

CHEMISTRY 1211K LABORATORY SYLLABUS
Spring 2018

Instructor: *Dr. Jyotsna Thota*

Office: 219 Courtland North

Phone: (404) 413-5525

Email: jthota@gsu.edu

(Send emails from your GSU email account and write the course number in the subject line)

Office hours: MWF 10.00 AM – 11.30 AM

Lab Meetings: 2.00 – 5:00pm every Tuesday

Pre-Lab Lecture: T 2:00 pm – 2:45 pm, NSC 218, and

Lab: T 2:45 am – 5:00 pm, NSC 234/238

Text/ Lab Manual: The Identification of an Organic Acid (distributed first day in lab)

Laboratory Materials Required: A stitched and bound notebook, and safety goggles or glasses. Lab fees paid to the university cover the laboratory manual and expendable supplies used in the lab throughout the semester. Replacement cost for broken or lost glassware/chemicals are due at end of the semester.

Schedule of Activities and Grading: The schedule of the lab experiments and the grading scheme is in the lab manual & below. Except for the first experiment on density, the rest of the lab activities are designed as an INDIVIDUALIZED STUDENT PROJECT that will continue throughout the semester and involve purification and identification of an unknown organic acid. Data will be recorded in lab notebooks, and data report sheets will be submitted to the instructor on specified dates. Details are given in the lab manual and during the pre-lab lectures.

Examinations and Reports: There will be **six quizzes** during the semester, and a full length **comprehensive final examination** (on the last day of lab, July 21st). A **report on the density of the unknown liquid lab**, and **data sheets on melting point of purified recrystallization unknown and unknown solid acid**, standardization (**molarity**) of **aqueous NaOH** solution prepared by student, **molarity of aqueous HCl** provided to student, **equivalent weight of pure unknown solid acid** and **computer search** will be submitted to the instructor on specified dates during the semester. Points (10% per day) will be deducted for late reports and data sheets.

A **FORMAL COMPREHENSIVE FINAL REPORT** and the **LAB NOTEBOOK** will be submitted to the instructor at the end of the semester **on Nov 27th**. Lab drawer checkout is required by this date or sooner to avoid an additional fee (including students who withdraw).

Class Preparation and Attendance:

Students are expected to attend EVERY prelab lecture and lab session (12:00 pm - 3:00 pm). If the Pre Lab is missed, the student will not be able to do lab that day, with NO Makeup. Please arrive on time, do not leave during the lecture. Students who are repeatedly late or absent will have points deducted. ***Students are individually responsible for the timely completion of all assignments (experiments and reports), absence being no excuse.***

Periodic **pop quizzes** will occur at the **start of pre-lab** to evaluate preparedness for the day's experiments. Lab notebooks will be checked throughout the semester, at start of pre-lab for preparation and at end of lab for experiment completion. **Do not assume that extra time will**

be allowed if you fall behind. A maximum of one excused absence may be made up, after midpoint with instructor's written permission and ONLY if room is available in another lab section.

To succeed in lab:

1. Come **prepared** each day by reading the next assigned experiment and completing experiment title, objective, and procedure in your notebook before you come.
2. Be **self-reliant**. Pay attention in pre-lab and write down notes given on the board, so that you can refer to these while doing the experiments. Socialize outside of lab.
3. Be **efficient** in lab so that you can complete hands-on experiments in a timely manner. Record all data, pre-lab notes, calculations DIRECTLY in your lab notebook in INK; do not record data on random pieces of paper that can be easily lost.
4. In lab, learn how to do the **calculations**; these need be **finished at home** and should be brought completed (in your lab notebook) to the next lab meeting (this is lab homework).
5. At the end of each day, in your notebook jot down **where you stopped** and where you **need to start next time**. At the end of each experiment, record your **conclusion** (example: have pure crystals, melting point of acid is ___ °C, average molarity of NaOH is ___ M, equivalent weight of acid is ___ g/mol, pKa of unknown acid is ___).
6. It is in your best interest to **complete experiments** and submit the data sheets by the assigned day, so that you can receive feedback on your progress and keep up with the experiment. Points will be deducted for late data sheets.
7. Prepare for **quizzes**, which focus on calculations needed for experiment analysis.
8. **Start writing your final lab report before the end of the semester**, so that there is time for feedback. A complete, **well organized notebook** will make the task of writing a good final lab report much easier.
9. Chemistry Department lab policies are at: **http://chemistry.gsu.edu/lab_policies.html**

