Course	**CHEM 1312: General Chemistry II**
Professors	Gregg Dieckmann, Sandhya Gavva, Stephanie Taylor, Sumudu Wijenayake
Term	Spring 2017
Meetings	Section 001: MWF 9:00 am – 9:50 am, SLC 1.102 (Dr. Taylor) Section 002: MWF 10:00 am – 10:50 am, SLC 1.102 (Dr. Gavva) Section 003: MWF 11:00 am – 11:50 am, SLC 1.102 (Dr. Dieckmann) Section 004: MWF 1:00 pm – 1:50 pm, SLC 1.102 (Dr. Dieckmann) Section 005: MWF 2:00 pm – 2:50 pm, SLC 1.102 (Dr. Wijenayake)

Professor's Contact Information

Phones [972-883-XXXX]	Dr. Dieckmann: 2903; Dr. Gavva: 2279; Dr. Taylor: 6044; Dr. Wijenayake: 2906
Office Locations	Dr. Dieckmann: BE 2.324; Dr. Gavva: SLC 3.501; Dr. Taylor: FN 3.308C; Dr. Wijenayake: BE 3.330C
Email Addresses	Dieckgr@utdallas.edu; sgavva@utdallas.edu; StephanieM.Taylor@utdallas.edu; snw081000@utdallas.edu
Office Hours	Dr. Dieckmann: Mon 2:00 to 3:00 pm; Thurs 10:00 to 11:00 am; workshop — Fri 2:00 to 3:30 pm (BE 2.528) Dr. Gavva: Tues 10:00 am to noon workshop — Fri 1:00 to 2:30 pm (GR 4.428) Dr. Taylor: Fri 2:00 to 4:00 pm; workshop--Mon 5:00 to 7:00 pm (HH 2.402) Dr. Wijenayake: Thurs 10:00 to 11:00 am; workshop--Thurs 8:00 to 9:30 am (JO 3.516) For all: PLEASE feel free to stop by when we are in our offices
Other Information	Best way to contact us: email listed above or stop by our offices; we don't read eLearning email

General Course Information

Pre-requisites, Co-requisites, & other restrictions	One year of high school chemistry and one semester of college general chemistry (e.g. CHEM 1311) are assumed.
Course Description	A continuation of CHEM 1311 treating solutions; chemical equilibrium, acids and bases, solubility; electrochemistry; organic chemistry; rates of reactions; and environmental, polymer, nuclear, and biochemistry.
Learning Outcomes	*Objectives* This course is the second of a two-course sequence. The goal of this course is to provide students with a working knowledge of how the basic concepts learned in CHEM 1311 apply to more complex chemical systems. The course focuses on the following: chemical equilibrium; rates of reactions; acid base chemistry, including buffer systems and acid/base titrations; electrochemistry; thermodynamics; nuclear chemistry; and basic organic chemistry concepts. Basic problem solving skills and critical thinking continue to be emphasized in this course. *Expected Learning Outcomes* Upon successful completion of this course, students will therefore: 1) be able to use their understanding of intermolecular attractive forces that determine the properties of the states of matter and phase behavior by predicting colligative properties and the characteristics of solutions 2) be able to use the basic concept of equilibrium in writing equilibrium constant relationships, determining whether equilibrium has been established, calculating equilibrium concentrations, and predicting the effects of concentration, pressure and temperature changes on equilibrium mixtures (LeChatelier's Principle) 3) be able to interpret experimental data (in both tabular and graphical form) by appropriately setting up and solving scientific problems using dimensional analysis with proper attention to scientific units and significant figures 4) be able to apply the concepts of equilibrium to (a) understand common inorganic reactions that occur in aqueous solutions (e.g. acid-base, solubility-precipitation and oxidation/reduction reactions); (b) understand how chemical equilibria depend on ΔH, ΔS and ΔG; and (c) determine standard and non-standard cell potentials and equilibrium constants from cell potential data for oxidation/reduction reactions 5) be able to demonstrate an understanding of the basic concepts of chemical kinetics, how rate & equilibrium properties are related, & how these topics relate to major scientific issues by utilizing this knowledge to solve kinetics calculations & evaluate rxn mechanisms
Required Texts & Materials	1. Textbook: *Chemistry: Atoms First, 2nd Edition* (Julia Burdge, Jason Overby); McGraw-Hill 2. course materials located on class site at eLearning: http://elearning.utdallas.edu/ 3. ALEKS online assessment and learning system: http://www.aleks.com 4. Calculator: ONLY one of these three: TI-30X IIS, TI-30X IIB or TI-30Xa

