

1. Staff - Lecturer - Dr. A. Friedel - Office 488 Science Building
Phone 481-6288 e-mail: friedel@ipfw.edu
- Laboratory Instructors -

T - 9:00-11:50 am	Dr.Friedel	SB 488	481-6288
T - 1:00- 3:50 pm	Mrs. Kimble	SB 486	481-6290
W - 6:00-8:50 pm	Mr. Mahuren	SB 491	481-6022
R - 9:00-11:50 am	Dr. Berger	SB 436	481-6291
F - 1:30- 4:20 pm	Dr. Duchovic	SB 484	481-6297

2. Office hours - M W- 8:30-9:30 am and 3:00-4:00 pm
R - 9:30-11:30 am and by appointment

3. Materials
 - a) Text: Darrell D. Ebbing, General Chemistry, 8th edition, 2005.

 - b) Lab Manual: Slowinski, Wolsey, Masterton, Chemical Principles in the Laboratory, 8th edition, 2005

 - c) Class notes
 - d) Safety Goggles
 - e) Scientific Calculator - logs and exponential numbers \$10-20.
 - f) A bound hard-cover notebook. This will be your laboratory notebook.
 - g) All graphs **MUST** be generated using a spreadsheet and graphing computer software.

4. Summary of the Grading Scheme

Assignment	Points
2 exams @ 150	300
1 final @ 250	250
13/14 lab exp @ 15	195
13/14 ASA's @ 5	65
6 quizzes @ 25	150
homework	<u>40</u>
	1000

5. Guaranteed Grades

A	900+	D	540-649
B	800-899	F	below 540
C	650-799		

6. Exam Schedule

Exam I Wednesday, February 7

Exam II Wednesday, March 21

The final exam will be a two hour exam which will be comprehensive in nature. Approximately one-third of the exam will come from material studied since test II and one-third from material covered on each of the previous two exams. The final will be entirely multiple choice.

The date and time of the final exam are:

Wednesday, May 2 8:00-10:00 am

Note: If you miss an exam for any reason you must notify me immediately at 481-6288, through e-mail or through the Chemistry Department Secretary at 481-6289. Make up of exams will be handled on an individual basis.

7. Quiz dates will be announced in lecture.

8. Attendance is expected in lecture. You are responsible for all material presented and all announcements made during lecture periods. Reading the chapter before coming to class is helpful and will make it possible for you to answer questions in the lecture. I expect you to answer questions in the lecture. Lecture notes for each chapter in PowerPoint format are available in the bookstore. Read those before coming to class. There are blanks which we will fill in during class time. Have words ready to use in the blanks when I call on you in class.

9. Special homework assignments will be given and collected on dates announced in the lecture.

Assigned chapter exercises and problems will not be collected, but I strongly recommend that you answer these questions and work out the problems. Quiz and exam questions will often be similar to these assigned problems. The answers will be available on the CHM 116 website. <http://www.ipfw.edu/chem/116friedel/>. You will need to have a copy of Adobe Acrobat Reader (available for download free at <http://www.adobe.com>). In preparing these solutions, Dr. Berger has made use of Greek characters and math symbols. These require proper fonts, WP Greek and WP Math A so that all equations can be read.

10. Lab reports are due at the beginning of the lab period following the one in which the experiment was performed. Lab reports turned in late may be subject to a penalty.

11. All lab experiments have associated with them an advanced study assignment (ASA). The purpose of the ASA is to familiarize you with the types of exercises and calculations you will do during the lab. The ASA will be collected at the beginning of the last lecture period of the week preceding the scheduled laboratory. The ASA for the first experiment will be collected on **January 12**.
12. The laboratory is a vital part of the course. Experiments not performed due to absence must be made up in another laboratory section within one week of the date of absence. Any lab not made up within this time period will result in a grade of 0. Students will have one laboratory period (2 hours and 50 minutes) to complete each laboratory assignment. Students who do not finish the lab in the allotted time will not be given additional time, either in their own lab or any other lab section. **Students arriving one hour or more late will not be allowed to begin the lab. Experiments missed because of absence must be made up within one week of the lab period in which that experiment was to be performed. Any lab not made up in this time period will result in a grade of 0.** Any student having grades missing for **three or more** labs will receive a grade of **F** for the course.
13. If you have a disability or acquire one and want to find out what special services and accommodations are available, you may contact Services for Students with Disabilities in Walb 113 (481-6950, voice ITDD). If I or your laboratory instructor can be of assistance don't hesitate to inform us of your special needs.
14. If at any time during the semester you find yourself in need of talking to someone about a personal or family crisis, please call any of the following individuals: Don Smith, IPFW personal counselor, at 481-6592; Ben Gates, Protestant campus minister, at 481-6992; or Mike Gibson, Catholic campus minister, at 481-6994. Campus Ministers are located in Walb Union 235.
15. **The last day to drop is Friday, March 16.** You must officially withdraw from the class to avoid getting an F. If you simply stop coming to class, this will result in your receiving a grade of F.
16. A note about appropriate behavior. Your laboratory instructors and I expect you to be thinking about chemistry when you are in the classroom or laboratory. We expect you to listen when we are instructing and speak when you are called on to ask or answer a question or express an idea. We expect your full attention so the appropriate learning environment is available to each person in the class.

