

MASC 310 – Materials Behavior and Processing

Fall, 2014

Prof. Nutt

Materials Behavior and Processing is intended for undergraduate engineering students from all engineering disciplines. The text we use features a design-led approach, as opposed to the conventional science-led approach (think of it as “top-down” as opposed to “bottom-up”), which will facilitate the learning. Instead of starting with atoms, bonding, and crystal structures, we start with materials requirements for design - the properties and processes. We then “drill down” to understand the underlying science behind the properties. The advantage of this approach is that it provides a practical context and perspective before diving into scientific explanations, providing students with practical insights and motivation for mastering fundamentals. This is also closer to the challenges encountered for most engineers in their professional life outside a research institution. One of the distinguishing features of the text by Ashby - this design-led approach - attempts to provide a global perspective and context for the study of materials. Periodic case studies are presented to illustrate how the concepts are put into practice in engineering applications, highlighting design considerations. The book also relies on charts and graphical communication of concepts. There is considerable breadth, as one might expect from the title. Students are expected to read approximately one chapter each week, and problems are assigned weekly from the textbook. A materials database will be used in assignments, and students must be able to run Windows software.

A Blackboard website for the course provides assignments, solutions, required materials, and a schedule of lectures. The TA will hold weekly office hours. I will have office hours twice a week (location and time see below).

Grading:

Assignment:	Weight:
Homework	10 %
Project	10 %
Attendance	10 %
Midterm I	20%
Midterm II	20 %
Final	30 %
Total	100 %

Homework Policy:

Homeworks are assigned on Tuesday's and are due the following week *at the beginning of class*. HWs turned in on time will be graded by the TA. HW's are useful to prepare for the exams and the projects. HW's are considered late 5 min after the start of class, and are penalized 30%. HW's will not be accepted after 24 hours past the due date and time.

Text:

Materials – Engineering, Science, Processing and Design, 3rd edition, Ashby, Shercliff, and Cebon, Butterworth, 2013

Software:

The course will be using software called CESEduPack 2014. The software runs on Windows systems only. If you are using a Mac, there are options to run Windows:

1. BootCamp
2. VirtualMachine (VMWare Fusion, VirtualBox,...)

The software will also be available on some computers in the library. The software download will be available for download in the first week of class.

Contact information:

email: nutt@usc.edu

Office: VHE-406

Office hours with TA every week

Office hours Prof. Nutt M, F: 8:00 a.m.- 9:00 p.m. or by appointment

Statement on Academic Integrity

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own. All students are expected to understand and abide by these principles. *Scampus*, the Student Guidebook, contains the Student Conduct.

<http://www.usc.edu/dept/publications/SCAMPUS/gov/>

Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found at:

<http://www.usc.edu/student-affairs/SJACS/>

Sanctions include but are not limited to: grade sanctions (e.g., "F" in course) and dismissal from the academic department (see following excerpt from SJACS site).

http://www.usc.edu/student-affairs/SJACS/forms/sjacs_appa.pdf

Appendix A: Academic Dishonesty Sanction Guidelines

Violation	Recommended Sanction for Undergraduates*
Copying answers from other students on any course work.**	F for course.
One person allowing another to cheat from his/her exam or assignment.	F for both persons.
Possessing or using material exam (crib sheets, notes, books, etc.) which is not expressly permitted by the instructor.	F for course.
Continuing to write after exam has ended.	F for course.
Taking exam from room and later claiming that the instructor lost it.	F for course and recommendation for further disciplinary action (possible suspension).
Changing answers after exam has been returned.	F for course and recommendation for further disciplinary action (possible suspension).
Fraudulent possession of exam prior to administration.	F for course and recommendation for suspension.
Obtaining a copy of an exam or answer key prior to administration	Suspension or expulsion from the university; F for course.
Having someone else complete course work for oneself.	Suspension or expulsion from the university for both students; F for course.
Plagiarism – Submitting other's work as one's own or giving an improper citation.	F for the course.
Submission of purchased term papers or papers done by others.	F for the course and recommendation for further disciplinary action (possible suspension).
Submission of the same assignment to more than one instructor, where no previous approval has been given.	F for both courses.
Unauthorized collaboration on an assignment.	F for the course for both students.
Falsification of information in admission applications (including supporting documentation).	Revocation of university admission without opportunity to reapply.
Documentary falsification (e.g., petitions and supporting materials; medical documentation).	Suspension or expulsion from the university; F for course when related to a specific course
Plagiarism in a graduate thesis or dissertation.	Expulsion from the university when discovered prior to graduation; revocation of degree when discovered subsequent to graduation.***

*Assuming first offense

**Exam, quiz, tests, assignments or other course work.

***Applies to graduate students