Schedule & Academic Calendar

Class Period	Day	Date	Topic	Chapter
1	Mon	Jan 9	Introduction	
2	Wed	Jan 11	Physical Properties of Solutions	13
3	Fri	Jan 13		
	Mon	***Jan 16***	***Martin Luther King Day (no class)***	
4	Wed	Jan 18	Physical Properties of Solutions	13 (cont.)
5	Fri	Jan 20		
6	Mon	Jan 23		
7	Wed	Jan 25	Kinetics	19
8	Fri	Jan 27		
9	Mon	Jan 30		
10	Wed	Feb 1		
11	Fri	Feb 3		
	Sat	**Feb 4**	**Exam 1 (Chapters 13 and 19)**	
12	Mon	Feb 6	Equilibrium	15
13	Wed	Feb 8		
14	Fri	Feb 10		
15	Mon	Feb 13		
16	Wed	Feb 15	Acids and Bases	16 (thru 16.9)
17	Fri	Feb 17		
18	Mon	Feb 20		
19	Wed	Feb 22		
20	Fri	Feb 24		
	Sat	**Feb 25**	**Exam 2 (Chapters 15 and 16)**	
21	Mon	Feb 27	Acids and Bases	16.10–16.12
22	Wed	Mar 1	Acid/base equilibria and Solubility equilibria	17
23	Fri	Mar 3		
24	Mon	Mar 6		
25	Wed	Mar 8		
26	Fri	Mar 10		
		Mar 13-18	***Spring Break***	
27	Mon	Mar 20	Acid/base equilibria and Solubility equilibria	17 (cont.)
28	Wed	Mar 22		
29	Fri	Mar 24	Entropy and Free energy	14
30	Mon	Mar 27		
31	Wed	Mar 29		
32	Fri	Mar 31		
	Sat	**Apr 1**	**Exam 3 (Chapters 17 and 14)**	
33	Mon	Apr 3	Free energy and equilibrium	15.4
34	Wed	Apr 5	Electrochemistry	18
35	Fri	Apr 7		
36	Mon	Apr 10		
37	Wed	Apr 12		
38	Fri	Apr 14		
39	Mon	Apr 17		
40	Wed	Apr 19	Nuclear chemistry	20, 2.4
41	Fri	Apr 21		
	Sat	**Apr 22**	**Exam 4 (Chapters 18 and 20)**	
42	Mon	Apr 24	Organic chemistry	23
43	Wed	Apr 26		
44	Fri	Apr 28		
	Mon	***May 1***	***Reading Day***	
	Wed	**May 3**	**Final Exam (Cumulative)**	

Exam Schedule:	**Sat**	**Feb 4**	**Exam 1**	**10:00 to 11:30am**
	Sat	**Feb 25**	**Exam 2**	**10:00 to 11:30am**
	Sat	**Apr 1**	**Exam 3**	**10:00 to 11:30am**
	Sat	**Apr 22**	**Exam 4**	**10:00 to 11:30am**
	Wed	**May 3**	**Final Exam**	**8:00 to 10:45pm (NOTE DAY/TIME CHANGE)**

Course Policies

Grading (credit) Criteria

Course Evaluation:

(i) In-class assignments	6%
(ii) ALEKS	14%
(iii) Midterm Exams (4 x 15%)	60%
(iv) Final Exam	20%

Our goal in this class is to help you develop an understanding (and appreciation) of how chemistry impacts your everyday lives. Our main focus will be on CONCEPTS and not just FACTS, and our teaching and testing will reflect this. We have designed this course to empower you to succeed in learning chemical concepts. We have a number of "resources" that we are putting at your disposal to enable you to succeed. While students will differ in the type of resources they prefer to utilize, in our experience we have identified a subset that are critical. Thus for those, we give extra emphasis in the class to strongly encourage students to use them. Resources are described below and in the following sections:

0. Homework assignments (end of chapter problems):

- a principle method for assessing whether you understand a concept and how to use it
- ***the MOST critical resource for preparing for exams***
- assigned for each chapter from end-of-chapter exercises in your textbook
- large number of problems selected to cover the majority of important concepts
- mixture of conceptual and quantitative problems
- these will not be collected or graded
- all homework assignments and keys are posted on eLearning

1. In-class assignments: (will drop the lowest score from this group)

- we will drop your lowest score; the others will be averaged together to give your in-class assignment average
- obvious message: attending class each and every day is arguably the MOST important thing a successful general chemistry student does
- these will be unannounced, and can occur anytime during any lecture
- typically short
- ***there will be no makeup in-class assignments given*** *(you will receive a "zero" for any you miss)*

2. ALEKS:

- helps a student strengthen their fundamental knowledge and identify what they don't understand
- useful to prepare for doing the homework—***doing ALEKS WITHOUT doing the homework will NOT be sufficient for Exam preparation***
- details for ALEKS provided in separate document
- each student will get a unique set of questions tailored by the system to suit the student's preparation and understanding of the material
- ALEKS will constitute 14% of your course score, broken down as follows:
  - -- Completion Goals, 13 of 14 objectives, 10%
  - -- Overall pie completion, 4%

