

**CHEMISTRY 441G – PHYSICAL CHEMISTRY LABORATORY****Syllabus – Spring 2008**

**Professors:** Dr. Y. Cai, TR Section (CP-104, TR 4:00-5:00 pm, or by appointment)  
 Dr. D. –S. Yang, MW Section (CP-09, MW 11:00 am-12:00 pm, or by appointment)

**TAs**

**MW Section:**  
 Mohammed Gharaibeh (T 12:00-1:00 pm, F 10:00 am-12:00 pm, CP-233)  
 Sudesh Kumari (MW 4:00-5:00 pm, CP-114)  
 Ronghua Lu (MT 11:00 am-12:00 pm, CP-325)

**TR Section:**  
 Pei Gao (TR, 4:00-5:00 pm, CP-07)  
 Natarajan Kalyanaraman (MW 4:00-5:00 pm, CP-07)  
 Lingbo Lu (TR 9:30-10:30 am, F 1:00-2:00 pm, CP-07)

In addition to these office hours, you may also reach TAs by appointment.

**Course Description:** Laboratory studies in physical chemistry, including quantum chemistry, spectroscopy, thermodynamics and chemical kinetics. Laboratory, 6 hours.  
 Prereq: A previous course in physical chemistry. (CHE 440G or CHE 547 or CHE 446G)

**Laboratory Hours (CP-114):** Monday/Wednesday, and Tuesday/Thursday, 1:00-3:50 pm. The laboratory will be open only during the regularly scheduled hours. Make-up labs or make-up hours will not be provided. You may swap lab slots with another group by mutual consent if your assigned slot conflicts with an unavoidable engagement, but you must have the TA's agreement at least a week in advance.

<b>Schedule</b>	<b>MW</b>	<b>TR</b>
Orientation & Safety (CP-114)	January 9	January 10
Statistical Treatment of Data	January 14	January 15
Statistical Treatment of Data	January 16	January 17
MLK Birthday-Academic Holiday-No Laboratory	January 21	January 21
Report Writing	January 23	January 22
Laboratory Experiments Begin	January 28/30	January 29/31
Report Discussion	February 13	February 14
Academic Holidays	March 10-15	March 10-15
Checkout Day <i>Attendance Mandatory</i>	April 23	April 24

**Lecture Rooms for Statistics and Report Writing**

January 14, 16 and 23 (MW)	1:00-3:50 pm, CP-211
January 15, 17 and 22 (TR)	1:00-3:50 pm, CP-137

## Other Dates

Wednesday, January 9	First day of classes
Tuesday, January 15	Last day to ADD a class
Wednesday, January 30	Last day to DROP a course without it appearing on the student's transcript. Last day to change grading option.

## Grading

For eight laboratories in the course, there will be a total of 800 points possible.

Preliminary Reports	10 %	(80 points)
Instructor Evaluation	10 %	(80 points)
Final Reports	80 %	(640 points)

Final letter grades for the course will be assigned on the following basis:

Final Average % (total points)	Course Grade
90 – 100 % (720 – 800)	A
80 – 89.9 % (640 – 719)	B
70 – 79.9 % (560 – 639)	C
60 – 69.9 % (480 – 559)	D
< 60 % (< 480)	E

The instructors reserve the right to lower the cutoffs listed above that are needed to earn a particular letter grade, but will **not** increase any cutoff shown.

A grade of D may not be awarded to a graduate student. Therefore, graduate students with a course average in the D range will receive a grade of E.

Because the University requires that graduate and undergraduate students be treated differently in 400G courses, graduate students enrolled in this course will have an additional assignment. This assignment will be an essay of 8-10 pages summarizing the course material and relating it to the student's research interest. The essay must be handed in by **April 11, 2008** and will count as 10 % of the course total.

Extensive instructions and specific requirements for preparing pre-lab and final laboratory reports, the writing thereof, some details on how they will be graded, and safety issues are included in the Spring 2008 version of the *Chemistry 441G Physical Chemistry Laboratory Manual*, and will not be repeated here. This portion of the laboratory *Manual* is to be considered another part of this course syllabus. Read through this material thoroughly. If you have any questions at all about the material, please ask one of the instructors.

## Experiments

You must complete each of the eight experiments listed below. Usually two or more students will work together on an experiment. The teaching assistants who are responsible for each lab are listed below.

Experiment*	TA (MW)	TA (TR)
#1-Methanol VP	<b>Gharaibeh, Kumari, &amp; Lu (Ronghua)</b>	<b>Gao, Kalyanaraman &amp; Lu (Lingbo)</b>
#2-Crystal Violet	<b>Gharaibeh, Kumari, &amp; Lu (Ronghua)</b>	<b>Gao, Kalyanaraman &amp; Lu (Lingbo)</b>
#3-Galvanic Cell	Kumari	<b>Gao</b>
#4-Gallium Ammonia	<b>Kumari</b>	Gao
#5- UV 2-Naphthol	<b>Lu (Ronghua)</b>	Lu (Lingbo)
#6- IR-Carbon Oxide	<b>Gharaibeh</b>	Kalyanaraman
#7- DSC 1-Naphthol	Lu (Ronghua)	<b>Lu (Lingbo)</b>
#8- Particle in a Box	Gharaibeh	<b>Kalyanaraman</b>

\* Name(s) in bold font are graders for the experiment.

