CHEMISTRY 102

Sections 543 - 554                  Spring 2005

Lecture: Mondays, Wednesdays & Fridays
(10:20 to 11:10 Heldenfels Room 100)

Laboratory: (Once a week in rooms on the 4th floor of
Heldenfels)

Instructor: M.L. Peck                  Office: 413 Heldenfels
Phone: 845-2356                      E-mail: peck@tamu.edu

Chem 102 is the second semester of the first-year chemistry sequence. Chem 102 is a 4-credit course. The outline of topics and activities for the lecture portion and the laboratory/recitation portion of these sections of Chem 102 are given later in this handout.

Sections 543 - 554 of Chem 102 are a part of a larger program. The First Year Chemistry Program and the Chemistry Department at Texas A&M University are committed to providing a meaningful course. Each grouping of sections of this course is independent of the other instructors’ sections but we strive to cover common content, etc. The instructors strive to be approachable both inside and outside the classroom. My office hours are discussed below. Feel free to call upon me when you need help. I will hold a review session before each exam. Other review sessions may be added later. For several hours each day, teaching assistants will be available in Heldenfels Room 116 to help you.

Information related to these sections of Chem 102 can be found on the web. I will post this syllabus, sample problems, information about me, course announcements, etc. The course’s web pages contain this syllabus, study materials, and additional information. Grade status can be accessed through the First Year Chemistry Program’s homepage (www.chem.tamu.edu/class/fyp/fypintro.html) or by going to the TAMU Chemistry Department’s homepage (www.chem.tamu.edu) then going to courses and clicking on the First Year Chemistry Program. You will be able to check your grades confidentially (instructions for accessing the web will be provided in class).

This course is intended for students who are pursuing a degree in a field that involves a molecular view of the composition and changes that materials undergo. Such fields include majors in the life sciences; in the development and application of new materials; in environmental science, in our diets, health, or transportation; and those fields of study that strive to improve our understanding of the world we live in.

Please let me know which of our efforts are most (or least) helpful and when I can be of further assistance.

M. L. Peck
Professor of Chemistry

COURSE POLICIES

I. Required Materials:
   3) Lab notebook (8 1/2" x 11" alternating white and yellow, perforated pages).
   4) Approved eye protection. University and Departmental Regulations require that splash-proof, chemical goggles be worn by everyone present any time any experimentation is being conducted or any time equipment or chemicals are being moved by anyone in the laboratory.
   5) Calculator suitable for use on lecture exams. You cannot use a calculator which has a multi-line screen or extensive memory. (See later discussion.)
   6) Four standard (8 1/2” x 11”) gray scantrons (Form No. 0-101607-TAMU). These forms are available in any of the bookstores. Turn them in, unmarked, to Room 116 during the hours that the information desk is open.
   7) “Access Code for entry into OWL (Online Web Learning)”, Thomson Learning Publishers (The code from last semester should still work.)
II. Optional Materials:
3) Laboratory apron or a nonflammable lab coat. An apron or lab coat will be required in laboratory if your shorts or skirt do not cover your knees.
4) “ChemSkill Builder”, version 6 (or newer), James D. Spain.

III. Course Objectives: Through this course we hope to develop your
a. problem-solving and critical thinking skills
b. knowledge of the molecular world
c. understanding of chemistry terminology
d. ability to perform basic chemical calculations
e. appreciation of the role that chemistry plays in society
f. positive attitude towards chemistry
To assist you in accomplishing these objectives we provide suggested reading assignments; scheduled lectures (see attached calendar); give pop quizzes, hourly exams and a final exam; selected homework assignments; and scheduled help desk hours, help sessions, SI sessions, etc. To take advantage of the resources and to accomplish these goals, students often devote 6 – 15 hours each week to this course.

IV. Lecture Reading Assignments: Lectures are designed to help you develop an understanding of the material being emphasized. To get the most out of lecture, one should always read the appropriate sections before they are discussed in class. The reading assignments are shown in the calendar that appears later in this handout.

V. Lecture Homework Assignments: Homework problems will be assigned from the textbook and from On-line Web Learning (OWL). The textbook problems will be for practice but may be similar to those on exams. There will be a total of 5 OWL assignments. Details on how OWL will be used as homework assignments will be distributed separately at another time. Each set of homework will be worth 6 points for a total of 30 for the semester. Homework must be submitted on time for it to be counted.

