

CHM 113 B  
8:40-9:30 MWF  
PS H-150  
Fall 2002

Instructor: Dr. James P. Birk  
Office: Physical Sciences H-240  
Phone: 965-3129  
E-mail: JBirk@asu.edu

Office Hours: MWF 10:40-12:00  
Other times by arrangement.  
These times can be changed by mutual agreement.

Lecture presentations (as allowed by copyright protection of some material) can be seen on an internet site: <http://www.public.asu.edu/~jpbirk>

This web site will also contain this syllabus, class notes, weekly quiz topics, sample exams, and other information of interest to the course.

Computers in the Learning Resource Center (PS H-137) are available for writing lab reports and graphing data; Microsoft Office (Word, Excel, etc.) is available on these computers. Graphical Analysis, a graphing program, is also available and is recommended for graphing data for your lab reports.

Section:	Lab Instructors:	Quiz Room:	Lab Room:	Time:
BA (77799)	Brooke Earnshaw	PSH-231	PSH-244	M 12:40-3:30
BB (23115)	Phil Root	PSH-230	PSH-244	M 2:40-5:30
BC (34473)	Melissa Wooden	PSH-231	PSH-244	T 8:40-11:30
BD (15634)	Brooke Earnshaw	PSH-230	PSH-244	T 12:40-3:30
BE (67296)	Kayla Hamersky	PSH-231	PSH-244	T 2:40-5:30
BF (68498)	Phil Root	PSH-231	PSH-244	W 12:40-3:30
BG (36251)	Melissa Wooden	PSH-433	PSH-244	Th 8:40-11:30
BH (75565)	Kayla Hamersky	PSH-231	PSH-244	Th 2:40-5:30

#### *Read The Textbook*

The study of chemistry can be an exciting and rewarding experience when there is a joint effort among the students and the instructors to improve learning. Learning chemistry can be a challenge – you are confronted with a new language (terminology and symbolism) and you must synthesize new ideas while integrating your previous understanding of science and math. Success is a matter of exposure and practice. Learn to use your text properly by staying ahead of your instructor in the text and re-reading sections that you find confusing. After class meetings, read the pertinent sections again. It may take several readings to understand the material. It is very important to work through example problems as you read to re-enforce your understanding. You should also try the suggested exercises as you work through the material — don't wait until exam time to work these exercises.

#### *Attendance*

Attendance at scheduled class lectures is essential and expected. Do not expect to consistently miss class and still do well. Timeliness in arriving for class is expected. Class will always be dismissed by the end of the period. Remember to turn off your pager or cellular phone prior to coming to class.

#### *Academic integrity*

Cheating will absolutely not be tolerated. The first such infraction will be dealt with to the fullest extent permissible by the University. There are no exceptions. This includes (but is not limited to) any form of inter-student collaboration on exams or external assignments that is not specifically sanctioned by the instructors, use of prohibited materials or devices during exams, copying or distribution of quiz or exam answers prior to the test, and plagiarism.

