General Information

Instructor
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Office: TLC 2-117 (2nd Floor, Department of Chemistry)
email: fkhan@westga.edu

Description
This laboratory course is designed to complement CHEM 1212. A series of experiments treat the fundamental behavior of gases, liquids, solids, and solutions including their thermodynamics, kinetics, and equilibria.

Materials
A bound composition notebook and a non-erasable, black or blue ink pen to record data and observations. This course will employ the MeasureNet system to acquire data in some of our labs. You will need to log in to www.measurenet.net to access your data.

Class time
Mondays 2:00 – 3:50 pm

Attendance
Attendance is required. If a student misses three or more laboratories, he or she may be awarded a grade of F for the course.

Office Hours
Mondays, Wednesdays 10:45 am - 12:00 pm
Wednesdays 2:00 – 3:45 pm
Tuesdays 9:30 – 11:00 am; 12:00 – 2:00 pm
Thursdays 9:30 – 10:45 am; 1:00 – 2:00 pm

Additional office hours on Fridays can be arranged by appointment.

Important Dates
Open drop ends at 11:59 pm on January 10
Open add ends at 11:59 pm on January 11
Last day to Withdraw with a grade of W is February 28
Learning Outcomes

1. Students will apply principles of thermodynamics, kinetics, and equilibria to describe observed behavior of gases, liquids, solids, and solutions;
2. Students will operate cooperatively to solve laboratory challenges through the application of practical, creative, and critical thinking skills;
3. Students will apply Microsoft Excel to analyze chemical data;
4. Students will communicate results and conclusions in a written format; and
5. Students will demonstrate good laboratory technique, safe laboratory conduct, and cooperation with other students.

Course Assessment

Pre-Laboratory Work (10%)
The laboratories will require preparation and careful work to complete in the allotted time. Please read all laboratory material before coming to laboratory. The laboratory material will be posted on CourseDen. It is important that you understand the theory and procedure of the experiment. PRIOR to each laboratory session, please turn in a short summary of the experiments you will perform on CourseDen in the Dropboxes provided.

Laboratory Conduct (5%)
You are responsible for working in a safe, timely manner to complete your experiment in the allotted time. After completion of an experiment, please make sure to clean up the laboratory space, clean and store glassware, and unplug hotplates. Failure to follow safety protocols, complete your experiment on time, or properly clean your laboratory space will result in a deduction from your Laboratory Conduct grade.

Laboratory Notebook (5%)
Keeping a detailed, accurate, and organized records is critical for all scientific professions and will help you tremendously when writing your laboratory report. To practice this skill, please keep a laboratory notebook that contains your observations, measurements, and experimental details (i.e. what you actually did). All notes are to be made in non-erasable, blue or black ink and kept in a bound composition book. Errors should be crossed out with a single horizontal line.

Lab Reports (65%)
Following each laboratory, you will be required to complete an associated laboratory report wherein you will analyze and summarize your findings. An electronic copy of this report must be submitted via the CourseDen Dropbox before the start of the next laboratory period. One separately completed report per individual is required. Reports are to be typed (no photos of writing). Please follow formatting guidelines, and include all information requested. Reports will be graded for proper formatting and content, scientifically accurate and clear discussion, and correct use of Standard English. Please note: Each report will be graded out of 100 points, except the “formal report”, which will be graded out of 200 points.
Final Exam (15%)
A final exam will be given on the last day of class. THIS WILL BE OPEN BOOK, and will consist of short questions and data analysis. A practice examination will be provided in mid-April.

Letter grades

<table>
<thead>
<tr>
<th>Score</th>
<th>Grade</th>
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<tbody>
<tr>
<td>90% - 100%</td>
<td>A</td>
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<tr>
<td>80% - 89%</td>
<td>B</td>
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<tr>
<td>65% - 79%</td>
<td>C</td>
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<tr>
<td>55% - 64%</td>
<td>D</td>
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<tr>
<td>0% - 54%</td>
<td>F</td>
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Course Policies

Extra-Credit Policy
No extra credit opportunities are available for this course.

Make-up Policy
Laboratory attendance is mandatory. If a student fails to attend a laboratory session or is removed from the laboratory due to a safety violation, the student will receive a zero for any grades and assignments associated with that laboratory. If an emergency forces a student to miss that day’s laboratory, the laboratory grade will be replaced the average of all laboratory grades, only if official documentation is presented. A maximum of one exemption will be allowed. No make-up laboratories will be given.