<table>
<thead>
<tr>
<th>Percentage of problems correctly completed and turned in on time.</th>
<th>&lt;50%</th>
<th>50 – 59%</th>
<th>60 – 69%</th>
<th>70 – 79%</th>
<th>80 – 89%</th>
<th>&gt;90%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of points added to your total lecture points</td>
<td>0</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
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VI. Lecture Attendance: Students are required to attend the lectures in their registered section. Attendance will be checked periodically.

VII. Pop Quizzes in Lecture: Pop quizzes will be given in lecture during the semester. Your eight best scores will be counted. Your score on the quizzes that are counted will contribute a maximum of 32 points to your possible lecture average. Most quizzes will involve cooperative efforts.

VIII. Exams: There will be three Lecture Exams (Exams 1, 2 and 3) given on the days indicated in the attached calendar. These are in addition to the POP QUIZZES, a FINAL EXAM and MAKE-UP EXAMS. These exams may have a combination of multiple-choice questions that will be machine-graded and non-multiple choice questions that will be hand-graded. Lab/recitation quizzes are described later.
1) Lecture Exams: These are 45-minute exams given during the regular lecture times. Each exam is worth 100 points. Exam 1 will cover material through Section 16-6 of the textbook. Exams 2 and 3 will concentrate on material covered after the previous exam; however, review questions may also be included. You must bring your student ID to each exam.
2) Final Lecture Exam: The Final Exam in the lecture portion of this course will be a 110 minute, 200 point exam that may test on any materials covered during the semester. The scheduled time for the Final Exam is Tuesday, May 10 at 8:00–10:00 a.m. You must bring your student ID to the Final Exam.
3) Make-up Exams: For students who have excused absences and who also notify me within one week of the missed exam, a make-up test will be arranged. Notification can be a telephone call or a short e-mail message. The make-up exams will be at least as difficult as the regular exams.
IX. **Grade Calculations:** Grades will be calculated on the basis:

**LECTURE POINTS POSSIBLE:**
- Homework: 30
- Exams (3 @ 100 points each): 300
- Quizzes (best 8 @ 4 points each): 32
- Comprehensive Final: 200

Total of Lecture Points = 562

**LABORATORY POINTS POSSIBLE:** (Will be adjusted so that the lab av. of each section will be between 80 & 86%.)
- Reports (9 reports x 20 points each): 180
- Quizzes (3 quizzes x 20 points each): 60
- Final (written): 40

Total of Laboratory Points = 280

(Adjusted for class average, then multiplied by a factor (~0.67) so that the maximum Laboratory is 187 points.)

Total Course Point = (Total of Lecture Points) + (Total of Laboratory Points after adjustment) = 562 + 187 or 749 possible.

Likely Grades (The range of each letter grade will be assigned at the end of the semester.) In the past, typical grade ranges were:

- 620 (~83%) and greater points = an A,
- 619 to 520 points (~83 – 69%) = a B,
- 519 to 420 points (~69 – 56%) = a C,
- 419 to 320 points (~56 – 43%) = a D,
- fewer than 320 points = an F

There is no reason to expect that the ranges will be greatly different this semester.

Students with absences (excused or non-excused) who miss one or more exams without making up the missed exams should consult me. In particular, students who request a grade of “I” (Incomplete) and meet all university criteria for this temporary grade, must review the records, etc., with me before I will consider giving the grade of “I.”

X. **Lecture Exam Administration:**

1) Check your exam seating assignment one day in advance.

Each exam will have a different seating assignment. Seating assignments will be posted on the bulletin boards outside of Room 100 at least 24 hours in advance of the exam.

2) Arrive at the lecture exam on time. Cheating or bringing in material with intent to cheat will result in a zero for the exam or a more severe penalty. Do not bring unauthorized materials into the exam.

3) Bring at least two sharpened #2 pencils, an eraser, and your TAMU ID card to the lecture exam. Pencil sharpeners and calculators (with certain restrictions - see (4) below) may also be brought to the exam. There must be no “sharing” of calculators during an exam. Any other questionable items must be out of sight in a briefcase, pack, purse, or sack, and stored under your desk or, if not in a closed container, you must place them at the front or back of the room before you take your assigned seat.

4) Students can NOT use calculators that are programmable or have alphanumeric capabilities. Some of the acceptable and unacceptable calculators are listed on the bulletin boards. Any student attempting to use an unacceptable calculator will receive a zero for the exam.

