Welcome
What? Why? How?

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Chemistry 125 vs 126?
CHEM.125/126
• Co-requisites with identical work and grades.
• One credit each for a total of two credits.
• Credit for TWO inorganic lab courses.

WAIT LISTS AND OVERRIDES
• Report to 1500 chem. (administrative office)
• Contact Debra Buck; debbuck@umich.edu

Course Information
• An independent introductory gen chem course with its own lecture, lab, and discussion
• Labs and discussion on a given topic occur after pre-lab lecture.
• Instructors for lab and discussion are GSIs.

Course Format
• Pre-lab lecture (1 hour) in 1800 chemistry
• Discussion (1 or 0 hour) in lab room
• Laboratory (2 or 3 hours) in lab room

• Labs = 3 hours if discussion is NOT held; labs = two hours when discussion is held
• Discussions occur AFTER the lab experiment is done

Required Materials

Supplies
Lab Marking pens

Web Sites
Ctools
• Course Information
• Resources: Lectures, Schedule, Exams, Review notes
• iTunes: Lecture Podcasts, Review Podcasts, Video Resources
• Lab data: Link to course website with evolving lab data

http://www.umich.edu/~chem125
Lab Safety

- Contact Lenses may NOT be worn in lab.
- Goggles and aprons must be worn in lab.

Special Needs

Special Safety Problems?
- Richard Giszczak; 1608 chem.
- richg@umich.edu

Special Needs or Concerns?
- Nancy Kerner; 3541 chem.
- nkerner@umich.edu
- Office hours:
  Tuesdays, 3-4 pm, Thursdays, 1-2 pm

Chemistry 125/126 Grading

<table>
<thead>
<tr>
<th>TOTAL course points</th>
<th>500 points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab and discussion (6)</td>
<td>300 points*</td>
</tr>
<tr>
<td>Exams (2)</td>
<td>150 pts</td>
</tr>
<tr>
<td>GSI/peer points</td>
<td>50 points</td>
</tr>
</tbody>
</table>

* See Course Information for lab and discussion point details

- Points reward individual and team efforts.
  Team % points 54 %
  Individual % points 46 %

Lab Performance and Points

- Labs must be performed to earn points
- Miss two labs? Contact the course coordinator for permission to stay in the course.
- Makeup may be arranged informally with home GSI to be performed in his/her other section
- Formal makeup directives are in the back of your lab manual
- Participation in discussion is required to earn discussion points
Lab Makeup

- When arranging a time/day for a makeup check the schedule of labs:

<table>
<thead>
<tr>
<th>Mon</th>
<th>Tues</th>
<th>Wed</th>
<th>Thurs</th>
<th>Fri</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-11</td>
<td></td>
<td>√</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>11-2</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>2-5</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
</tbody>
</table>

- The lab week runs from Wednesday thru Tuesday
- You will perform an individual (rather than team) makeup if your makeup occurs outside the lab week

Earning Maximum Points

Team Reports

- The form in the manual is merely an outline.
- For maximum points respond to all questions in the experiment
- Refer to lab data to support conclusions
- Study the “Team Report Tips” in the manual
- Study the experiment grading rubrics

Discussion

- Study the Discussion Grading Rubrics

Exams

- There is no final exam!
- There are two hourly exams (75 pts each):
  - Tuesday, November 9, 6:15 - 7:45 pm
  - Monday, December 13, 6:15 - 7:45 pm
- There are alternate exams on the same days for students with legal conflicts or students needing extended time

Session One (September 8 - 14)

- Introductions
- Team Assignment Survey Form, manual, page 4
- Break
  - Team assignments
  - Check-In
  - Team Task Exercise, pages 5-7
  - Team Task Schedule, page 8
  - Periodic Table Scavenger Hunt, pages 12-15
  - Safety and Scavenger Hunt, pages 18 – 20

Pre-lab Prep and Schedule

(Manual, pages 239 - 240)