****To pass the lab:** students MUST (1) **take the written lab final exam**, (2) **turn in a final lab report**, and (3) **turn in their lab notebook**. All this is **due on Nov 27th** (during week 12) at the beginning of prelab lecture. It is important that students work on their lab report as experiments progress during the semester. **The final lab report cannot be written in one night.**

Chemistry Department Student Integrity Policy:

The Department of Chemistry follows the university policy on academic honesty published in "Faculty Affairs Handbook" and "On Campus: The Undergraduate Co-Curricular Affairs Handbook." All tests & quizzes taken & reports submitted must represent student's individual unaided effort. To receive or offer information during an examination will be considered cheating. Suspected offenses may be referred to the Department Chair for appropriate action. Classes will never be cancelled unless an official from the Chemistry Department gives the class personal notification. Don't assume a note to be enough without checking with the Department office (389 Petit Science Center).

The University requires that faculty members must, on a date after the mid-point of the course to be set by the Provost (or his designee):

1. Give a WF to all those students who are on their rolls but no longer taking the class
2. Report the last day the student attended or turned in an assignment.

Students who are withdrawn may petition Department Chair for reinstatement into their classes.

TENTATIVE SCHEDULE OF EXPERIMENTS

DATE	LAB	CHEM 1211 LAB EXPERIMENTS
Jan 16	1	Check-in , Safety Video & Orientation, Desk & Unknowns assigned. Review safety procedures and equipment use. Wash all glassware in drawer. Review Burette use.
Jan 23	2	Density of “Unknown Liquid Sample” 3 parts to experiment, discuss error analysis, take safety test.
Jan 30	3	Purify “Recrystallization Unknown” Determine solvent for “Recrystallization unknown” – Submit “Density” Data Sheet
Feb 6	4	Determine Melting Point (mp) & Yield of “Recrystallization Unknown” Take “Unknown Organic” acid and write unknown number in your note book Determine Melting Point (mp) of unknown organic acid
Feb 13	5	Prepare NaOH solution and titrate with KHP to determine molarity of NaOH (Use this NaOH solution for rest of the semester) – Submit Two “Melting Point” Data Sheets
Feb 20	6	Obtain ~0.3M HCl solution (record Carboy No.) and titrate with NaOH to determine the molarity of HCl – Complete “Molarity of NaOH Calculation” Data Sheet
Feb 27	7	Determine solvent for “Unknown Organic acid” Titrate with NaOH to determine the Equivalent Weight of RCO₂H – Submit “Molarity of NaOH & HCl” Data Sheet
Mar 6	8	Catch up
Mar 20	9	Perform Computer Search to find possible Identity of RCO ₂ H. – Submit “Equivalent Weight” Data Sheet (G) Do 1st pKa titration of RCO₂H with NaOH using pH meter. – <i>Graph Titration Curve at HOME in Excel & bring plots (hardcopies) to Lab # 9.</i> – Submit Sample for Sodium Fusion Test to identify N, Cl, Br, I
Mar 27	10	Do 2nd & 3rd pKa titration of RCO₂H with pH meter for different % EtOH solvents. (F) Do Sodium Fusion Tests to identify N, Cl, Br, I. – Submit copy of Computer Search to Instructor & keep a copy for your report.
Apr 3	11	Finish pKa titrations of RCO₂H with NaOH using pH meter at different % EtOH. – Submit one pKa Titration Curve – with equivalence point & pKa identified. – Determine pKa value in pure H ₂ O from pKa titration graphs & %EtOH correction plot – Calculate Equivalent Weight from pKa titration graphs. Finish Sodium Fusion Tests to identify presence of N, Cl, Br, I.
Apr 10	12	Make-up Lab, Clean-up and Checkout.
Apr 17	13	Take Final Exam, Submit Lab Notebook and Final Lab Report** (with summary data sheet) Clean-up and Checkout. **Required to Pass Lab