INTRODUCTION TO MATERIALS SCIENCE AND ENGINEERING

INSTRUCTOR: Prof. Pinshane Huang (email: pyhuang@illinois.edu)
COURSE TIMES: 12:30–1:50 pm, Tuesday and Thursday (Central Standard Time)
TEACHING ASSISTANTS: Emiliana Cofell (email: ecofell2@illinois.edu)
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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 to 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 demonstrations, experiments, case studies, 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, Campuswire, and your e-mail regularly for course updates. I also expect that if you are taking this course, you have a genuine interest in learning about materials science and engineering. Students who take this course solely in order to get an A are not typically satisfied with their experience.

EVALUATION:
Grading for the course will be broken down as follows:
Participation (15%)
Homework (35%)
Class Project (10%)
Quizzes (40%)

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 lecture slides before class and may write on them to assist with note-taking. Video recordings of lectures will be posted on Compass.

PARTICIPATION:
Attending and engaging in class is integral to the interactive nature of this course. You may earn participation points in several ways: by attending class synchronously and participating in online polling questions, by completing the “Weekly Check-in” questions on Gradescope, or by posting on Campuswire. You need to earn 150 participation points to get full credit. You cannot earn more than 150 points. Below is the distribution of points possible from each source:
In-class polling up to 116 (3 pts per class)
Weekly check-ins up to 72 (3 pts per week)
Campuswire posts up to 100 (3-5 points per post)
As you can see from the participation grading scheme, you will need to participate regularly to get full participation points, but you have choices on how you would like to participate.
**Campuswire:** We will be using Campuswire to facilitate course discussions in this class. You can access our Campuswire class at: [https://campuswire.com/c/GF5F53835](https://campuswire.com/c/GF5F53835)

You may receive participation points for asking or answering a question or responding to a prompt. You earn 3 points per post (these must be public posts sent to “Entire Class”; you do not receive credit for private posts). We will also periodically post prompts for discussion that you can respond to. You will receive a +2 pt bonus if an instructor or TA endorses your post. If your post is a duplicate of another post or off-topic, you will not receive credit. You should distribute your posts over the course of the semester; if we see people suddenly posting in large volumes, particularly near the end of the term, we will cap the points you can earn per week at 15. We will remove off-topic or inappropriate posts, though we have never needed to do so. More broadly, we may change how the discussion board works over the course of the semester to best suit the course and how you are using it.

Campuswire is also the way that you can privately contact the course instructors. Homework regrade requests should be submitted on Gradescope; do not ask us grading-related questions on Campuswire. For most direct messages, please post your note to “Instructors and TAs”.

Another tip: by default, Campuswire sends you a large number of notifications. Click your icon on the bottom left, “Settings”, then click “Notification Preferences” and adjust to your taste.

**Problem Sets:** Problem sets will typically be due on Thursdays at 12:00 PM, Central Standard Time. You will be issued one Late Homework Coupon, which can submitted with one homework set for a 24-hour extension. Otherwise, *late problem sets will not be accepted.*

This year, we will be managing homework submission and grading through Gradescope. You will submit your homework to Gradescope as a pdf file by scanning a paper copy of your homework. After the homework is graded, you will be able to view your grade and get feedback about your work. If you spot an error in the grading, you will have one week from the date the homework was graded to submit a regrade request through Gradescope. More information is available at: [https://www.gradescope.com/help#help-center-section-student-workflow](https://www.gradescope.com/help#help-center-section-student-workflow)

*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 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.

**iClickers:** To conduct in-class polling, we will be using iClicker REEF. You can get iClicker REEF as an app on your phone, or you can respond online on your laptop. You do NOT need an iClicker Student Remote. You will receive credit for in-class polling if you attend class synchronously and respond to the questions posed each class. Credit is assigned per day of class you attend and is based on participation only. A 1-year subscription to iClicker REEF costs $25 and is available at: [https://www.iclicker.com/pricing](https://www.iclicker.com/pricing). You will need to link your iClicker account to you by entering your netID (the first part of your email before the @illinois.edu) in the student ID field in your REEF profile. More on linking your account under “REEF polling by i>clicker” here: [https://citl.illinois.edu/citl-101/instructional-spaces-technologies/teaching-with-technology/i-clicker/student-faq](https://citl.illinois.edu/citl-101/instructional-spaces-technologies/teaching-with-technology/i-clicker/student-faq)

*Note:* If you do not wish to purchase iClicker REEF, you can receive full participation points by participating in discussions on Campuswire and responding to weekly check-in questions on Gradescope.
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 a scientific outreach activity. You will receive more information and detailed instructions on the final project in mid-October.

QUIZZES: This class will contain 4 quizzes. 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 1-2 weeks in advance; the final quiz will occur during the final exam period. Quizzes will be administered via Gradescope and monitored by UIUC’s CBTF proctors.

OFFICE HOURS AND GETTING HELP:
If you need help or simply would prefer to work in the company of others, you have several options:

1. Attend the virtual study sessions (also called TA office hours) 9:00-10:00 am Tuesday and 5:00-6:00 pm Wednesday via Zoom. Here, you can interact with the TAs, work with your classmates, and discuss the homework.
2. Interact with Prof. Huang. Her “Interactive Conversation” time (or office hours) is on Thursday from 2-3 pm on Zoom, or by appointment.
3. 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.

For circumstances such as extended illness, family emergencies, or religious observances that conflict with or make it difficult for you to keep up with coursework, you should contact Professor Huang via a Campuswire direct message as soon as possible to discuss options. In these cases, I encourage you to reach out to the Dean of Students office, which can help you contact and manage accommodations with all of your courses. For religious observances, you can request accommodations at https://odos.illinois.edu/community-of-care/resources/students/religious-observances/.

ZOOM ETIQUETTE: Any synchronous meetings, including our classes and office hours, will be conducted on Zoom. You will need to log in to Zoom to attend the course. You can do so at: illinois.zoom.us/signin using your NetID and password. Please mute yourself if you are not speaking. A good Zoom trick is to press and hold spacebar to temporarily unmute (this is called “push to talk”). During class, you can ask questions by pushing the “raise hand” button or typing in the Zoom chat.

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. Ignorance is not an excuse for any academic dishonesty. It is your responsibility to read this policy to avoid any misunderstanding. Do not hesitate to ask the instructor(s) if you are ever in doubt about what constitutes plagiarism, cheating, or any other breach of academic integrity.

INCLUSIVITY STATEMENT: The effectiveness of this course is dependent upon each of us to create a safe and encouraging learning environment that allows for the open exchange of ideas while also ensuring equitable opportunities and respect for all of us. Everyone is expected to help establish and maintain an environment where students, staff, and faculty can contribute without fear of personal ridicule, or intolerant or offensive language. If you witness or experience racism, discrimination, micro-aggressions,
or other offensive behavior, you are encouraged to bring this to the attention of the course director if you feel comfortable. You can also report these behaviors to the Bias Assessment and Response Team (BART) (https://bart.illinois.edu/). Based on your report, BART members will follow up and reach out to students to make sure they have the support they need to be healthy and safe. If the reported behavior also violates university policy, staff in the Office for Student Conflict Resolution may respond as well and will take appropriate action.