**CHM 113 B**  
**TENTATIVE LECTURE SCHEDULE\***  
**Fall 2002**  
**Dr. J. Birk**

DAY	DATE	CHAPTER	PAGES	TOPIC
M	26-Aug			<b>INTRODUCTION; Diagnostic Test</b>
W	28-Aug	1	1-33	Matter and Measurement
F	30-Aug	2	35-65	Atoms, Molecules, and Ions
M	2-Sep			<b>LABOR DAY - NO CLASSES</b>
W	4-Sep			
M	6-Sep			
F	9-Sep	3	67-103	Calculations with Chemical Formulas and Equations
W	11-Sep			
F	13-Sep			
M	16-Sep			
W	18-Sep			
F	20-Sep			<b>EXAM 1, CHAPTERS 1, 2, and 3</b>
M	23-Sep	4	105-143	Aqueous Reactions and Solution Stoichiometry
W	25-Sep			
F	27-Sep	5	145-185	Thermochemistry
M	30-Sep			
W	2-Oct			
F	4-Oct	6	187-225	Electronic Structure of Atoms
M	7-Oct			<b>EXAM 2, CHAPTERS 4 and 5</b>
W	9-Oct			
F	11-Oct			
M	14-Oct			
W	16-Oct	7	227-259	Periodic Properties of the Elements
F	18-Oct			
M	21-Oct	8	261-301	Basic Concepts of Chemical Bonding
W	23-Oct			
F	25-Oct			
M	28-Oct			
W	30-Oct			
F	1-Nov	9	303-351	Molecular Geometry and Bonding Theories
M	4-Nov			<b>EXAM 3, CHAPTERS 6, 7, and 8</b>
W	6-Nov			
F	8-Nov			
M	11-Nov			<b>VETERAN'S DAY HOLIDAY – NO CLASSES</b>
W	13-Nov			
F	15-Nov	10	353-391	Gases
M	18-Nov			
W	20-Nov	11	393-433	Intermolecular Forces, Liquids, and Solids
F	22-Nov			
M	25-Nov			
W	27-Nov			
F	29-Nov			<b>THANKSGIVING HOLIDAY - NO CLASSES</b>
M	2-Dec			
W	4-Dec	13	469-507	Properties of Solutions
F	6-Dec			<b>EXAM 4, CHAPTERS 9, 10, and 11</b>
M	9-Dec			
M	16-Dec			<b>FINAL EXAM at 7:40-9:30</b>

TEXT: Brown, LeMay, Bursten, Chemistry: The Central Science

\* Some sections will be skipped; these will be announced at appropriate times during the course.  
Some chapters may take more or less time than estimated here.

**CHM 113 B**  
**SUGGESTED EXERCISES**  
**Brown, LeMay, Bursten, Chemistry: The Central Science**

Following is a list of exercises in each chapter that we suggest you work. If a given section of the textbook is not covered in class, an announcement will be made that this material is not included on an examination; the corresponding exercises can then also be omitted. It is desirable for you to work additional exercises on your own as well. Also try some of the problems in the Additional Exercises section to make sure you can properly invoke the appropriate concepts without having them identified for you.

Answers to selected exercises (indicated by a red number) can be found at the end of the book, and complete solutions to the other exercises (indicated by a black number) can be found in the Solutions to Exercises, available from the bookstore. Most of the following exercises were selected from those with a red number.

<b>CHAPTER</b>	<b>SUGGESTED EXERCISES</b>
1	1, 3, 7, 9, 11, 13, 23, 33, 35, 37, 45, 51, 65
2	1, 3, 5, 13, 17, 19, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 52, 58
3	1, 3, 4, 5, 7, 9, 13, 15, 17, 19, 21, 27, 29, 33, 35, 41, 43, 45, 49, 55, 57, 59, 61, 67, 69, 73, 79, 97
4	1, 3, 5, 9, 11, 13, 15, 17, 19, 21, 23, 25, 31, 33, 35, 37, 39, 43, 51, 53, 55, 59, 65, 67, 75, 82, 85
5	1, 7, 9, 13, 15, 17, 19, 21, 23, 25, 27, 35, 37, 39, 41, 47, 49, 51, 53, 55, 61, 63, 65
6	1, 3, 5, 7, 11, 13, 23, 25, 29, 31, 33, 37, 39, 41, 43, 45, 47, 51, 53, 57, 59, 63, 64, 65, 69
7	1, 3, 5, 7, 9, 13, 15, 17, 19, 21, 23, 25, 27, 31, 33, 35, 37, 39, 41, 43, 47, 49, 51, 55, 62
8	1, 2, 3, 7, 9, 13, 15, 17, 21, 23, 25, 27, 29, 33, 35, 37, 39, 41, 47, 51, 53, 57, 58, 59
9	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43
10	1, 9, 13, 15, 17, 19, 21, 23, 29, 31, 35, 37, 43, 47, 49, 57, 59, 63
11	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 23, 27, 29, 37, 39, 47, 48, 49, 51, 53, 55, 57, 59, 61, 63, 69, 71, 73, 75
13	1, 3, 5, 9, 11, 13, 15, 17, 23, 25, 27, 33, 37, 41, 49, 51, 53, 55, 59

