

Course Syllabus



Course Description

This course is a multidisciplinary introduction to topics at the intersection of materials and data science. Corresponding to this, it brings in speakers and activities from multiple different departments (computer science, information science, statistics, physics, materials science, and mechanical engineering) to provide their own perspectives on this subject.

Scope

- Introduction to the connection of materials and data science
- Specific issues regarding experimental and computational materials data
- Data acquisition and management, data curation
- Uncertainty quantification
- Applying machine learning to materials data

Course Grading

Attendance of each unit will be graded through a Canvas assignment, filled out in class. Class participation on the Canvas Discussion section will be graded, and it is expected that you ask two questions throughout the semester and answer two questions throughout the semester. Several of the units will involve hands-on sessions. For these, you will turn in a report on each of your hands on activities. The report should include a narrative about what you are doing and why. Learning how to do this is an important part of doing science.

Schedule: Lecture/Presentations: Tues/Thurs 11 am – 12:20 pm CST; 2051 Sidney Lu Mech Engr Building;

Office hours: please request via email to schleife@illinois.edu (<mailto:schleife@illinois.edu>).

Prerequisites

Basic familiarity with the following is expected:

- Materials Science (Structure of materials; Properties of materials; Materials Characterization)
- Computer Science (Programming and data structures (e.g. Python, C, C++, or MATLAB))
- Mathematics (Linear algebra; Statistics)

If you have any questions or concerns about this, please reach out to your professor.

Required Text: None, but reading papers may be assigned for specific lectures beforehand.

Obtaining help: The main two ways to obtain help are online at Canvas or schedule an office hour via email. You can of course also speak with your professor briefly after lecture. Please do not send emails for routine help or absences. In cases of emergencies related to exams (e.g., illness) you should email your professor at the earliest possible opportunity.

Disability-Related Accommodations

To obtain disability-related academic adjustments and/or auxiliary aids, students with disabilities must contact the course instructor and the Disability Resources and Educational Services (DRES, <http://disability.illinois.edu>) as soon as possible, and no later than Feb. 1. To contact DRES, you may visit 1207 S. Oak St., Champaign, call 333-4603, e-mail disability or go to <https://www.disability.illinois.edu>. If you are concerned you have a disability-related condition that is impacting your academic progress, there are academic screening appointments available that can help diagnosis a previously undiagnosed disability. You may access these by visiting the DRES website and selecting “Request an Academic Screening” at the bottom of the page.

Plagiarism

Collaborative interaction in small groups is encouraged, but each student must submit a writeup themselves. Any verified incident of plagiarism will result in formal academic sanctions. Students are responsible for familiarizing themselves with the definition of and penalties for plagiarism in Section I-401 of the UIUC Student Code. Note that plagiarism includes “copying another student’s paper or working with another person when both submit similar papers without authorization to satisfy an individual assignment”.

Emergency Response Recommendations

Emergency response recommendations can be found at the following website:

<http://police.illinois.edu/emergency-preparedness/>. I encourage you to review this website and the campus building floor plans website within the first 10 days of class:

<http://police.illinois.edu/emergency-preparedness/building-emergency-action-plans/>.

Sexual Misconduct Reporting Obligation

The University of Illinois is committed to combating sexual misconduct. Faculty and staff members are required to report any instances of sexual misconduct to the University’s Title IX Office. In turn, an individual with the Title IX Office will provide information about rights and options, including accommodations, support services, the campus disciplinary process, and law enforcement options. A list of the designated University employees who, as counselors, confidential advisors, and medical professionals, do not have this reporting responsibility and can maintain confidentiality, can be found

here:

wecare.illinois.edu/resources/students/#confidential.

Academic Integrity

The University of Illinois at Urbana-Champaign Student Code should also be considered as a part of this syllabus. Students should pay particular attention to Article 1, Part 4: Academic

Integrity. Read the Code at the following URL: <http://studentcode.illinois.edu/>.

Academic dishonesty may result in a failing grade. Every student is expected to review and abide by the Academic Integrity Policy: <https://studentcode.illinois.edu/article1/part4/1-401/>. 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.

Religious Observances

Illinois law requires the University to reasonably accommodate its students' religious beliefs, observances, and practices in regard to admissions, class attendance, and the scheduling of examinations and work requirements. You should examine this syllabus at the beginning of the semester for

potential conflicts between course deadlines and any of your religious observances. If a conflict exists, you

should notify your instructor of the conflict and follow the procedure at

<https://odos.illinois.edu/communityof-care/resources/students/religious-observances/> to request appropriate accommodations. This should be

done in the first two weeks of classes.

Family Educational Rights and Privacy Act (FERPA): Any student who has suppressed their directory information pursuant to Family Educational Rights and Privacy Act (FERPA) should self-identify to the instructor to ensure protection of the privacy of their attendance in this course.

See <https://registrar.illinois.edu/academic-records/ferpa/> for more information on FERPA.