

## Chemistry 371: Introduction to Chemistry of Materials

Fall 2017

Syllabus

<b>Instructor</b>	Robin S. Tanke, Ph.D.
<b>Phone:</b>	346-4325
<b>E-mail:</b>	rtanke@uwsp.edu
<b>Office:</b>	D141 Science
<b>Office Hours:</b>	T 11AM- noon, Wed 2-3 PM, F 9-10AM or by appointment, drop in

**Class Sessions:** Wednesday in A111

**Final Exam:** Monday, December 18, 2017 10:15 – 12:15 A111

### Learning Outcomes:

At the end of this course, students can:

- Classify materials as metals (alloys), ceramics (glasses), natural or synthetic polymers, semiconductors or composites
- Explain how the physical structure of a material relates to the chemical, mechanical, electrical, magnetic and optical properties of a material
- Discuss how advances in materials chemistry have contributed to technological advances.

**Prerequisite:** Chem 326 or con reg.

**Required Materials:** The textbook Understanding Solids by Richard J. D. Tilley is available from text rental.

**Grading:** The tentative letter grades will be given as follows: "A" - 185 points, "B" 165 points, "C" 145 points, "D" 125 points.

1. Homework Assignments (4 at 15 pts, 3 at 10 pts)	90 points
2. Article Summary 1	10 points
3. Article Summary 2	10 points
4. Written Assignment	30 points
5. Midterm Exam	20 points
6. Final Exam	40 points
<b>Total</b>	<b>200 points</b>

LATE WORK POLICY: I expect work to be turned in at the designated time; however, if work must be late, you will receive a 10% grade reduction for material 1 hour to 1 week late. Any work turned in more than 1 week late will not be accepted except under special circumstances.

**Student Conduct:**

Class attendance is mandatory and class preparation is expected. Assigned reading and viewing materials will often be included in class discussion so please come prepared.

Please be respectful of your classmates!

Students are reminded that they are to conduct themselves in accordance with the rules for academic conduct. The University of Wisconsin System and UWSP Chapter 14 of the Wisconsin Administrative Code, Rules of the Board of Regents of the University of Wisconsin System is to be followed by all students, staff, and faculty. A copy can be found at <http://www.uwsp.edu/admin/stuaffairs/rights/rightsChap14.pdf>.

**Disabilities:** If you have disabilities and need any special accommodations, you should contact the office of Disability Services during the first two weeks of the semester.

**Accommodations for Religious Beliefs:** Religious beliefs will be accommodated according to UWS 22.03 provided I am notified during the first three weeks of classes.

Robin Tanke Fall Semester 2017

	Monday	Tuesday	Wednesday	Thursday	Friday
08:00	Research		325 Lab 01L1 C134/A111		
09:00			325 Lab 01L1 C134		Office Hour
10:00		325 Lec 01 A121	325 Lab 01L1 C134	325 Lec 01 A121	325 Lec 01 A121
11:00		Office Hour			
12:00			371 Lec 01 A111		
13:00					
14:00		325 Lab 01L2 C134/D214	Office Hour	325 Lab 01L3 C134/A111	Seminar or Meeting
15:00		325 Lab 01L2 C134		325 Lab 01L3 C134	
16:00		325 Lab 01L2 C134		325 Lab 01L3 C134	

### Chemistry 371 Tentative Schedule Fall 2017

<b>Date</b>	<b>Topic</b>	<b>Assignment due</b>
9/6	Unit 1: Chemical Bonding and States of Aggregation	
9/13	Unit 1: Microstructures and Defects	
9/20	Unit 2: Metals and Alloys	Unit 1 Homework
9/27	Unit 2: Silicates, Polymers, and Composites	Article Summary 1
10/4	Unit 3: Phase Diagrams	Unit 2 Homework
10/11	Unit 3: Diffusion and Phase Transitions	
10/18	Unit 3: Phase Diagrams for Alloys and Corrosion	Unit 3 Homework
10/25	Midterm Exam Units 1-3	
11/1	Unit 4: Redox Reactions and Batteries	Article Summary 2
11/8	Unit 5: Mechanical Properties of Materials	Unit 4 Homework
11/15	Unit 6: Magnetic Properties of Materials	Unit 5 Homework
11/22	Unit 7: Electrical properties: Conductivity	Unit 6 Homework
11/29	Unit 7: Semiconductors	Written Assignment
12/6	Unit 7: p-n junctions and LEDs	Unit 7 Homework
12/13	Review	
12/18	Final Exam	10:15 – 12:15