INTRODUCTION TO MATERIALS SCIENCE AND ENGINEERING

INSTRUCTOR: Prof. Pinshane Huang (office: MRL 258, email: pyhuang@illinois.edu)

COURSE LOCATION: 12:30–1:50 pm, Tuesday and Thursday, 103 Talbot

TEACHING ASSISTANTS:

WEBPAGE: https://compass2g.illinois.edu/

COURSE DESCRIPTION: This 2-credit course provides students with a first look into the vibrant, interdisciplinary field of materials science and engineering. The course introduces fundamental building blocks for thinking like a materials scientist, such as: how to draw and interpret phase diagrams, how to relate materials structure, properties, processing, and performance, how draw crystal structures and identify crystal plans and directions, how to evaluate and test materials for specific applications, and how to describe the major materials classes, their properties, and how they are used in our world. We will also discuss frontiers of materials research and engineering in diverse areas including nanomaterials, biomaterials, energy materials, and more. To facilitate learning, the course will include laboratory demonstrations, experiments, case studies of advances in materials, and a term project.


EXPECTATIONS: I expect you to: come to class prepared and on time, actively participate during class, interact collegially with other members of the class, complete readings and assignments in a timely manner, and seek help when you run into difficulty. You are also expected to check Compass and your e-mail regularly for course updates.

EVALUATION:
Grading for the course will be broken down as follows:

- Attendance and in-class exercises (10%)
- Homework (35%)
- Class Project (15%)
- Quizzes (40%)

ATTENDANCE AND IN-CLASS EXERCISES:
Attending and engaging in class is integral to this interactive nature of this course. Excused absences are given for reasons such as extended illness, family emergency, and approved campus activities. You should contact the professor before the class to gain an excused absence (at least 24 hours if possible).

Participation with i>clicker will account for 10% of your final grade. Of this total, 5% will be Attendance & Participation, according to the rubric below. For Attendance & Participation points, you receive the points as long as you show up for class and participate in the clicker activities. 5% will be Achievement points, based on whether your answers are correct on the days you participate.

Do not click in for a friend. Doing so can result in an automatic “F” for the course.

Grading scheme for Attendance and Participation:
100%: 0 or 1 unexcused absence
90%: 2 unexcused absences
85%: 3 unexcused absences
-5% for each additional unexcused absence
COURSE MATERIALS: Course materials, including handouts and problem sets will be available online through our course Compass website at https://compass2g.illinois.edu/. On the Compass website, you can access partially completed lecture slides before class. Students often choose to download or print these slides and bring them to class to take notes with. You will also be able to access completed lecture slides after class; these are posted roughly once a week.

Video of lectures will be posted at https://echo360.org. Log-in instructions for the echo site are available at https://it.engineering.illinois.edu/user-guides/student-guide-echo-360. The lectures are posted as a study-aid ONLY. Note that the lecture videos are not a substitute for showing up and participating in class.

PROBLEM SETS: Problem sets will be due on Thursdays at the beginning of class. You will be issued one Late Homework Coupon, which can be stapled to and turned in with one homework set for a 24-hour extension. Late homework should be submitted to the course homework box on the 2nd floor of the MSE building. Otherwise, late problem sets will not be accepted.

In all problem sets, it is your responsibility to show your work and provide explicit evidence that you applied appropriate concepts, used logical reasoning, and followed correct procedures in order to get points for each problem. It is not the responsibility of the grader to decipher what you did or how you got your answer. The most common way students lose points on problem sets is by not showing enough work; if you do not show your work, you will not receive full credit even if all your answers are correct. I strongly encourage you to look at the handout “A roadmap for tackling problem sets in materials science” for guidance and example problem set solutions.

You are encouraged to collaborate and seek help. But, your write-ups must be in your own words, not copied or paraphrased from your classmates or any other sources. You must acknowledge in writing anyone who you talked to or worked with in order to help complete your work. For example, asking “Do you know how to start problem 5” is OK as long as it is acknowledged, but it is not appropriate to divide up problems 1-4 between students and then copy the answers from each other.

CLASS PROJECT:
As your class project for MSE182, you and your team will design an interactive exhibit on a topic in materials science and engineering for Engineering Open House. You will receive more information and detailed instructions on the final project in mid-October.

QUIZZES:
This class will contain 4 in-class quizzes, each 45 minutes in length. No notes, calculators, or other testing aids will be allowed. The quizzes will each be worth 8% of your total grade, except for your top scoring quiz, which will be worth 16% of your grade. Quizzes will be announced at least 1-2 weeks in advance; the final quiz will occur during the final exam period, 8:00-11:00 AM on Tuesday, December 19.

GETTING HELP:
If you need help or simply would prefer to work in the company of others, you have several options:
1. Come to the study sessions (also called TA office hours) 5-6:00 pm Monday, Tuesday, and Wednesday in the MEB undergraduate lounge. Here, you can interact with the TAs, work with your classmates, and discuss the homework.
2. Interact with Prof. Huang. You can stop by MRL 258 during her “Interactive Conversation” time on Thursday from 2-3 pm, or make an appointment to discuss your questions or concerns.
3. If you find that you are having a great deal of trouble, you may wish to get additional help at the Center for Academic Resources in Engineering (CARE), which provides workshops, tutoring, and more for students in engineering. http://care.engineering.illinois.edu/
ACCOMMODATIONS:
To obtain disability-related academic adjustments and/or aids, students should contact the course instructor and the Disability Resources and Educational Services (DRES) as soon as possible. To contact DRES, you may visit 1207 S. Oak St., Champaign, e-mail disability@illinois.edu, or go to the DRES website. If you are concerned you have a disability related condition that is impacting your academic progress, academic screening appointments are available on campus that can help diagnose a disability.

ACADEMIC INTEGRITY:
Honesty and integrity are fundamental to our community. Guidelines for academic integrity are detailed in Article 1, Part 4 of the Illinois Student Code. Any confirmed violations of that code will be taken seriously and may result in failure for the course.