Student Conduct
Students are obligated to abide by the conduct guidelines in the university catalog. Respect and courtesy of all students while in the classroom is required. The following are also mandatory:

1. Experiments in the chemistry laboratory routinely employ hazardous materials and equipment. Proper dress and personal protective equipment are required to participate in a lab. Failure to follow safe laboratory conduct or observe dress code will result in expulsion from that day’s laboratory and a zero on you laboratory report and associated notebook and conduct grades.

2. We will discuss the experiment and associated hazards at the beginning of each laboratory, so it is important to be on time. Arrival after the conclusion of the pre-laboratory lecture constitutes a safety hazard and you will not be allowed to perform that day’s laboratory and receive a zero on that laboratory report and associated notebook and conduct grades.

3. This classroom space is used by multiple classes, so it is imperative to the safety of other students that all stations are thoroughly cleaned after the completion of that day’s experiments. Failure to do so will result in a grade reduction for that laboratory.
Academic Honesty

‘Sharing’ laboratory assignments or material therein between students is plagiarism. Such ‘sharing’ can include, but is not limited to, copying any part from another assignment (i.e. yours or another student’s) with no or minimal change. Manipulation of data is a gross ethical violation and is expressly forbidden. Instances of plagiarism or data manipulation will result in a ‘0’ for that report and possible additional action per University regulations on Academic Dishonesty.

Occurrences of cheating are rare. However, cheating by one individual raises questions about fairness for the rest of the class, and indeed, endangers the honor code that governs our examination system. It is after considerable thought and agonizing that I have arrived at the following formula. If an individual cheats on a report for the first time, he/she will obtain a score of zero for that particular report. If an individual is caught cheating a second time during the semester, he/she will receive a grade of F for the entire course.

Disabilities Act / Accessibility for the Course

If you are a student with a disability as defined under the Americans with Disabilities Act and require assistance or support services, please notify me and provide me with a copy of your packet from Student Services. The university will provide you with resources for any audio/visual needs that you may have with the learning management system or course content.

It is critical that you contact UWG Accessibility Services immediately to find out what accommodations are necessary so we can work together to facilitate your success in this class. Please consult the UWG Accessibility Services site http://www.westga.edu/accessibility or call (678) 839-6428 for more details regarding accessibility for this course.

University Policies and Academic Support

Please review the Common Language for all university course syllabi at the address: https://www.westga.edu/administration/vpaa/assets/docs/faculty-resources/common_language_for_course_syllabi_v2.pdf

This document contains important information regarding Academic Support, Online Courses, Honor Code, Email Policy, Credit Hour Policy, and HB 280 (Campus Carry).

Note on Syllabus Modifications

I reserve the prerogative to modify this syllabus at any time during the course of the term, particularly with regards to course schedule. Students will be notified of all syllabus modifications. In a case where a substantial modification is required, I will reissue a revised syllabus.
# Tentative Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
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<tbody>
<tr>
<td>January 8</td>
<td>Orientation; Using Excel in the Chemistry Laboratory</td>
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<tr>
<td>January 15</td>
<td>MLK Holiday</td>
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<tr>
<td>January 22</td>
<td>Laboratory 12 - Enthalpy of Vaporization</td>
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<tr>
<td>January 29</td>
<td>Laboratory 13 - Freezing Point Depression</td>
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<tr>
<td>February 5</td>
<td>Laboratory 14 - Kinetics I</td>
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<td>February 12</td>
<td>Laboratory 15 - Kinetics II (Formal Report)</td>
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<td>February 19</td>
<td><strong>Discuss and</strong> revise Kinetics II Report</td>
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<tr>
<td>February 26</td>
<td>Laboratory 16 - Chemical Equilibrium</td>
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<tr>
<td>March 5</td>
<td>Laboratory 17 - pH Measurements</td>
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<tr>
<td>March 12</td>
<td>Laboratory 18 - Buffers Laboratory</td>
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<tr>
<td>March 19</td>
<td>SPRING BREAK</td>
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<tr>
<td>March 26</td>
<td>Laboratory 19 - Titrations</td>
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<tr>
<td>April 2</td>
<td>Laboratory 20 - Enthalpy of Hydration</td>
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<td>April 9</td>
<td>Laboratory 21 - Reaction Entropy</td>
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<td>April 16</td>
<td>Laboratory 22 - Qualitative Analysis</td>
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<tr>
<td>April 23</td>
<td>Laboratory 22 - Qualitative Analysis contd.</td>
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<td>April 30</td>
<td>Laboratory Final</td>
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