	1. S. Mesz, "Kano model, product design and startups: a powerful combination," 2017. 1. M. Oshin, "The Dick Fosbury Flop: How to Think Outside the Box & Innovate New Ideas," mayooshin.com, 2017	1. C. Olsen-Landis, "Kano Model - Ways to use it and NOT use it," IBM Design, Medium.com, 2017 2. J. Dinsmore, "2021 Ford F-150 Hybrid's Big Draw: The 7.2-kW Pro Onboard Generator," Torque News, Feb. 6, 2021.		
#5 Creative Ideation	19	7	10/5/2022	W	Teaching Team	Open Lab Hours	1. Kano Model for Analyzing Customer Needs 1. Eliminating Impossible Concepts	1. M. F. Ashby, Material Selection in Mechanical Design, 4th Ed., Ch 3: Engineering Materials & Their Properties, Butterworth-Heinemann, 2011		
	20	7	10/7/2022	F		No Class: Homecoming				
#5 Creative Ideation	21	8	10/10/2022	M	Traum	Assumption Removal Activity How to Select Subsystems	1. Right Sizing the Subsystem Number 2. Function Analysis Method for Divergent Thinking	1. M. F. Ashby, Material Selection in Mechanical Design, 4th Ed., Ch 4: Material Property Charts, Butterworth-Heinemann, 2011		
#6 Down-Selection to Preliminary Design	22	8	10/12/2022	W	Teaching Team	Open Lab Hours	1. Kognito Gatekeeper Workshop & Collegiate Mental Health 2. Kognito Online Training Site 3. Reinforcement of Skills Learned in Kognito Training	1. M. F. Ashby, Material Selection in Mechanical Design, 4th Ed., Ch 5: Materials Selection - The Basics, Butterworth-Heinemann, 2011		
#6 Down-Selection to Preliminary Design	23	8	10/14/2022	F	Niemi	Generative Design Workshops [Autodesk Visit]	1. Jim Collins, "Good to Great Ch5 - Hedgehog Concept" 2. Radio Cade, "What Makes You Think You're Creative?"	1. M. F. Ashby, Material Selection in Mechanical Design, 4th Ed., Ch 6: Case Studies: Materials Selection, Butterworth-Heinemann, 2011		
#6 Down-Selection to Preliminary Design	24	9	10/17/2022	M	Traum	Maslow's Hammer, Birmingham Screwdriver, & Death by McMaster-Carr: Selecting OTS vs. Custom Parts	1. Subsystem Synergy and Discord 2. Carrying out a Concept Down-Selection Matrix	1. L. Thompson, "What to do with your problem team member," Kellogg School of Management, Northwestern University, November. 2014	Preliminary Design Report (PDR)	
#6 Down-Selection to Preliminary Design	25	9	10/19/2022	W	Teaching Team	Open Lab Hours	1. Material Selection - Intro to Ashby Charts 2. Hedgehog Concept	1. J. Rampton, "What Should You Do When Team Members Aren't Pulling Their Weight?" Entrepeneur.com, January 19, 2021.		
#10 Product Evaluation & Presentation	26	9	10/21/2022	F	Sander	Guest Lecture - Giving an Elevator Pitch [Guest Speaker: Julia Sander, UF MAE HR]	1. Performing a Trade Study			
#6 Down-Selection to Preliminary Design	27	10	10/24/2022	M	Traum	Maslow's Hammer, Birmingham Screwdriver, & Death by McMaster-Carr: Selecting OTS vs. Custom Parts	1. Normalizing Concept Valuations	1. University of Florida Intellectual Property Policy	CDR Peer Evaluation	Concept Design Report (CDR) (by 10pm) CDR Peer Evaluation
#7 Intellectual Property	28	10	10/26/2022	W	Teaching Team	Open Lab Hours	1. Intellectual Property: Trade Secrets [Needs Video] 2. Intellectual Property: Patents	1. L. Lessig, Free Culture: How Big Media Uses Technology and the Law to Lock Down Culture and Control Creativity, The Penguin Press, New York, NY, 2004		
#7 Intellectual Property	29	10	10/28/2022	F	Croley Traum	Guest Lecture - Technology Transfer, IP Protection & Confidentiality Guest Speaker: Dr. Rick Crowley, UF Innovate Hub Assistant Director, Licensing Officer] PERIOD 3 AND 7 ONLY IP Movie Screening 1 "Flash of Genius" PERIOD 9 ONLY	1. Intellectual Property: Copyright 2. Intellectual Property: Trademark 3. K. Main "McDonald's Discovers the Golden Ticket to Making Money in the Metaverse"	1. L. Lessig - TED Talk, Re-examining the Remix 2. USPTO: Trade Secrets		