Text: Darrell D. Ebbing, General Chemistry, 8th Edition, 2005

<u>Week</u>	<u>Dates</u>	<u>Assignment</u>
1	Jan 8, 10, 12	Chapters 11&12
2	Jan 17, 19	Chapter 12
3	Jan 22, 24, 26	Chapter 14
4	Jan 29,31, Feb 2	Chapter 14
5	Feb 5, 7, 9	Chapter 14 - EXAM 1 - FEB. 7
6	Feb 12, 14, 16	Chapter 15
7	Feb 19, 21, 23	Chapter 15
8	Feb 26, 28, Mar 2 Mar 5-9	Chapter 16 SPRING BREAK
9	Mar 12, 14, 16	Chapter 17
10	Mar 19, 21, 23	Chapter 17 - EXAM 2 - March 21
11	Mar 26, 28, 30	Chapter 18
12	April 2, 4, 6	Chapter 19
13	April 9, 11, 13	Chapter 20
14	April 16, 18, 20	Chapter 20
15	April 23, 25, 27	Chapter 21
16	May 2-8:00-10:00am	FINAL EXAM

Chemistry 116

Practice Problems from Ebbing 8th edition

- Chapter 11: 4, 10, 12-17, 21, 25, 27, 29, 33, 37, 43-49 odd, 57, 65-75 odd, 79-85 odd, 103, 109, 115
- Chapter 12: 2,-6, 8, 11, 33-75 odd, 81-103 odd
- Chapter 14: 1, 6, 7, 8, 9, 10, 11,12, 16, 17, 18, 23-65 odd, 71, 73, 77-87 odd, 93-97 odd, 107-121 odd
- Chapter 15: 4, 5, 6, 7, 8, 9, 10, 13, 15,16, 24-28 even, 29-105 odd
- Chapter 16: 1, 3, 4, 5, 7, 10,-14, 15-19 odd, 23-29 odd 33-101 odd
- Chapter 17: 1, 2, 4-15, 16-24 even 27-123 odd
- Chapter 18: 1-8, 11, 13, 17-99 odd
- Chapter 19: 1-4, 7, 8, 13, 15,16, 19, 22, 25-101 odd
- Chapter 20: 1, 2, 3, 4, 7, 8, 9, 13, 14, 17-121 odd
- Chapter 21: 1, 2, 4, 11, 17-21 odd, 25-97 odd

Solutions to these exercises and problems will be available on the course web page.

CHM 116L - Spring 2007
General Chemistry Laboratory Schedule

Week	Dates	Reference*	Assignment	ASA Due
1	Jan 9–12		Check in	
2	Jan 16-19	SPEC A	Raoult's Law	1/12
3	Jan 23-26	handout	Molar Mass Determination by Depression of the Freezing Point	1/19
4	Jan30-Feb 2	SWM #20	Rates of Chemical Reactions I. The Iodination of Acetone	1/26
5	Feb 6-9	SWM #21	Rates of Chemical Reactions II. A Clock Reaction	2/2
6	Feb 13-16	SWM #23	Determination of the Equilibrium Constant for a Chemical Reaction	2/9
7	Feb 20-23	SWM #22	Properties of Systems in Equilibrium: Le Chatelier's Principle	2/16
8	Feb 27- Mar 2	SWM #24	The Standardization of a Basic Solution and the Determination of the Equivalent Mass of a Solid Acid	2/23
	Mar 5-9	Spring Vacation		
9	Mar 13-16	SWM #25	pH, Buffers and Their Properties	3/2
10	Mar 20-23	SWM #26	Determination of the Solubility Product of PbI_2	3/16
11	Mar 27-30	SWM #36	Qualitative Analysis of Group I Cations	3/23
12	April 3-6	SWM #30	Determination of Iron by Reaction with Permanganate - a Redox Titration	3/30
13	April 10-13	SPEC. B	Thermodynamic Prediction of Precipitation Reactions	4/6
14	April 17-20	SWM #31	Determination of an Equivalent Mass by Electrolysis	4/13
15	April 24-27	SWM #32	Check Out - Voltaic Cell Measurements	4/20