5) Follow the directions given to you as you enter the exam room. **Do not write on the envelope or on the back of the scantron sheet. Failure to follow these directions may result in a withheld or zero grade.** Note: Only answers recorded on the standard gray scantron sheet or other designated sheets will be graded.

6) During the exam, keep all work covered as much as possible. Talking or looking around the room will result in a withheld grade for the exam.

7) Work carefully, but you must finish in the allotted time; exams handed in late will not be accepted. Please remain seated quietly until asked to leave.

XI. **Dishonesty:** Students are expected to be the sole source of any work submitted in their name. The utilization or submission of work of others is a violation of Texas A&M University scholastic dishonesty policies and disciplinary steps will be taken. Only **authorized** electronic or printed materials or equipment may be
used in or near the classroom. As commonly defined, plagiarism consists of passing off as one’s own the ideas, words, writings, etc., which belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that person. If you have questions regarding plagiarism, please consult the latest issue of the Texas A&M University Student Rules, under the section “Scholastic Dishonesty.”

XII. Copyright: All handouts used in this course are copyrighted. By “handouts,” I mean materials generated for this class, which include but are not limited to syllabi, quizzes, exams, lab problems or study sheets, in-class materials, review sheets, and additional problem sets, notes, etc. Because these materials are copyrighted, you do not have the right to copy the handouts unless I expressly grant permission.

XIII. Aggie Honor Code: “An Aggie does not lie, cheat, or steal or tolerate those who do.” Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor System. Students may be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the TAMU community from the requirements or the processes of the Honor System.

XIV. Information Office and Help Desk: The Information Office is at Room 116 HELD. Office Hours are Monday - Friday 9:30-12:30 p.m. and Monday - Thursday 1:30-4:30 p.m. Questions can be answered there pertaining to your course records, homework, etc. This is also where you turn in your scantron sheets. A Help Desk will also be staffed in Room 116 during these same hours. Check outside of Room 116 for changes in the schedule.

XV Bulletin Boards: Special announcements will be posted on the official bulletin boards (Rooms 100, 413, and 117) and on the web.

XVI. Review Schedule: In addition to the regular SI sessions, I will conduct Review Sessions before each exam. They are currently scheduled on 2/9 (Wed) at 7:00 p.m., 3/6 (Sun) at 7:00 p.m., 4/3 (Sun) at 7:00 p.m. and 5/8 (Sun) at 7:00 p.m. The review session on 2/9 will be held in Room 200 of Heldenfels, the other three will be in Room 100. Additional review sessions may be arranged.

XVII. Office Hours: An office hour will be held Mondays and Wednesdays from 1:30 to 3:30 p.m. unless other activities conflict with these times. Additional office hours will be held for those who cannot meet at the above times.

XVIII. Final Lecture Exam Schedule: Our final lecture exam is scheduled for Tuesday, May 10 from 8:00 to 10:00 in Room 100 Heldenfels. Please do not expect to take the final exam at any time other than its scheduled time.

XIX. The Americans With Disabilities Act requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation for their disability. If you believe you have a disability requiring an accommodation, please contact the Department of Student Life, Services for Students with Disabilities in Room 126 of the Koldus Building or call 845-1637.

XX. World Wide Web (http://www.chem.tamu.edu/class/fyp/) Included are (1) details on individual lecture and lab sections, and (2) a test-bank of selected multiple-choice questions for each chapter, and (3) a math review. It should work. If there is a problem, e-mail me at peck@tamu.edu.

XX. Important Dates:
Last day to add a class/change sections.
Mar. 3: Midsemester Grades Due in Chem. Depart.
Mar. 14-18: Holiday - - Spring Break
Mar. 25: Reading day - - No classes – Good Friday
April 5: Last day to Q drop a course.
April 25-29: Course Evaluations
May 2: Dead Day (MONDAY CLASSES)
May 3: Redefined Day (FRIDAY CLASSES)
May 4 & 5: Reading Days (No Classes)
May 10: Final Lecture Exam for Sections 543 - 554 is from 8:00 – 10:00 a.m. in Room 100 Heldenfels.
# Lecture Schedule

