Sustainability Education Resources   Sustainable UMass

2015

Syllabus: Introduction to Mechanical and Industrial Engineering

Erin Baker
University of Massachusetts - Amherst

Follow this and additional works at: https://scholarworks.umass.edu/sustainableumass_educationresources

Part of the Industrial Engineering Commons, and the Mechanical Engineering Commons

SYLLABUS
ENGIN 113 – Introduction to Mechanical and Industrial Engineering
Fall 2015

1. Course Description, Goals, and Objectives

Student teams will explore engineering analysis and design under the theme of Engineering Sustainability: Energy and the Environment, incorporating economics, environmental impacts, and social concerns.

ENGIN 113 is intended to introduce students to the fields of Mechanical Engineering and Industrial Engineering, and to provide students with important skills that they will need to be successful in college and the professional world. The specific course objectives are to:

- Develop effective teamwork skills, including peer- and self-evaluation.
- Practice critical thinking and engineering problem solving.
- Take a systems approach to design, incorporating economics, environment, and social concerns
- Develop information literacy.
- Communicate technical material clearly to a broad audience.
- Demonstrate competency in computer applications, including Creo and Excel.
- Complete two projects incorporating some key skills from Mechanical Engineering and Industrial Engineering.

2. Instructors

2.1. Professors

Professor Erin Baker	Professor David Schmidt
120C Marston	210B Marston
edbaker@ecs.umass.edu	schmidt@acad.umass.edu
Office hours:	Office hours:

2.2. Teaching Assistants

Jane Doe	John Doe
Coordinating TA	TA

3. Textbook and required course materials

3.1.Required:

- Creo Parametric 2.0 Tutorial, Toogood, R., SDC Publications, ISBN: 978-1-58503-815-2
- iClicker

3.2.Suggested:
- Ristinen R and Kraushaar, J: Energy and the Environment, ISBN: 978-0-471-73989-8
- Microsoft Office (available in computer labs)
- Creo Parametric (available free to students, email <contact person> for download link)

4. Course Requirements and Grading

4.1.Attendance

This class follows the University's official class absence policy. In general, attendance is required at all labs and lectures. In limited circumstances, students may be officially excused from class as detailed in the policy. Students with excused absences should contact <designated individual> as soon as possible to arrange for makeup work. Students must notify the professor before the due date of assignments, except in case of unforeseeable emergencies (e.g. sudden illness). **Forgetting to give proper notice is not an acceptable reason to miss due dates**

Students with unexcused absences are responsible for all material covered in class and should coordinate with their team members to catch up on the material they missed.

4.2.Requirements and Evaluation

There are three categories of assignments: individual, team, and hybrid. Individual assignments are graded individually. Team assignments are awarded a number of assignment points based on the assignment grade; these points are then allocated among team members according to the iPeer process. Hybrid assignments are assignments that are done first as individuals and then as a team; for hybrid assignments each team member's grade will be calculated as a weighted combination of the individual and team scores according grade weights which will be decided in class. See separate handouts for details.

Your grade will be based on the following graded assignments.

4.2.1. Assignments and Quizzes (15%)

There will be a number of quizzes and assessments during the semester. Some will be individual and some will be team-based. These will help you to understand your level of readiness for projects; will help you learn material; and will provide us with a method to evaluate your individual understanding of the topics covered.

4.2.2. Labs (25%)

You will work through tutorials on Creo and Excel in the computer lab. Each lab assignment will be worth an equal share of your grade, except for the final grand challenge lab, which will be worth four normal labs. **Labs will be graded based on mastery: there is no partial credit. Lab assignments are due at the end of each lab period.**

4.2.3. UMass Climate Action Plan (CAP) Project (25%)

The CAP project will involve three parts: (1) a short proposal, which will be graded on completeness; (2) a mid-term oral report, which will be graded based on a rubric; (3) a final written report graded by rubric. Please use the rubrics to direct your work. The CAP project provides an opportunity to apply engineering methods and systems thinking. See separate handout for details.

4.2.4. Energy Extraction Device (EED) (25%)

Students will design, fabricate, test, and document a small device for extracting the maximum possible mechanical work from a surrogate fuel and oxidizer. The students will submit their device and a final report that documents the methods and results from this project. The grading will be based on the quality of the design, the experimental work, the analysis of the data, and the documentation. See separate handout for details.

