Syllabus

**APPL 150 – Introduction to Materials Science**
Tuesdays and Thursdays, 12:30am-1:45pm, 265 Phillips
(Tip: If you ever forget where the website is, google “Oldenburg UNC”, click “Teaching” on the left bar, and the link to the APPL 150 page is on the top of that page).

**Instructor:** Prof. Amy L. Oldenburg, Physics
Email: aold@email.unc.edu
Office Location: 331 Chapman – during office hours or by appointment only
Office Hours: 2-3pm Thursdays (or by appointment)

**Teaching Assistant:** Sara Oliver
Email: sloliver@live.unc.edu
Office Hours Location: 335 Chapman Hall
TA’s Office Hours: 5-6pm Mondays

**Why Study Materials?**
What gives the objects we interact with their texture and pliability? What causes them to break or to degrade over time? How do you choose the best material for a given application? While this topic could easily cover a year-long course, I will aim to give you the essential tools that will guide you in future studies.

**Required Textbook:**
W. D. Callister and D. G. Rethwisch, Fundamentals of Materials Science and Engineering: An Integrated Approach, 4th ed. ISBN 978-1-118-06160-2. The online version of this textbook is OK (but not as flexible as having the real book), and you may use it if you wish. **If you want to get the 3rd edition, you must have a plan for how you will obtain the homework assignments each week, as they will be assigned from the 4th edition, and I cannot be responsible for differences between the editions.** The overall chapters appear to be the same between editions, but I cannot vouch for other slight differences between the texts. Materials science is a rapidly evolving field and there certainly may be newer and more relevant topics in the 4th edition.

**Required Calculator:**
A hand-held calculator is required for in-class activities as well as examinations. It should not be part of a wireless device and should also not be a computer.

**Expectations:**
Read the textbook chapters before the lectures! I cannot stress this enough. You have an excellent textbook. My job during lecture is to clarify the tougher concepts in the book and to provide you with some context and guidance in your learning process. Unfortunately, there isn't enough lecture time to cover everything you will learn by reading the book, which is why this is so important.

Make sure you know how to do the homework independently. While I do encourage you to work in groups, ensure that you truly understand how to do the problems.

Actively participate in class. Ask questions! If you have a question, I guarantee that others around you have the same question. Also, group activities will be handed out every class period, and I expect you to work with your colleagues to complete them.

In-class worksheets:
As part of every class we will be doing an in-class worksheet of problems, which are not graded but are purely to help you learn. Please use this opportunity to:
• Ask the professor or your classmates when you are stuck
• Finish the worksheet in class, or if you cannot finish, take the answers with you and finish it later
• Make sure you have the right answers! I will only give them out near the end of the time period
• Use your worksheets to study for exams

Homework:
Homework will be due every Tuesday at the beginning of class. If you cannot arrive to class on time, then the homework is due under my office door (331 Chapman) at any day or time more than 15 minutes before class starts. (If I return from class to find homework under my door, it will be considered late).
• Problems will be posted 1 week in advance on the course website
• Due within first 10 minutes of class
• Late homework is 50% credit up to 24 hours, then no credit
• Homework must be hand-written
• You are strongly encouraged to collaborate with your peers on the homework
• The use of outside solution manuals is an honor code violation
• Some homework answers are in the back of the book; please use these answers if they are provided
• Homeworks will be graded on showing your work in an unambiguous manner, with less emphasis on the final answer (especially if the answer is in the back of the book).

Exams:
There will be 4 quizzes and 1 final exam at times listed on the schedule. You will be allowed to use your calculator and 1 page of handwritten notes, but otherwise will be closed book. The quizzes will be 30 minutes each.

Project:
There will be a research project / paper as part of this course, on a topic of your choosing. You might start thinking about topics you are passionate about now. More details will be provided by March.

Accessibility:
I am sensitive to students with disabilities or anything which may make certain aspects of the course inaccessible to you. Please do not hesitate to make me aware of any such issues.

Grading:
Your final grade will be based upon the following:
25% Homework
30% Quizzes (7.5% for each of 4)
25% Final Examination
20% Semester Project
Up to an extra 2% for class participation
Cutoff percentages for final grades will be at the instructor’s discretion.
I am happy to provide you with a grade estimate upon request.