

CHEM 1112—(all sections)
GENERAL CHEMISTRY II LABORATORY
The University of Texas at Tyler
Spring, 2009

*Syllabus**

*Note: the right to further clarify parts of this syllabus, if required by unforeseen circumstances, is retained.

SECTIONS & INSTRUCTORS

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| <p>Section 001/RBS 3022—Mondays 1-5 Dr. Thusitha Jayasundera (TJ) in RBS 3005 566-7185 or thusitha.jayasundera@gmail.com M: 10⁰⁰-12⁰⁰, TR: 10⁰⁰-11³⁰ -----Office Hours----- (Or by appointment)</p> | <p>Section 002/RBS 3022—Tuesdays 6-10pm Mr. Jason DiStefano in RBS 3033 566-5525 or jdistefano@uttyler.edu -----By Appointment Only</p> |
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| <p>Section 003/RBS 3022—Wednesday 1-5 Dr. Tanya Shtoyko in RBS 3031 565-5502 or tshtoyko@uttyler.edu TR: 8⁰⁰-10⁰⁰; F: 11⁰⁰-12⁰⁰ -----Office Hours----- Only (Or by appointment)</p> | <p>Section 004/RBS 3022—Fridays 1-5 Ms. Alicia Barrett (Adjunct) Alicia.Barrett@UT.Tyler -----By Appointment</p> |
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COURSE DESCRIPTION

CHEM 1112, General Chemistry II Laboratory, is a continuation of CHEM 1111, an introductory laboratory course in general chemistry. This course has three major goals:

- 1) facilitate students' understanding of General Chemistry (CHEM 1311/1312);
- 2) increase students' proficiency in manipulating labware and chemical instrumentation;
and
- 3) increase students' level of skill in both oral and written communication in chemistry.

Prerequisite: credit for, or concurrent enrollment in, General Chemistry II (CHEM 1312).

STUDENT LEARNING OUTCOMES

- A. The chemistry laboratory techniques introduced will enable students to perform in other laboratory environments with facility and speed.
- B. The chemical principles being demonstrated will enable students to make similar scientific abstractions and predictions in chemistry as well as other scientific disciplines.

- C. The opportunities to collect and manage experimental data will enable students to express themselves in more precise and reliable quantitative terms both in written and verbal forms.
- D. The experimental problems confronted will enable students not only to manage quantitative data with integrity but also draw logical conclusions about the applicability of data to similar real-world problems.
- E. The time spent together performing experiments will instill laboratory work ethics in the students, including a sense of responsibility for the safety and productivity of all.

MATERIALS REQUIRED FOR LAB WORK

- A. Each student must purchase and maintain a bound laboratory notebook in which to generate a *permanent* record of experimental observations, notes, calculations, etc. The lab record book you purchase must provide:
 - 1. a label for your name and phone number/email address, or other contact information, the name of the department, course, semester and section numbers, and the instructor's name;
 - 2. a table of contents page for entering experiment titles *chronologically*;
 - 3. pages consecutively *prenumbered*;
 - 4. *preprinted* page headings for entering title, date, name, and *specific* lab section (e.g., CHEM 1112-003); and
 - 5. a *perforated*, carbonless duplicate for each page.
- B. *Splash-proof* safety goggles must be worn in the laboratory whenever you or your neighbors are performing experiments. (Time during your initial lab period will be allotted for purchasing goggles from your American Chemical Society Student Affiliates on campus to ensure that you will be prepared to comply with this requirement.)
Warning: students will not be admitted into the lab without splash-proof goggles!
- C. Lab aprons will be made available by the department for student use, but students must also plan ahead to be clothed appropriately for laboratory work. **Warning:** students will not be allowed to work in the lab without an effective apron and appropriate coverage from chest to toes! (**This means *no open-toed shoes* or *extensive areas of exposed skin on your torso!***)
- D. Scientific calculator, when needed.
- E. Your general chemistry lecture textbook, when needed.

LABORATORY REQUIREMENTS

- A. Arrive *on time* and *be prepared* for each laboratory. **Please note: you will complete a short (< 10 min.) pre-lab quiz at the beginning of each lab period.** Failure to be prepared could result in serious mistakes in carrying out the lab procedures or not being able to finish the experiment in the time allotted. (**Warning:** insufficient time in the lab period is NOT a valid reason for submitting a late or incomplete report.)
- B. Keep a running journal in your lab record book (see above for the specific features required) of everything you hear, do or observe during the lab period that is relevant to the exercises you perform.
- C. Organize in a loose-leaf notebook all written information other than that contained in your lab manual or lab record book. These materials are helpful in preparing for lab exams and will also serve to document your grades, should the need arise to contest your lab average.
- D. **Bring all your own materials required for lab**—especially your goggles, your lab manual and your lab record book.
- E. Be responsible for laboratory equipment furnished by the Department of Chemistry. You may have to reimburse the department for any missing or damaged equipment.
- F. Maintain a clean and orderly working area. This means CLEAN UP AFTER YOURSELF!
- G. Read, comprehend, and follow the laboratory safety guidelines at all times. These rules include, but are not limited to:
1. **Safety goggles must be worn in the laboratory at all times.** Students who do not have safety goggles will not be admitted into the laboratory.
 2. **You will not be allowed in the lab with open-toed shoes or any clothing exposing extensive areas of your skin to the risks of burns or chemical splashes.**
 3. Do not consume *anything* by mouth in the lab, including gum and smokeless tobacco!
 4. Do not perform unauthorized experiments or remove chemicals or equipment.
- Note:** we take safety infractions very seriously. Depending on the seriousness of such infractions, you may lose points on your lab work habits grade, be dismissed and receive a zero on any work missed, or even be dropped from the course.