4.2.5. iPeer (5%)

iPeer is a peer evaluation package that allows team members to evaluate themselves and their teammates. iPeer affects your grade in two ways: you will receive a grade for completing the iPeer process (5% of your grade); and your iPeer rating will affect your CAP and EED project grade.

iPeer ratings are determined entirely by your team – your iPeer rating depends on how your teammates rate your work. If your teammates rate you highly it will help your grade, **and if your teammates rate you poorly it will hurt your project grades.**

See the separate iPeer handout for a detailed explanation of the iPeer process.

4.2.6. iClicker (5%)

iClicker is an in-class response system widely used in UMass classes. The purpose of i-Clicker is to provide immediate feedback to the instructor; to provide surveys of the class understanding and opinions for discussion; and to provide the opportunity for active participation in learning.

iClicker remotes are available through the UMass bookstore and must be registered on Moodle in order for you to get credit for your answers. It is your responsibility to obtain and maintain your iClicker; iClicker questions cannot be made up under any circumstances, including technical problems with your iClicker (it is your responsibility to carry extra batteries).

Most lectures will have an iClicker component. Every day that has an iClicker question will be worth an equal share of your iClicker grade, and each question in a given day will count equally toward that day's iClicker grade. For example, if there are 30 lectures with iClicker questions, and each day had three questions, each day would count for 1/30 of the iClicker grade, and each question would count for 1/3 of its day's credit. iClicker questions are extra credit for the first two class meetings. After that, your three lowest daily iClicker scores will be dropped.

To get credit, you must be present in class and submit your response to each question before the time expires (usually about 30 seconds). In most cases iClicker questions do not need to be answered correctly to receive credit (you get iClicker credit for participating).

Submitting iClicker answers for another person (i.e. holding another person's iClicker) will be considered academic dishonesty. If you are caught doing this, everyone involved will receive zero iClicker points for the entire course.

Students who make inappropriate responses (e.g. inappropriate words in open response questions) will receive zero iClicker points for the entire course.

4.3. Late Work

Late **project** assignments will be penalized one full letter grade per day or part thereof that they are late.

Students who are present and working on the **lab** for their entire lab period but are unable to complete the lab assignment before the end of the lab period may finish the lab on their own time and turn it in within the first ten minutes of the next lab period.

Except as explicitly described above, no late assignments will be accepted and you will receive a zero for that assignment. This includes Moodle quizzes, readiness assessments, iClicker points, and any other graded assignment.

5. **Academic Honesty**

Academic dishonesty is a serious offense that can result in severe consequences, up to and including expulsion from the university. Academic dishonesty will be dealt with according to the university's Academic Honesty Policy.

Lying in an attempt to improve your grade (e.g. by claiming that Moodle was down when it wasn't) is academic dishonesty. Note that Moodle keeps a complete log of all student activity.

5.1. Collaboration

While this is primarily a team based course, there are occasional individual assignments. Collaboration on individual assignments is prohibited. At a minimum, improper collaboration will result in receiving a zero for the assignment for everyone involved.

5.2. Plagiarism

Plagiarism is strictly prohibited. The UMass Amherst Academic Regulations define plagiarism as: *"Knowingly representing the words or ideas of another as one's own work in any academic exercise. This includes submitting without citation, in whole or in part, pre-written term papers of another or the research of another, including but not limited to commercial vendors who sell or distribute such materials."*

The Writing Program has prepared a more-detailed explanation of plagiarism.

Plagiarism is a very serious offense and will be dealt with harshly. It's not worth it. Don't do it.

5.3. Turnitin

In order to combat plagiarism the University uses Turnitin, plagiarism detection software. As a condition of continued enrollment in this course, you agree to submit all* assignments to the Turnitin for textual comparison or originality review for the detection of possible plagiarism. All submitted assignments will be included in the UMass Amherst dedicated database of assignments at Turnitin and will be used solely for the purpose of checking for possible plagiarism during the grading process and during this term and in the future.

*Note that not all assignments will need to be submitted to Turnitin. You will be provided with specific instructions when assignments need to be submitted to Turnitin.

6. Respectful and Responsible Community

6.1.Acceptable Classroom Behavior

Challenging ideas is an essential element of learning, but must be done in a respectful manner. All students are expected to read, understand, and abide by all applicable university policies, including the Code of Student Conduct, and the Guidelines for Classroom Civility and Respect.

6.2.Personal Media Devices

The classroom is equipped with extensive learning technology, including laptops, whiteboards, and display screens. Personal media devices (e.g. cell phones, tablets, personal laptops) are not necessary and may not be used in class, unless expressly stated otherwise. Students should keep files that they will need in class on a thumb drive or on their UMass Google Drive