**CHM 113 B  
LABORATORY SCHEDULE**

DATES				EXPERIMENTS
MON	TUE	WED	THU	
8/26	8/27	8/28	8/29	1. What Are the Safety Concerns in the Lab? Check into lab; Diagnostic Test
9/9	9/3	9/4	9/5	4. How Is Lab Equipment Used?
9/16	9/10	9/11	9/12	6*. How Can the Waste be Made Useful?
9/23	9/17	9/18	9/19	11*. How Much Sodium Bicarbonate is in the Mixture?
9/30	9/24	9/25	9/26	11*. (continued)
10/7	10/1	10/2	10/3	8*. How Hot is the Water?
10/14	10/8	10/9	10/10	15*. What Factors Affect the Intensity of Color?
10/21	10/15	10/16	10/17	15*. (continued)
10/28	10/22	10/23	10/24	19*. Should We Mine This Ore?
11/4	10/29	10/30	10/31	19*. (continued)
11/18	11/5	11/6	11/7	24*. How Much Gas?
11/25	11/12	11/13	11/14	24*. (continued)
12/2	11/19	11/20	11/21	21. What are the Structures of Some Crystalline Solids?
12/9	12/3	12/4	12/5	Presentations/Posters (See p. 189 in the lab manual); Lab cleanup

Investigation numbers designated with a \* are presentation/poster session choices.

Your lab grade will be based on 10 points per lab report, 20 points for the poster session, 10 points for the notebook, and 10 points for evaluation. Your final lab total will be adjusted to the appropriate number of points as described elsewhere in this syllabus.

Lab Manual: R. C. Bauer, J. P. Birk, and D. J. Sawyer, "Laboratory Inquiry in Chemistry," Brooks/Cole, 2001.

Goggles must be worn in the laboratory at all times. Failure to abide by safety rules can result in your expulsion from the class.

At the beginning of the semester, you will be assigned to a group within which you will complete the lab investigations and write reports. Each member of the group is required to make an equal contribution to efforts for which you will receive credit. Your group is responsible for resolving issues of unequal contributions. If you are unable to do so, inform your TA or the lab coordinator. Lab grades will be adjusted according to efforts contributed by each group member.

In addition to attaining an understanding of chemical concepts discussed in lecture, your success in this course depends on your ability to perform well in the laboratory. Your final grade in the lab will be based on several factors including attendance, class participation, contribution to group activities, successful completion of the experiments, submission of the laboratory reports, laboratory notebook, and complying with safety rules. You must attend every lab: Three or more absences may result in an automatic failure in this course. If you must miss a lab for an excusable reason, written verification of the absence is required. Absences will only be excused for the following reasons: (1) There is a serious illness or death in your family; (2) You are ill enough to see a physician; or (3) You travel for an official, university sponsored function that requires your attendance; e.g. you're on the swim team.

