

**UK Department of Chemistry**  
**CHE 580: Materials Chemistry, Spring 2015**  
**Course Description and Syllabus**

**Meeting Times:** TR 9:30-10:45 a.m.  
**Classroom:** CP-103  
**Instructor:** Beth S. Guiton, CP-148C  
**Office Hours:** TR ~15 mins after class; Monday 12:15-2:45 p.m.

**Course Description:** A detailed investigation of a topic of current significance in chemistry.

**Required Text:**

*Solid State Chemistry and its Applications (Student Edition)*, Anthony R. West; 2<sup>nd</sup> Ed, Wiley (2014)  
- OR -

*Basic Solid State Chemistry*, Anthony R. West; 2<sup>nd</sup> Ed, Wiley (1999).

**Optional Visualization Aids:**

Advanced Molecular Model Set for General and Organic Chemistry, LLC Mega Molecules (~\$20)

Polyhedral Model Kit, Institute for Chemical Education (~\$115)

CrystalMaker software suite: available in person in Dr. Parkin's x-ray diffraction facility, or remotely, at [vnc://xray.uky.edu](http://vnc://xray.uky.edu) (user name: che580; password: c\_maker). A VNC client may be required when accessing from a linux or windows machine. Note: if someone is already logged on to the computer when you try to access it, open a text box and type "Are you using this machine?" – if no one responds, log out and back in as che580.

**Course Coverage:**

An overview of basic solid state materials chemistry, including the structure of materials, synthetic methods, methods of characterization such as x-ray diffraction and electron microscopy, and a discussion of their optical, electronic, and magnetic properties. Prereqs: introductory inorganic and physical chemistry are recommended.

**CHE 580 home page:** [http://www.chem.uky.edu/research/guiton/che580\\_S15.php](http://www.chem.uky.edu/research/guiton/che580_S15.php)

**Examinations:**

Three examinations will be given: two midterms on March 5, 2015 (9:30-10:45 a.m.) and April 9, 2015 (9:30-10:45 a.m.), and a Final on May 7, 2015 (8-10 a.m.). Unless announced otherwise Midterm 1 will examine the material covered in Problem Sets 1-4, Midterm 2 will examine the material covered in Problem Sets 5-7, and the Final will be cumulative. Any student with a legitimate conflict with an exam time must inform me in writing, according to university regulations posted online (<http://www.uky.edu/Registrar/bulletinCurrent/toc2.htm>) by the Office of the Registrar.

**Problem Sets:**

Problem sets will be assigned each week and due the following week during class. Late assignments (up to one week) will receive half credit.

**Literature Presentation:**

A short (~10-15 min) presentation will be given by each **graduate student** during the final two or three classes before dead week (April 16 (possible), 21, and 23). The subject of the presentation will be a paper from the literature assigned by the instructor approximately one week ahead of time. Students should prepare a short presentation to summarize the essential details of their assigned paper using the material learnt from the course to aid in their interpretation. Further details to be announced in class.

**Grading:**

|                          |                                  |
|--------------------------|----------------------------------|
| Problem sets (10):       | 15% (20% undergraduate students) |
| Literature presentation: | 5% (graduate students only)      |
| Midterm 1:               | 25%                              |
| Midterm 2:               | 25%                              |
| Final examination:       | 30%                              |

Grades will be assigned according to the following tentative scheme. Ranges may be lowered but will not be raised. A: 85-100%; B: 75-84%; C: 60-74%; D: 50-59% (undergraduates only)

**Attendance:**

Attendance will be taken at the beginning of each class. Students absent from **no more than two** classes (or with legitimate excused absences), and present for **all of the literature presentation classes** will be awarded five extra credit percentage points on their final class total.

**Important Dates:**

|                           |   |
|---------------------------|---|
| Midterm examination 1:    | Thursday March 5, 9:30 - 10:45 a.m.     |
| Spring break:             | March 16-21                             |
| Midterm examination 2:    | Thursday April 9, 9:30 - 10:45 a.m.     |
| Last problem set due:     | April 23                                |
| Literature Presentations: | April 16 (possible), 21, 23             |
| Dead Week:                | April 27 – May 1                        |
| Final examination:        | Thursday, May 7, 8:00 a.m. – 10:00 a.m. |

**Academic Integrity:**

Homework should be viewed as original pieces of work to convey that you understand the rationale for solving the problems. You may confer with others on various techniques and ask for help, but it is up to you to illustrate your understanding. Verbatim copying of someone else's homework will not be tolerated. The minimum penalty for cheating on this course is a grade of E.

**Excused Absences:**

An excused absence must be documented in writing. Excused absences from exams or quizzes should be given to me (the instructor) prior to the exam or quiz. A make-up exam or quiz will be given to the student within a few days of the missed exam or quiz. The University allows excused absences for the following:

- Illness of the student or serious illness of a member of the student's immediate family.
- The death of a member of the student's immediate family.
- Trips for members of student organizations sponsored by an academic unit, trips for university classes, and trips for participation in intercollegiate athletic events.
- Major religious holidays. This must be notified to the instructor no later than the last day for adding classes.
- Any other circumstance which the instructor finds reasonable cause for nonattendance.

**Course Evaluations:**

Course evaluations are an important component of the Department's instructional program. Time will be allotted during class towards the end of the semester to complete the evaluation of the course and the instructor.

**Letter of Accommodation:**

If you have a documented disability that requires academic accommodations, please see me as soon as possible during scheduled office hours. In order to receive accommodations in this course, you must provide me with a **Letter of Accommodation** from the Disability Resource Center (Room 2, Alumni Gym, 257-2754, [jkarnes@uky.edu](mailto:jkarnes@uky.edu)) for coordination of campus disability services available to students with disabilities.