<table>
<thead>
<tr>
<th>Experiment Topics</th>
<th>Pre-lab lecture</th>
<th>Pre-lab Reading Pages</th>
<th>Lab Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check-in Safety Hunt</td>
<td>9/7 (300 sections)</td>
<td>9/7 (200 sections)</td>
<td>9/8 (100 sections)</td>
</tr>
<tr>
<td>Team Task periodic Table Hunt</td>
<td></td>
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</tbody>
</table>

The Pre-lab report (page 38) for experiment 1:
- requires work on the Internet
- is due at the start of experiment 1.
Chem.125/126 Topics and Learning
“To develop learning competence students must understand facts and ideas in the context of a conceptual framework”
• The chem.125/126 framework is the Periodic Table.

Chem.125/126 Topics and Learning
“To develop learning competence students must understand facts and ideas in the context of a conceptual framework”
• The chem.125/126 theme song, “Structure and Property Relationships”

Chem. 125/126 Goals and Methods
Student goals and background?
- Do you intend to be a chemist?
  • Students do NOT intend to be chemists!

CHEMISTRY 125/126 Methods
Methods fueled by concern about what non-chemist students can do with the skills they learn later on in life and student learning research.
• Develop life long skills
  Data analysis, team work, presentation skills…)
• Understand core concepts
  Emphasize process rather than content or memorization

“Many undergraduates graduate without knowing how to think logically, write clearly, or speak coherently”
Alter classroom methods:

Traditional → Inquiry
Individual → Teamwork
Teacher-centered → Student-centered
→ Incorporate technology

Why Inquiry-based learning?
• Students construct their own understanding of concepts, rather than simply being told information
• Students develop stronger critical thinking skills
• The approach exposes students to the process of science
Chem.125/126: Guided Inquiry Labs

E → I → A

**Exploration**
Collect data to solve a problem

**Concept Invention**
Interpret data, formulate results

**Application**
Apply concept in a new setting

**Discussion**

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**Why Student-Centered Course?**

- Teacher (rather than the student) becomes highly skilled in a teacher-centered class - Teacher (rather than the student) writes, speaks, consults, organizes, and solves problems.

“blah, blah, blah, blah”

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**Why Teamwork?**

- Students differ in thinking and processing skills.

- Social interactions reveal differences and result in learning by restructuring of students knowledge.

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**Lab Methods**

- Collaborative Team research.
- Teams collect data for different (rather than identical) samples and/or conditions.*
- Technology assisted data collection and analysis.

* See page 232 of the lab manual for team experiment and discussion question assignments.

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**CoLABnet**

- Data is available in lab and on the course website: http://www.umich.edu/~chem125.
Discussion Methods

• Teams’ solve assigned problems in lab.*
• Teams’ orally present results in discussion.
• Questions address critical thinking skills of invention and application

* See p.232 of lab manual for team assigned discussion questions.

Student Success in chem.125/126

The inquiry format and team work does NOT
• insure an A in the course
• insure student learning and understanding.

YOU (the student) need to make tactical decisions!

Student Success in Chem.125/126

• Choice of tactics must be appropriate.

Student Success in Chem.125/126

• Is NOT dependent on prior knowledge
• Is dependent on your individual efforts!
  - Come prepared to lecture, lab, and discussion
• Invest effort in your team work and social interactions
  - think out loud with teammates
  - instruct one another as to how solutions are derived
  - collaborate; don’t split up work!
• Use available support and resources
  - use Ctools resources, office hours…
  - Study exams now!

Where Would We Be Without Chemistry?

Where Would We Be Without Chemistry?

no chemical reactions
Where Would We Be Without Chemistry?

- no leather or rubber
- no paint or coatings
- no metals
- no fabrics

H₂O ———— 50.1 kg
C ———— 12.6 kg
N ———— 1.8 kg
Ca ———— 1.7 kg
P ———— .68 kg
K ———— .25 kg
Na, Mg, Fe, etc —— .32 kg

150 kg male

No you
"That's all folks!"

Questions?

Email nkerner@umich.edu
Attend office hours