University of Southern California
Materials Science

MASC 505 Crystals and Anisotropy S. Nutt
Course Syllabus
Fall 2022

Prof. Nutt
VHE 406

E-mail: nutt@usc.edu
Preferred method of communication. Use “MASC 505” in subject of the e-mail and use your USC e-mail account to send e-mail to me.

Office Hour: All meetings are by appointment. My office hours will be Monday 2:00-3:00 pm and Wednesday 2:00-3:00 pm, but you should still make an appointment. E-mail me to make and confirm an appointment, even if you would like to meet during the office hour. If this time does not work you, e-mail me with times that work for you.

Class Website: Log on to Blackboard at https://blackboard.usc.edu for the class website. Class documents will be posted on Blackboard, including the syllabus. E-mails to the class will be sent via Blackboard and sent to your USC e-mail account. Read the e-mails regularly. E-mails sent to the entire class will start with the heading “MASC 505” vs an e-mail to any specific student.


Grading

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>25% credit/no credit</td>
</tr>
<tr>
<td>Two midterms</td>
<td>25% each</td>
</tr>
<tr>
<td>Final</td>
<td>25%</td>
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Midterms - Oct 5th, 2021 and Nov 2nd, 2023
Final - Friday December 10, 2021, 11:00 am – 1:00 pm

Text

“Structure of Materials – an Introduction to Crystallography, Diffraction, and Symmetry”

De Graef and McHenry, available as e-text on Amazon for $42

Final Exam – Friday December 9th, 2023, 11:00 am – 1:00 pm
Schedule of Lectures – MASC 505 - Fall 2022

Week 1 – Aug 22, 24
   Materials and properties – Ch 1
   Periodic table and bonding – Ch 2

Week 2 – Aug 29, 31
   Crystal Structure – Ch 3

Week 3 – Sep 5 (holiday), 8
   Crystal calculations – Ch 4

Week 4 – Sep 12, 14
   Lattice planes – Ch 5

Week 5 – Sep 19, 21
   Reciprocal lattice – Ch 6

Week 6 – Sep 27, 29
   More crystal calculations – Ch 7
   Midterm exam – Sep 30

Week 7 – Oct 3, 5
   Symmetry in crystals – Ch 8

Week 8 – Oct 10, 12
   Point groups – Ch 9

Week 9 – Oct 17, 19
   Plane and space groups – Ch 10

Week 10 – Oct 24, 26
   X-ray diffraction geometry – Ch 11

Week 11 – Oct 31, Nov 2
   X-ray diffraction intensity – Ch 12
   Midterm exam – Nov 3

Week 12 – Nov 7, 9
   Crystal structures and diffraction – Ch 14

Week 13 – Nov 14, 16
   Ceramic structures – Ch 21
   MT-2

Week 14 – Nov 21
   Ceramic structures – Ch 21

Week 15 – Nov 28, 30
   Metallic, non-crystalline – Ch 17, 20

Dec 9th (F) – Final exam (11 am – 1 pm)
Statement on Academic Conduct and Support Systems

Academic Conduct:

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, “Behavior Violating University Standards” https://policy.usc.edu/scampuspart-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, http://policy.usc.edu/scientific-misconduct.

Support Systems:

Student Counseling Services (SCS) - (213) 740-7711 – 24/7 on call
Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention. https://engemannshc.usc.edu/counseling/

National Suicide Prevention Lifeline - 1-800-273-8255
Provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week. http://www.suicidepreventionlifeline.org

Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-4900 - 24/7 on call
Free and confidential therapy services, workshops, and training for situations related to gender-based harm. https://engemannshc.usc.edu/rsvp/

Sexual Assault Resource Center
For more information about how to get help or help a survivor, rights, reporting options, and additional resources, visit the website: http://sarc.usc.edu/

Office of Equity and Diversity (OED)/Title IX Compliance – (213) 740-5086
Works with faculty, staff, visitors, applicants, and students around issues of protected class. https://equity.usc.edu/

Bias Assessment Response and Support
Incidents of bias, hate crimes and microaggressions need to be reported allowing for appropriate investigation and response. https://studentaffairs.usc.edu/bias-assessment-response-support/

The Office of Disability Services and Programs
Provides certification for students with disabilities and helps arrange relevant accommodations. http://dsp.usc.edu

Student Support and Advocacy – (213) 821-4710
Assists students and families in resolving complex issues adversely affecting their success as a student EX: personal, financial, and academic. https://studentaffairs.usc.edu/ssa/

Diversity at USC
Information on events, programs and training, the Diversity Task Force (including representatives for each school), chronology, participation, and various resources for students. https://diversity.usc.edu/

USC Emergency Information
Provides safety and other updates, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible, http://emergency.usc.edu

USC Department of Public Safety – 213-740-4321 (UPC) and 323-442-1000 (HSC) for 24-hour emergency assistance or to report a crime.
Provides overall safety to USC community. http://dps.usc.edu