**CHEMISTRY 102**  
Spring 2005, Sections: 543 - 554

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<td>* Q-drop period begins</td>
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<tr>
<td>Chapter 16</td>
<td>* Review Session 7:00 p.m. (Rm. 200)</td>
<td>Exam #1</td>
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<td>Chapter 18</td>
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<td>* Mid-semester grades due</td>
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<td>Chapter 20</td>
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<td>* Review Session Sunday 7:00 p.m. (Rm. 100)</td>
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<td>Chapter 21</td>
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<td>Chapter 27</td>
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<td>* Reading Day</td>
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<td>* Final Exams Begin</td>
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* Good Friday
* Q-drop period begins
* No Classes
* Review Session Sunday 7:00 p.m. (Rm. 100)
* Friday's Classes
* Reading Day
* Reading Day
SPRING SEMESTER 2005
CHEMISTRY 102 Lab/Recitation
SECTIONS 543 - 554
Dr. M.L. Peck
NOTES and SCHEDULE

This course involves 3 types of laboratory experiments. (1) Guided inquiry experiments ask you to use your data to find generalizations; therefore, this type is designed to be an introduction to the topic before it is discussed in lecture. The emphasis is on using your data. (2) Open inquiry experiments require you to design an experiment concerning a topic that you have studied. The open inquiry labs deal with applying the idea in a new setting. (3) Skill building experiments are designed to develop techniques, not necessarily new content knowledge.

Required Materials:
3) The lab notebook (8 1/2” x 11”, perforated alternating white and yellow pages).
4) Approved eye protection. University and Departmental Regulations require that splash-proof, chemical goggles be worn by everyone present any time any experimentation is being conducted or any time equipment or chemicals are being moved by anyone in the laboratory. (The Graduate Chemistry Fraternity will be at the labs the week of Jan. 24 - 27 to sell suitable goggles). Failure to wear goggles will result in expulsion from the laboratory for the experiment involved.

Optional Materials:
1) Calculator suitable for use on lecture exams and in the lab. (For the limitations on the calculators that can be used on lecture exams, see the discussion in the lecture portion of this syllabus.)
2) Laboratory apron or a nonflammable lab coat. An apron or lab coat will be required in the laboratory if your shorts or skirt do not cover your knees.

Policy on Safety and Breakage: Before working in this laboratory portion of the course, every student must read the “Laboratory Safety” rules in the laboratory manual plus any Departmental Rules and agree in writing to abide by these rules. It is imperative for your safety that you and everyone around you strictly adhere to the Safety Rules. Failure to comply with the safety regulations (e.g., by not wearing eye protection at all times; by wearing open-toed shoes, short skirts or shorts without also wearing a labcoat or apron; by running an unauthorized experiment; or by removing chemicals or equipment from the lab) may result in dismissal from this portion of the course or deduction of points on your reports. You will be utilizing equipment furnished by the Chemistry Department. It is your responsibility to properly maintain the equipment while it is in your care. If equipment that has been entrusted to you is not returned in satisfactory condition, you will be held responsible for it.

Recitation: Recitation will be an important part of each lab meeting. Topics discussed during recitation may include: the Report Form that is due that day, the Report Form due the next week, lecture topics, and the current experiment. Some weeks the recitation will be held after the experiment has been completed and the students have had an opportunity to pool data, etc.

Absences: The following schedule gives the date that each experiment, quiz, recitation activity, etc., is to be completed. Excused absences must be reported to your laboratory instructor (TA) in a timely manner. Written excuses may be required. Your instructor can arrange for you to attend one of the make-up sessions held each Thursday evening for students who missed the previous week due to a university approved reason. If there is space available, your lab instructor may arrange for you to attend a different section, also taught by your lab instructor, at a time later the same week as the one you missed. Makeup quizzes will be administered by your lab instructor or IA (instructor assistant) the week of April 25 - 29.

Data Sheets: A data sheet must be submitted at the end of the lab period to receive a grade for that day’s experiment. The data sheet may not be graded in some sections; however, the Report Form for the corresponding experiment will not be graded if the data sheet is not submitted the day the experiment is conducted.

Pre Labs, Reports, and Post Labs: For each experiment you will receive a total score between 20 and 0. Prelabs are worth 5 points, lab reports are worth 10 points, and the post-labs are worth 5 points (unless stated otherwise). The Report Form must reflect information obtained by you while in the laboratory and recorded on your data sheets. The Prelab Exercises associated with each experiment are due before you start the experiment. Most Report Forms and Post Labs are usually due the week after the experiment was run. Neatness and completeness of your data sheets, prelabs, reports, and postlabs may be considered when points are assigned. Points will be deducted for materials not submitted on the date due. Materials more than two weeks late will not be graded unless you have a university approved excuse.

