MSE 403: Synthesis of Materials  

Instructor:  
Prof. Daniel Shoemaker  

Email: dpshoema@illinois.edu  
Office: 112 Materials Research Laboratory  
Office Hours: Email for appointment  

Grader: To be announced on Compass  

Class Schedule: Tuesday/Thursday 9:30 – 10:50AM, 4101 MSEB  

Course Materials: No textbook is assigned for this class. This makes assigned handouts, chapters, and articles very important. Reading material will be posted on Compass and all are required reading.  

Grading:  
15% Homework: approximately biweekly, 40% late penalty per 24 hours  
15% In-class activities, including quizzes, daily reading questions  
20% Midterm 1: In-class  
20% Midterm 2: In-class  
30% Poster Project: During Finals slot  

Objectives:  
Understand the processes, energy balance, and motivation for compound formation  
Learn general methodologies for materials synthesis in a variety of systems  
Suggest and evaluate reasonable syntheses for a variety of applications  
Investigate one arena of synthesis in detail and present a poster to your peers  

Topics:  
Origins and synthesis of Metals, Ceramics, Polymers:  
Chemical bonding  
Thermodynamics  
Thermal synthesis, Oxidation and Reduction  
Kinetics and Catalysis  
Nucleation and Growth  
Vapor Deposition  
Sol-gel Techniques  
Nanomaterials
Grades will be assigned using the following scale:

A+ = 98-100%
A  = 93-97%
A-  = 90-92%
B+ = 88-90%
B  = 83-87%
B-  = 80-82%
C+ = 78-80%
C  = 73-77%
C-  = 70-72%
D+ = 68-70%
D  = 63-67%
D-  = 60-62%
F   < 60%

At my discretion, the minimum score needed to earn a certain letter grade may be lowered, but it will not be raised.

Ethics:
Plagiarism of text, data, figures, graphs, etc., is strictly not allowed. Instances of plagiarism will result in a zero grade for the assignment for all authors. Please read and understand the rules: www.library.uiuc.edu/learn/research/academicintegrity.html

Instances in which answers are copied (from any source, including references, classmates, or old answer sets) will result in sanctions in accordance with the Illinois Student Code, ranging from a zero grade for that assignment to immediate failure in the course.

Sharing clickers is an insta-fail offense and not worth the meager points. Don’t bother.

Resources for Students in Distress:
Take care of yourself, your friends, and acquaintances. For personal or academic issues it is important to remember that many consulting options are available to students, through the College of Engineering (206 Eng Hall, walk-in during business hours), McKinley, or the Counseling Center (http://counselingcenter.illinois.edu/). If you would like to speak to someone about a situation you've encountered, please call the Counseling Center at 217-333-3704, or the after-hours Crisis Line at 217-359-4141.

Emergencies can occur any time:
Run: Leave the area as fast as possible. MSEB has twin staircases on its East/West ends.
Hide: Shelter in place if necessary. The MSEB basement is a tornado shelter.
Fight: Enrollment of MSE 403 is 46. I expect us to team up.

If you are in a safe location, wait for Illini-Alert updates. Sign up for text alerts.