

# MSE 489 Course Syllabus

## A. Course Details

Title: MSE 489 Materials Design

### A.1. Meeting Details

- Meeting Place: Ferris Hall 510
- Meeting Time: Wednesday at 1:50 pm - 5:00 pm

### A.2. Instructors:

#### Course Organizer, Lecturer for first half of the semester

- Prof. David Keffer, room 301 Ferris Hall, [dkeffer@utk.edu](mailto:dkeffer@utk.edu)

#### Individual Team Faculty Mentors

- Prof. David Harper, [dharper4@utk.edu](mailto:dharper4@utk.edu)
- Prof. Bin Hu, [bhu@utk.edu](mailto:bhu@utk.edu) with help from Prof. Orlando Rios, [orios1@utk.edu](mailto:orios1@utk.edu)
- Prof. Eric Lass, [elass@utk.edu](mailto:elass@utk.edu)
- Prof. Peter Liaw, [pliaw@utk.edu](mailto:pliaw@utk.edu)
- Prof. Kate Page, [kpage10@utk.edu](mailto:kpage10@utk.edu) with help from Prof. Yanfei Gao, [gao7@utk.edu](mailto:gao7@utk.edu)

#### Laboratory Manager

- Dr. Jerry Egeland, [gegeland@utk.edu](mailto:gegeland@utk.edu)

#### Teaching Assistants

- Dong Han, [dhan7@vols.utk.edu](mailto:dhan7@vols.utk.edu) (Page/Gao team)
- Syeda Bushra Haider, [sbushrah@vols.utk.edu](mailto:sbushrah@vols.utk.edu) (Lass team)
- Jacob Morton, [jmorto27@vols.utk.edu](mailto:jmorto27@vols.utk.edu) (Harper team)
- Hugh Shortt, [hshortt@vols.utk.edu](mailto:hshortt@vols.utk.edu) (Liaw team)
- Yipeng Tang, [ytang24@vols.utk.edu](mailto:ytang24@vols.utk.edu) (Hu/Rios team)

### A.3. Course Material

Required Textbook:

- Materials Selection in Mechanical Design, M. F. Ashby, 5<sup>th</sup> Edition. Butterworth-Heinemann, Elsevier, 2017.

Required Software:

- Granta EduPack
- Software license paid for by the MSE department

Course Website:

- <http://utkstair.org/clausius/docs/mse489/index.html>

#### A.4. Catalog Description

MSE 489 - Materials Design

3 Credit Hours

Design projects involving materials selection and performance.

Satisfies Volunteer Core Requirement: Applied Oral Communication (AOC), Engaged Inquiries (EI) Satisfies General Education

(RE) Prerequisite(s): MSE 304 with a grade of C or better, MSE 340 or MSE 347, MSE 360 or MSE 367, MSE 390 or MSE 397, MSE 480.

Registration Restriction(s): Minimum student level – senior.

#### B. Course Objectives:

The objectives of this course are provided in a separate document located at

- <http://utkstair.org/clausius/docs/mse489/pdf/objectives.pdf>

#### C. Grading Policy

##### C.1. Grade Breakdown

| Assignment   | Percentage of Course Grade |
|--|----------------------------|
| • Midterm Oral Presentation                                  | 10%                        |
| • Midterm Written Report                                     | 10%                        |
| • EURēCA Poster  | 20%                        |
| • Final Oral Presentation                                    | 20%                        |
| • Final Written Report                                       | 20%                        |
| • Individual Participation Grade (faculty mentor evaluation) | 10%                        |
| • Individual Participation Grade (peer evaluation)           | 10%                        |
| • Total  | 100%                       |

##### C.2. Course Grades

Course grades will be assigned on the following basis:

|              |    |
|--------------|----|
| 90.0 - 100.0 | A  |
| 85.0 - 89.99 | B+ |
| 80.0 - 84.99 | B  |
| 75.0 - 79.99 | C+ |
| 70.0 - 74.99 | C  |
| 60.0 - 69.99 | D  |
| 00.0 - 59.99 | F  |

This course grade basis may (at the instructor’s discretion) be shifted uniformly down, should the overall performance of the class require it. This course grade basis will not be shifted up. (That is, if an exam proves to be too hard and the average is low, an 89% may make an A. However, if an exam proves to be too easy and the average is high, a 90% will always make an A.)

### C.3. Grading Procedures

In the table below, the responsible party for determining the grade is provided.

| Assignment   | Grade Determined By                                    |
|--|--|
| ● Midterm Oral Presentation  | course instructor                                      |
| ● Midterm Written Report   | course instructor                                      |
| ● EUR̄CA Poster  | course instructor                                      |
| ● Final Oral Presentation  | course instructor with input from team faculty mentors |
| ● Final Written Report   | course instructor with input from team faculty mentors |
| ● Individual Participation Grade (faculty mentor evaluation <sup>§</sup> ) | team faculty mentors                                   |
| ● Individual Participation Grade (peer evaluation <sup>§§</sup> )          | team members   |

<sup>§</sup>At the end of the semester, all faculty mentors will submit a final evaluation of each of the students in their group and this evaluation will be included in the course grade.

<sup>§§</sup>At the end of the semester, all senior design students will submit a final peer evaluation for each of the other students in their group and this evaluation will be included in the course grade.

### D. Continuing Education Requirement

Students enrolled in MSE 489 are required to participate in five extracurricular continuing education opportunities. This requirement encourages student to adopt the habits of lifelong learning, essential to their success as engineers. Failure to complete this requirement will result in the student receiving an “Incomplete” in the course. The “Continuing Education Form” is located on the course website.

### E. Additional Non-Graded Activities

#### E.1. Senior Exit Survey

Students enrolled in MSE 489 are asked to participate in the senior exit survey in April. This survey allows the department to perform data critical in the ABET continuous improvement process.

#### E.2. Tickle College of Engineering Senior Design Showcase

Students have the option of participating in the Tickle College of Engineering Senior Design Showcase, where they can present their EUR̄CA poster again, this time to an audience of alumni and industry partners.

### F. Getting Help

The course organizer is here to help you successfully complete this course. If you begin to encounter a problem, you are encouraged to seek out the instructor before it becomes a disaster. Extra-effort will be made to meet with students who regularly attend lectures and project meetings.

The best way to contact the instructor is via email. To guarantee that the email is read promptly, make the subject of the email “MSE 489” Emails with the subject “Help Me!” or similar subjects are identified as spam and deleted without being opened.

### **G. Course Schedule:**

The schedule for this course is provided in a separate document located at

<http://utkstair.org/clausius/docs/mse489/pdf/schedule.pdf>