## Submission Deadlines for Laboratory Reports

The final laboratory report for each experiment is due at the beginning of the lab period (1 p.m.) one week after the day on which you did that experiment. Reports that would normally be due during Spring Break (March 10-15) should be turned in on **March 17 & 19 (MW) or 18 & 20 (TR)**.

## ACADEMIC DISHONESTY

You are hereby notified that the Department of Chemistry considers academic dishonesty (cheating) a very serious offense. We will follow the new policy for handling cases of academic dishonesty: (1) The minimum penalty for a first offense is **zero** on the assignment. (2) Any offense that results in a penalty will be reported to the Registrar by the Ombud. (3) The minimum penalty for a second offense is **E**, and for a third offense, it is **suspension**.

“Dry labbing” (that is, not doing the lab, then using other students’ data or inventing your own data) is regarded as cheating. Using any part of a report written by others is plagiarism, a form of cheating. It is also cheating if you use a spreadsheet created by someone else to analyze your data. Even though you will collect your data in pairs, the analysis of your common data and preparation of your laboratory report *must be completed independently*. In the words of the University Senate:

### 6.3.1 PLAGIARISM

All academic work, written or otherwise, submitted by students to their instructors or other academic supervisors, is expected to be the result of their own thought, research, or self-expression. In cases where students feel unsure about a question of plagiarism

involving their work, they are obliged to consult their instructors on the matter before submission.

When students submit work purporting to be their own, but which in any way borrows ideas, organization, wording or anything else from another source without appropriate acknowledgment of the fact, the students are guilty of plagiarism.

Plagiarism includes reproducing someone else's work, whether it be published article, chapter of a book, a paper from a friend or some file, or whatever. Plagiarism also includes the practice of employing or allowing another person to alter or revise the work which a student submits as his/her own, whoever that other person may be. Students may discuss assignments among themselves or with an instructor or tutor, but when the actual work is done, it must be done by the student, and the student alone.

When a student's assignment involves research in outside sources or information, the student must carefully acknowledge exactly what, where and how he/she has employed them. If the words of someone else are used, the student must put quotation marks around the passage in question and add an appropriate indication of its origin. Making simple changes while leaving the organization, content and phraseology intact is plagiaristic. However, nothing in these *Rules* shall apply to those ideas which are so generally and freely circulated as to be a part of the public domain.

### **6.3.2 CHEATING**

Cheating is defined by its general usage. It includes, but is not limited to, the wrongfully giving, taking, or presenting any information or material by a student with the intent of aiding himself/herself or another on any academic work which is considered in any way in the determination of the final grade. The fact that a student could not have benefited from an action is not by itself proof that the action does not constitute cheating. Any question of definition shall be referred to the University Appeals Board. [US: 12/12/05]

In the case of suspected academic dishonesty, the instructors and the Department of Chemistry will carefully follow the procedures detailed in the current version of the *University Senate Rules* on the Disposition of Cases of Academic offenses (6.4).

**If you have any questions at all about what may constitute academic dishonesty in the course, please ask.** It is the student's responsibility to do so. The following website provides more information: <http://www.uky.edu/USC/New/SenateRulesMain.htm>

**SAFETY RELEASE – Physical Chemistry Laboratory**

1. The Chemistry Department makes every effort to run instructional laboratories safely.
2. Students who have special medical conditions (e.g., severe allergies, pregnancy) should consult with their personal physicians before beginning laboratory work. The Chemistry Department will be happy to work with a student's personal physician in attempting to determine the level of risk to that particular student.
3. The responsibility of the Chemistry Department for a student in a laboratory may be different if that student is not yet 18 years old. Please mark the appropriate box below:  
 I have already passed my eighteenth birthday.  
 (If not already 18 years old). My birth date is: \_\_\_\_\_
4. Removal of chemicals, glassware, or any other items from any laboratory in the Department constitutes a potential safety hazard to individuals in the community who are not familiar with their safe handling. Any student alleged to have removed any item from the building will be reported to the police. Any student caught removing any item from the building will be prosecuted. The case of any student convicted of removing an item from the building will be automatically turned over to the Dean of Students and charged with a disciplinary offense. The Department may recommend that the Dean of Students seek the harshest of University sanctions, which include expulsion.
5. Please read the following statement. If you accept the statement, please sign and date it in the spaces provided. No laboratory work may begin until this statement has been signed.

I certify that I –

- a. Have been instructed in laboratory safety procedures,
- b. Understand these procedures and all my questions about them have been answered
- c. Agree to abide by them,
- d. Have given correct information about my birth date,
- e. And have read the paragraph (2) above.

Print Name \_\_\_\_\_

Signed \_\_\_\_\_

Date \_\_\_\_\_

## SAFETY STATEMENT

I certify that I know the locations of all the –

- a. exits to the hallways (3)
- b. emergency showers (3),
- c. fire extinguishers (4),
- d. eyewash stations (3),
- e. fire blankets (2), and the
- f. carbon monoxide alarm (1)

in the Physical Chemistry Laboratory – Room 114 in the Chemistry Physics Building at the University of Kentucky.

I further certify that I have been given instruction in the use of these devices, I understand how and when to use these, and have had all my questions concerning these devices answered.

I understand that I **must** wear approved safety goggles or safety glasses **at all times** in the laboratory.

PRINT NAME \_\_\_\_\_

SIGNED \_\_\_\_\_

DATE \_\_\_\_\_