#7 Intellectual Property	30	11	10/31/2022	M	Traum	IP Movie Screening 1 "Flash Of Genius" PERIOD 3 AND 7 ONLY IP Movie Screening 2 "Flash Of Genius" PERIOD 9 ONLY	1. Bill Of Materials 2. Purchase Orders	1. L. Lessig - TED Talk, Laws that Choke Creativity 2. Nicole Pesce: 'How to play 'Happy Birthday' Like Beethoven, Chopin, Brahms, Bach and Mozart: Culture Remix Fair Use Example	Exit Resume + Resume Worded Score Final Oral Presentation Final Oral Presentation Slides Final Design Report (FDR)	
#7 Intellectual Property	31	11	11/2/2022	W	Teaching Team	Open Lab Hours	1. Estimating Manufacturing Costs 2. Design Review Expectations		IP Movie Screening Commentary 90-Second Pitch Video Project Abstract	
#7 Intellectual Property	32	11	11/4/2022	F	Croley Traum	IP Movie Screening 2 "Flash Of Genius" PERIOD 3 AND 7 ONLY Guest Lecture - Technology Transfer, IP Protection & Confidentiality Guest Speaker: Dr. Rick Crowley, UF Innovate Hub Assistant Director, Licensing Officer] Period 9 ONLY				
#8 Finalizing Design	33	12	11/7/2022	M	Traum Mishur	Designing In Safety	1. Design for Manufacturing 2. Design for Manual Assembly			
	34	12	11/9/2022	W		No Class: Veteran's Day				
#9 Design Reviews	35	12	11/11/2022	F	Teaching Team	Design Review 1	1. Detail Design: Design, Analyze, Prototype Cycle		Design Review 1 Feedback Resolution	
#9 Design Reviews	36	13	11/14/2022	M	Teaching Team	Design Review 1				11. IP Movie Screening Commentary
#10 Product Evaluation & Presentation	37	13	11/16/2022	W	Teaching Team	Design Review 1 Faculty & Course Evaluations	1. Death By PowerPoint	1. D. G. Ullman, "Improving Team Communication with Design Technology Readiness Levels," 2020 2. Design Technology Readiness Level Template		90-Second Pitch Video (11/16) Project Abstract (11/16)
#10 Product Evaluation & Presentation	38	13	11/18/2022	F	N/A	No Class Meeting : Major Assignment Due			PDR Peer Review	Preliminary Design Report (PDR) (by 10pm) PDR Peer Review (11/20)
	39	14	11/21/2022	M		No Class: Thanksgiving Day				
	40	14	11/23/2022	W		No Class: Thanksgiving Day				
	41	14	11/25/2022	F		No Class: Thanksgiving Day				
#9 Design Reviews	42	15	11/28/2022	M	Teaching Team	Design Review 2			Final Oral Presentation Synchronous Interaction Design Review 2 Feedback Resolution	Exit Resume + Resume Worded Score Design Review 1 Feedback Resolution
#10 Product Evaluation & Presentation	43	15	11/30/2022	W	Martin	Technology Readiness Levels [Guest Speaker: Shawn Martin, US DoD]		1. L. E. Rogers, et al, "Transitioning Oral Presentations Online in Large-Enrollment Capstone Design Courses Increases Panelist Participation," Advances in Engineering Education, 2020.		
#9 Design Reviews	44	15	12/2/2022	F	Teaching Team	Design Review 2				Final Oral Presentation Slides (12/02)
#11 Final Deliverables	45	16	12/5/2022	M	Stakeholders	Final Oral Design Presentation				Final Oral Presentation
#11 Final Deliverables	46	16	12/7/2022	W	Stakeholders	Final Oral Design Presentation				Final Oral Presentation
#11 Final Deliverables	47	16	12/8/2022	R	Stakeholders	Final Oral Design Presentation				Final Oral Presentation
#11 Final Deliverables	48	16	12/9/2022	F	Stakeholders	Final Oral Design Presentation			23. FDR Peer Evaluation 24. Exit Skill Set Inventory Survey	Final Oral Presentation Final Design Report Design Review #2 Feedback Resolution Peer Evaluation for FDR Exit Skill Set Inventory Survey