ATTENDANCE

- A. Laboratory attendance is essential. You will be allowed to make up **only one lab** this semester if you have an excused absence.
- B. **An unexcused absence results in a grade of zero for any lab work or exam missed.**
- C. Normally, an excused absence includes medical emergencies, a death in your family or required travel for a UT @ Tyler's event (e.g., athletic team travel). All supporting documentation should be presented to the lab instructor.

- D. Students who anticipate being absent from class due to a religious observance are *required* to inform their instructor(s) of such absences as soon as possible (at least two weeks before the religious holiday).
- E. Students who anticipate being absent from class due to a required travel for a UT Tyler's event (e.g., athletic team travel) are *required* to inform their instructor(s) of such absences at least two weeks before the absence.

GRADING SYSTEM

Final grades will be assigned according to the standard grading scale (< 60 = F, 60-69 = D, 70-79 = C, 80-89 = B, 90-100 = A) and weighted according to the following scheme:

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| A. Pre-lab Quizzes----- | 15.0 % |
| B. Lab Reports ----- | 50.0 % |
| C. Lab Exam I----- | 17.5 % |
| D. <u>Lab Exam II</u> ----- | <u>17.5 %</u> |
| Total ----- | 100.0 % |

- A. Pre-lab quizzes will test for familiarity with the chemical principles and procedures scheduled that day, including mastery of pre-lab material in the lab manual or, in the case of a quiz following the pre-lab lecture, pre-lab lecture content.
- B. The Lab Reports grade also reflects the instructor's subjective impression of your lab work habits, including but not limited to, punctuality, personal organization, spirit of community, etc. Examples: paying attention; taking notes during pre-lab lectures; keeping your syllabus, schedule, pre-lab lecture notes, handouts, procedures, reports, etc. organized in a loose-leaf notebook; showing consideration for those around you; not writing observations directly on Summary Report Sheets; etc.
- C. The ultimate goal of keeping a running diary of your lab work in a lab record book is to provide enough detail for someone (including yourself) to reproduce *exactly* what you did in lab, including variations from the published procedures, so as to share or confirm your findings. To fulfill this goal it is important to:
 1. Make all entries in ink and identify mistaken entries by drawing a *single* line through them—if you decide to reverse yourself, correct the correction the same way! Note: space your entries on each page according to the number of *corrections* you anticipate you may need to make for that section (for example, equations or calculations)!
 2. Keep a running Table of Contents—ensure that you start each new lab on a *fresh* page and that you make a *complete* entry in the Table of Contents *before* you start recording *anything* about the succeeding lab.
 3. Record data *directly* into your record book *as soon as it is done or observed!* During the lab period **never write anything pertinent to your experimentation on Summary Report sheets or anywhere else!** Both you as well as your supervisor need to assume that your entries *comprehensively* include all that was observed in the lab!
 4. Always record numerical data with their appropriate units of measurement.

5. Before leaving the lab for the day, have the instructor initial and note the time at the end of your entries. This validates your actual performance of the lab and gives your instructor a chance to spot-check your work before you assume you are ready to leave for the day. *Your instructor may also collect your record book duplicates at this time.*
- D. Your lab reports reflect the bulk of your grade in this course. Lab reports give you the opportunity to analyze and discuss the *significance* of your lab experiences—any thoughts that are pertinent to, but not *necessarily* included in, your experimental record book (though including such questions or thoughts “on the fly” in your record book before you forget them is highly recommended). Written lab reports also give you the opportunity to develop the skill of preparing executive summaries—reports usually required of professional lab workers by their supervisors. In writing formal reports **great care must be taken to see that statements indicate neither the writers nor the intended readers of the reports** (third person literary style). Although the specific areas that your instructor will expect to see included in every report are identified below in general, expect your instructors to give you further guidance on the *specific* arrangement in which they may require your particular lab section to submit them:

TYPEWRITTEN REPORT FORMAT:

The minimum (but usually adequate) length of reports is two-three typewritten, double-spaced pages (not including the cover sheet) in 12-pt Times New Roman font with 1” margins all way round on 8 ½ x 11” white paper devoted to the following:

1. A cover sheet centering the following lines on the sheet: your name, the title of the experiment, your specific section (e.g., CHEM 1112-001), your instructor’s name, and the date due.
 2. Purpose: The overall purpose or objective of doing the lab.
 3. Procedure: You have to describe the changes made to the given procedure and cite the lab manual.
 4. Results/Discussion: This section is a *concise summary* of how you arrived at your answers, *with very little in the way of procedural details!* This section should contain an organized (i.e., tables, graphs) presentation of the results of your experiment, a comparison with expected values and a discussion of any significant difference. You should state and explain all important observations, your answers (final results), including details pertinent to grading them. For example, answers for an unknown sample **cannot be graded** appropriately without including the **sample’s ID number!** You should interpret or discuss your answers. Also, you should suggest the ways to reduce significant sources of error in your answers and *briefly* overview the principles learned or observed in the experiment.
 5. References: (if appropriate)
 6. Duplicates of the relevant pages from your lab record book (if not previously submitted).
- E. **Reports are due before the beginning of your section’s next regularly scheduled lab period.** Note: submit each report *as soon as possible* (instead of waiting for the deadline). Completing reports in a timely manner is much more enjoyable and invariably

takes less time and earns better grades! Besides, **failure to turn in a lab report *on time* will result in a grade reduction—each ½ class day late means a 5-point deduction.**

- F. Exam items will reflect principles, observations, calculations and/or practical techniques covered during the course of completing each lab exercise and lab report. Depending on your instructor, exam items may include or even emphasize any of the following practical and/or intellectual requirements :
1. calculations to be completed,
 2. data to be interpreted,
 3. observations to be made,
 4. points to be discussed,
 5. tasks to be performed,
 6. etc.
- G. The coverage of topics on the 2nd exam will emphasize, but not be limited to, the experiments **not** covered on the 1st exam.

ACADEMIC HONESTY

Any inclusion of another's results, words or ideas in work submitted as your own (plagiarism) in this laboratory is a serious infraction of University Rules regarding Student Conduct (refer to your current student handbook). Expect this rule to be strictly enforced in this course.

DISABILITIES

If you have a disability, including a learning disability, for which you need to request disability support services/accommodation(s), please contact Ida MacDonald in the Disability Support Services office so that the appropriate arrangements may be made. In accordance with federal law, a student requesting disability support services/accommodation(s) must provide appropriate documentation of his/her disability to the Disability Support Services counselor. For more information, call or visit the Student Services Center located in the University Center, Room 282. The telephone number is 566-7079 (TDD 565-5579). Additional information may also be obtained at the following UT Tyler Web address: <http://www.uttyler.edu/disabilityservices>.

GRADE FORGIVENESS

If you are repeating this course *with the intention of having your previous grade forgiven (replaced)*, **you must file a request with the registrar by the 12th day of class**. UT Tyler students are eligible for grade forgiveness (grade replacement) in a maximum of three courses as undergraduates and a maximum of two courses as graduates. Failure to file this request on time will result in an averaging of the original grade with this semester's grade in

calculating your overall grade point average. (See page 35 of the 2006-2008 Undergraduate/Graduate Catalog.)

IMPORTANT DATES

Please refer to your lab schedule for specific dates of scheduled labs, exams, holidays and the last day to drop with an automatic "W".

INSTRUCTOR ALERTS

If you expect to receive lab alerts from your instructor, be sure to **email your name and section number to her/him at your earliest convenience**, so your email address can be added to the group for mailings specific to your section.

SEATING ASSIGNMENTS

Your instructor may require assigned seating in the lab. If so, and you have a preference, be sure to include your preferred seating assignment in the email to your instructor.

**CHEM 1112—GENERAL CHEMISTRY II LABORATORY
SPRING, 2008 SCHEDULE***

*Note: the right to substitute or switch labs, as required by unforeseen circumstances, is reserved.

| <u>Dates</u> | <u>Experiments, Exams & Library Projects</u> |
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| <i>Jan 12-16</i> | <i>Introduction to Course, Laboratory Safety</i> |
| <i>Jan 19-23</i> | ----- NO LABS MEET ----- |
| Jan 26-30 | <i>Library Report Assignments</i> Nine Bottles—Identifying Solutes in Nine Unidentified Solutions |
| Feb 2-6 | Colorimetric Determinations of Food Dyes |
| Feb 9-13 | Synthesis of Alum from Waste Aluminum Cans |
| Feb 16-20 | Determining the Molar Mass of a Volatile Liquid by the Dumas Method |
| Feb 23-27 | Molecular Modeling |
| Mar 2-6 | ----- 1st WRITTEN LAB EXAM ----- |
| Mar 9-13 | ----- SPRING BREAK—NO LABS MEET ----- |
| Mar 16-20 | WRITTEN LIBRARY REPORT DUE |
| Mar 16-20 | Determinations of Molar Mass by Freezing Point Depression |
| Mar 25 ----- | Last day to drop or withdraw from a course with a grade of W |
| Mar 23-27 | Determinations of Reaction Rates with a Clock Reaction |
| Mar 30-Apr 3 | Determinations of the Dissociation Constant of a Weak Acid |
| Apr 6-10 | Determinations of Solubility & K_{sp} |
| Apr 13-17 | ORAL LIBRARY REPORTS (POSTER SESSIONS) |
| Apr 20-24 | ----- 2nd WRITTEN LAB EXAM ----- |
| Apr 27-May 1 | MAKE –UP LAB: A Redox Titration |
| May 5-8 | FINAL EXAM WEEK—no final exam for this lab course |