Lab/Recitation Quizzes: Quizzes (20 points each, usually 3 or 4 points per question) are scheduled at various times during the semester. The quizzes will reflect what you should have gained from previous weeks’ experiments, what you should master before beginning the current week’s experiment, your understanding of the exercises on the assigned homework, your ability to utilize techniques and concepts, and your understanding of the recitation topics discussed in lab.

Grades: At the end of the semester the scores on all quizzes, prelabs, reports, postlabs, and written final (40 points) will be totaled for each student and multiplied by a factor so that the class average will be between 80 and 86%. Adjusted averages of greater than 100% will be treated as if they are exactly 100%.
<table>
<thead>
<tr>
<th>Week of Lab Meeting</th>
<th>Investigation</th>
<th>Report and PostLab Due</th>
<th>Tentative Recitation Topic</th>
<th>Quiz</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/18 – 1/21</td>
<td>No Lab or Recitation Meeting this week. Double check your schedule. All scheduling conflicts must be resolved this week.</td>
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<tr>
<td>1/24 – 1/28</td>
<td>Introduction Lab Check-in and Lab Lecture on Safety Read the safety rules and agree in writing to follow them or you will not be allowed to do the experiments.</td>
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<td>Significant Figures and Math Review Discuss Schedule, Policies and Rules</td>
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<tr>
<td>1/31 – 2/4</td>
<td>Exp. #16 - Enthalpy of Reactions - A Guided Inquiry Prelab is due at beginning of lab. You will be assigned a lab partner. Hand in Data Sheet before leaving lab.</td>
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<td>Chemical Thermodynamics: How a calorimeter works (Chapter 15)</td>
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<tr>
<td>2/7 – 2/11</td>
<td>Exp. #17 – Kinetics of Decolorization of Crystal Violet – A Guided Inquiry Work in partners. Hand in Data Sheet before leaving lab.</td>
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<td>Chemical Kinetics (Chapter 16) and How to graph data (see App. in textbook)</td>
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<td>2/14 – 2/18</td>
<td>Exp. #26 – The Copper Cycle An Open Inquiry Hand in Data Sheet before leaving lab.</td>
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<td>Review: Equilibrium Concepts (Chapter 17)</td>
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<tr>
<td>2/21 – 2/25</td>
<td>Exp. #19 - Factors Affecting Reactions – A Guided Inquiry Hand in Data Sheet before leaving lab.</td>
<td>#26</td>
<td>Quiz 1</td>
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<td>2/28 – 3/4</td>
<td>Exp. #21 - Acids and pH - A Guided Inquiry Hand in Data Sheet before leaving lab.</td>
<td>#19 mid-semester grades due 3/1</td>
<td>Review: Acids and pH</td>
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<tr>
<td>3/7 – 3/11</td>
<td>Exp. #22 - Reactions of Acids and Bases – A Guided Inquiry Hand in Data Sheet before leaving lab.</td>
<td>#21</td>
<td>Review: Acid/Base Titrations</td>
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<tr>
<td>3/14 – 3/18</td>
<td>SPRING BREAK - No classes</td>
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<td>3/21 – 3/25</td>
<td>Exp. #23 - Acids and Bases – An Open Inquiry Hand in Data Sheet before leaving lab.</td>
<td>#22</td>
<td>Review - Factors Affecting Reactions &amp; Acids and pH Quiz 2</td>
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<td>4/11 – 4/15</td>
<td>#24 - Electrochemistry. A Guided Inquiry Hand in Data Sheet before leaving lab.</td>
<td>#27</td>
<td>Electrochemistry: The Voltaic Cell (including the Concentration Cell) (Chapter 21)</td>
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<td>4/18 – 4/22</td>
<td>QUIZ 3 Review for final</td>
<td>#24</td>
<td>Quiz 3</td>
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<tr>
<td>4/25 – 4/29</td>
<td>Written Final (40 points). Evaluations. All missing work, make-up finals, requests for the grade of “incomplete,” make-ups of prior incomplete grades, etc., must be completed and all forms submitted before 5 pm April 29 if they are to be considered in this semester’s records.</td>
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