CHM 6628 Chemistry of Solid Materials
Syllabus Fall Semester 2021
Daniel R. Talham
CLB 412

Topics: Approximately 2/3 of the course will be dedicated to background and fundamentals of solid state chemistry, with the final 1/3 reserved for current topics.

- Fundamentals (August 23 until approximately October 21)
  - Classification and Structures of Solids
  - Electronic Structure of Solids
    - Semiconductors, Metals and Superconductors
  - Optical Properties of Solids
  - Magnetism and Magnetic Materials
  - Porous Solids, Intercalation, Ion Storage and Transport
  - Surfaces
  - Characterization Methods
- Current Topics and Case Studies (Approximately October 25 until December 7)
  - To be decided. Some Possibilities:
    - Hybrid Perovskite Semiconductors and Emitters
    - 2D Materials
    - Battery Solid Electrolytes and Electrode Materials
    - Ferroelectrics and Multiferroics

Objective: At the conclusion of the course students should have an understanding of the fundamentals that underlie most contemporary solid-state and materials chemistry, including: solid-state structure types; electronic structure of semiconductors, metals, and superconductors; magnetism and magnetic materials; optical properties; surface effects and properties; solid-state nanochemistry; and modern characterization methods.

Grading: Grades will be based on a mid-term exam (50%), homework assignments and in-class discussions and presentations (50%).

Homework: Homework will be assigned approximately every two weeks. Doing homework with a partner or in groups is encouraged.

Accompanying Reading:

"Solid State Chemistry and its Applications, 2nd Edition, Student Edition" Anthony R. West ISBN: 978-1-119-94294-8 March 2014. This text will be the principal source of background material. Reading will also be assigned throughout the course from several sources including books, review articles and primary literature articles.

Another book, "Solid State Chemistry, An Introduction" L. Smart and E. Moore, is at a lower level, but could provide an alternative presentation if a student feels it helpful. This book was the main text a few years ago for this class, so there may be copies around some of your labs.

The following are included as part of the UF Policy on Course Syllabi. Please contact the instructor if there are any questions.

Attendance: Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx

Academic Honesty: UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code." On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel.

Accommodations for students with disabilities: Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, www.dso.ufl.edu/drc/) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Software Use: All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy: There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: http://registrar.ufl.edu/catalog0910/policies/regulationferpa.html

Campus Resources:
Health and Wellness

U Matter, We Care:
If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student.

Counseling and Wellness Center: http://www.counseling.ufl.edu/cwc, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS)
Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or http://www.police.ufl.edu/.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. https://lss.at.ufl.edu/help.shtml.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling. https://www.crc.ufl.edu/.

Library Support, http://cms.uflib.ufl.edu/ask. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. https://teachingcenter.ufl.edu/.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. https://writing.ufl.edu/writing-studio/.

Student Complaints Campus: https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf.

Feedback: Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/.