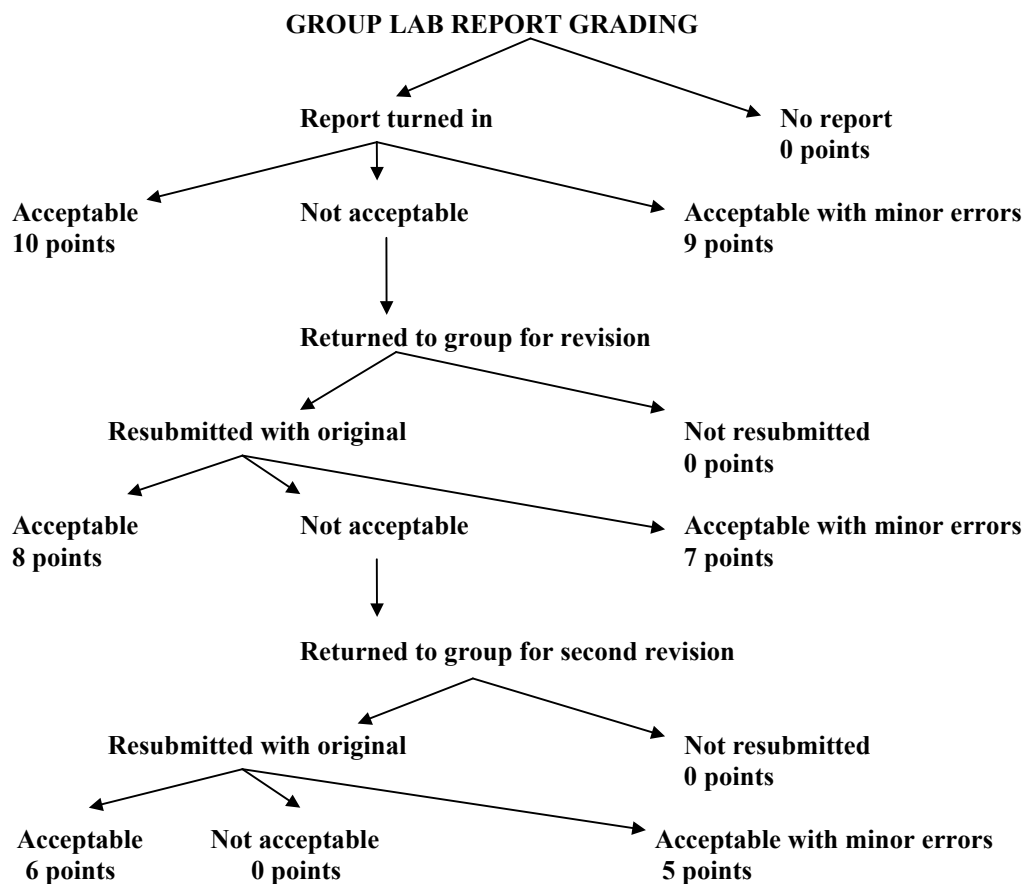
Each investigation will require your group to submit a complete lab report (see page 4 of the lab book). Your completed laboratory report is due by 4.30 p.m. two working days after you complete the laboratory work. However, if during the semester your usual laboratory due date falls on the day of an exam, you have an additional working day to complete the work. If you submit a report deemed unacceptable, your lab instructor will allow you to rewrite it. Your report will be graded according to the scheme shown below.

A laboratory notebook is required for this course. You must obtain a notebook capable of creating duplicate pages. The recommended carbonless lab notebook is being sold by AXE in the foyer of PSH-Wing. This notebook will serve as your laboratory record of procedures, observations, calculations, and results. Your instructor will inspect your laboratory notebook throughout the semester.

**CHM 113 B  
COURSE GRADING**

<b>Hour Exams (4)</b> (lowest score will be dropped)	<b>300 points</b>
<b>Final Exam</b> (Tuesday, December 11, 7:40-9:30 a.m.)	<b>200</b>
<b>Lab</b> (10 lab reports x 10 pts; poster 20 pts; notebook 10 pts; evaluation 10 pts; adjusted to 100 pts)	<b>100</b>
<b>Individual Quizzes (12 or more)</b> (2 lowest scores will be dropped)	<b>100</b>
<b>Group Quizzes (10 or more)</b> (2 lowest scores will be dropped)	<b>50</b>

Attendance at lecture is mandatory. Quizzes will be given during the discussion period during most weeks, at the discretion of the teaching assistants. Group quizzes will not be announced and will be given during lecture at appropriate times; group grades will be assigned. There are no make-up exams. If you will be away for a university-sanctioned activity, you must arrange to take the exam prior to the scheduled exam time.



**GUARANTEED LETTER GRADE DISTRIBUTION**

Total Average		Exam Average	Letter Grade
> 87	and	> 82	A
> 72	and	> 65	B
> 55	and	> 50	C
> 45	and	> 40	D
< 45	or	< 40	E