* SWM = Slowinski, Wolsey, Masterton, Chemical Principles in the Laboratory, 8th edition, Brooks/Cole, 2005

Chemistry 116 Laboratory

Spring, 2005

1. Required Materials
The materials required for lab include the lab manual, safety goggles, a scientific calculator and a bound hard cover notebook.
2. Lab Sections
There are five different CHM 116 laboratory sections as indicated on page 1 of this packet. The laboratory meets in SB 415.
3. Lab Reports
The report for each laboratory consists of the hand-in sheet (the 'report' or 'data' sheet) from the lab manual with all the appropriate spaces for data and results filled in. Pay attention to significant figures and units.
Lab reports are due at the **beginning** of the lab period following the one in which the experiment was performed. Lab reports turned in late without a valid reason will be subject to a penalty.
4. Advance Study Assignments
All lab experiments include an advance study assignment (ASA) which will familiarize you with the types of exercises and calculations expected in lab. Each ASA is worth 5 points. You must complete the ASA so as to hand it in on the date indicated on the laboratory schedule page.
5. Laboratory Absences
The laboratory portion is a vital part of the course. Experiments not performed due to absence must be made up **within one week** of the missed lab period. Any lab not made up in this time period will result in a grade of 0 unless there are special extenuating circumstances. It is your responsibility to notify the instructor as soon as possible after becoming aware that a lab will be missed.
6. Laboratory Grades
There will be 14 lab experiments during the semester; each lab report will be worth 15 points. The 14 ASA's will be worth 5 points each. The lab portion of the course will contribute 260 points in total since we will count your 13 best scores out of the 14 possible.
7. Check-In and Check-Out
Check-in will occur during the first lab period; check-out during the last period. If you drop the course, it is your responsibility to follow the check-out procedure as soon as possible.
8. Safety
When you check into lab, your laboratory instructor will discuss the Chemistry Department Safety Regulations. You will be required to read and sign a copy of the regulations indicating that you agree to abide by these regulations. These

regulations must **always** be followed. You are required to purchase goggles (for example, from the bookstore) and must wear them **at all times** in the laboratory unless explicitly told otherwise by your instructor.

9. Recording Procedures and Data

It is useless to perform an experiment and lose the resultant data or record data for which experimental conditions are not carefully recorded. We will expect you to keep an approved **BOUND LABORATORY NOTEBOOK (spiral-bound or other notebooks with removable pages are not acceptable)**. **You will record in your notebook all data as they are collected along with experimental conditions.**

Writing data to loose sheets of paper for later entry in the notebook is unacceptable. For a more detailed description of the required format for the lab notebook, see the following page.

10. Objectivity

Scientific experiments and the results of those experiments should be approached and reported objectively. We recognize that there may be times when, in spite of your best efforts or for reasons beyond your control, things will not go well for you in the lab. If this happens, see your instructor immediately for guidance on how to proceed. If you have given a good effort on the experiment, then the least you should do is prepare a report including your experimental data, however bad you may think them to be. **NEVER borrow results from others.**

FORMAT FOR BOUND LABORATORY NOTEBOOKS

1. Your bound laboratory notebook should conform to the protocols expected in most science and engineering laboratories. Your entries should be timely, unambiguous, complete, permanent and dated. Your notebook must have a permanent binding so that pages are not removable. It should be sturdy enough to hold up against spills, scorches and occasional wettings.
2. All data should be recorded in **ink** while the experiment is being performed. Data must be recorded in the bound notebook and **not** on the report sheet itself.
3. You must use the notebook for all 14 labs.
4. Be sure to abide by the following for the notebook:
 - Write your name, course number, and address on the outside.
 - Never tear out pages.
 - Include a Table of Contents at the beginning listing title and number of experiment, date performed, and page on which experiment begins.
 - Number all pages (except Table of Contents).
 - Always use permanent ink, never pencil. **One point will be deducted if ink is not used.**
 - Cross-out errors with a single line**; do not use wite-out, do not scratch-out errors, and do not cross out entries multiple times.
5. The format of the entries for each experiment should be as follows:
 - I. Title Section
Include name, number, and date of experiment at the top of the page in the lab notebook.
 - II. Data Section
It is recommended that the format of the data section be the same as that of the report sheet. Be sure to include units on quantities. This section must be initialed by the instructor as well as the sheet to be handed in next week before you leave the laboratory.
 - III. Results and Calculations
Include all calculations necessary to analyze the data collected. Unless told otherwise by your instructor, the calculations do not have to be completed during the lab period. However, it is recommended that calculations be done during the period so that, in the event of poor results, you might have an opportunity to repeat parts of the lab experiment.
6. The lab instructor will review your notebook entries. **Two points will be deducted if a bound notebook was not used in the lab.** The bound notebooks will **not** be collected at the end of the semester.