3. Midterm exams (scantron-based multiple choice exams):

- each exam is 80 minutes long
- ALL 4 MIDTERM EXAMS MUST BE TAKEN, at the scheduled time and on the scheduled day
- ***There will be no makeup exams given***
- ***There will be no early exams given*** (except in the case of an acceptable, documented reason as defined by University policy)
- The lowest of the 4 exam scores will be automatically replaced by a higher final exam score. If you have an ***acceptable, documented reason*** for missing an exam (examples include: documented illness, auto accident, participation in UTD-sponsored event, observance of religious holiday), you will be allowed to replace the missed exam with your score on the final. Otherwise, you will receive a "zero" for that exam, that zero will not be replaced by the final, and

<table>
<tr><td></td><td>will be included in the calculation of your final class grade
• You may arrive late for an exam until the time when the first student finishes and leaves (only penalty being that you will have proportionally less time to finish the exam). After this grace period you will not be allowed to take the exam and will receive a score of “zero”
• questions will focus on concepts and material covered in class, homework, in-class assignments and ALEKS

<u>4. Final exam (scantron-based multiple choice exam):</u>
• comprehensive exam
• the final exam is 2 hours and 45 minutes long
• The final exam must be taken and cannot be replaced by any other grade, so
• No makeup final will be given. <u>NOTE THE DAY AND TIME OF THE FINAL!</u></td></tr>
<tr><td>Make-up Exams</td><td>There are no make-up exams (see above).</td></tr>
<tr><td>Extra Credit</td><td>There is no extra credit.</td></tr>
<tr><td>Class Attendance</td><td>Regular and punctual class attendance is expected. Students who fail to attend class regularly are inviting scholastic difficulty. Absences may lower a student’s grade (see “1. In-class Assignments:” in the Course Evaluation section above).</td></tr>
<tr><td>ALEKS Deadlines</td><td>ALEKS objectives are due on the date listed below—at the deadline time (11:59 pm), these objectives will close and you will no longer be able to improve your grade for that objective.

<table>
<tr><th>Date Due</th><th>Objective #</th><th>Content</th><th>*Knowledge check after?</th></tr>
<tr><td>Wed Jan 18</td><td>1</td><td>solutions 1</td><td></td></tr>
<tr><td>Wed Jan 25</td><td>2</td><td>solutions 2</td><td>yes</td></tr>
<tr><td>Wed Feb 1</td><td>3</td><td>kinetics 1</td><td></td></tr>
<tr><td>Wed Feb 8</td><td>4</td><td>kinetics 2</td><td>yes</td></tr>
<tr><td>Wed Feb 15</td><td>5</td><td>equilibrium</td><td></td></tr>
<tr><td>Wed Feb 22</td><td>6</td><td>acid/base 1</td><td></td></tr>
<tr><td>Wed Mar 1</td><td>7</td><td>acid/base 2</td><td>yes</td></tr>
<tr><td>Wed Mar 8</td><td>8</td><td>buffers</td><td></td></tr>
<tr><td>Wed Mar 22</td><td>9</td><td>titrations/solubility</td><td>yes</td></tr>
<tr><td>Wed Mar 29</td><td>10</td><td>thermo 1</td><td></td></tr>
<tr><td>Wed Apr 5</td><td>11</td><td>thermo 2</td><td>yes</td></tr>
<tr><td>Wed Apr 12</td><td>12</td><td>echem 1</td><td>yes</td></tr>
<tr><td>Wed Apr 19</td><td>13</td><td>echem 2</td><td></td></tr>
<tr><td>Wed Apr 26</td><td>14</td><td>nuclear</td><td></td></tr>
</table>

* you will be given a knowledge check after this objective’s deadline (before you can proceed to the next objective)</td></tr>
<tr><td>Exam/Final Exam Details</td><td>• Students will be assigned to specific exam rooms based on their last name. Assignments will be announced before the first midterm exam, and will be valid for the full semester.

• you will need your valid COMET CARD to take the exam; in the absence of this, a valid, current photo ID such as your driver’s license can be used

• during exams, students are not allowed to have the following items with them: food or beverages, scratch paper (unless provided by the instructor), course materials, textbooks, notes (including formula sheets), or electronic devices, including iPads, iPhones or any other type of smart phone or cellular phone, iPods, MP3 players, earphones, radios, cameras, multi-functional timepieces, computers, or ANY device capable of accessing cellular or wireless networks.

• when possible, students will sit in alternating seats, face forward at all times, and remove any clothing which might conceal eye movements, reflect images of another’s work, or hide course materials for copying.</td></tr>
</table>

	• exam proctors will monitor any communication or signaling between students by talking, whispering or making sounds, or by using your hands, feet, or other body movements, the test paper itself or your writing implement. • We have a specific calculator (listed below) **required for use on all exams** TI-30X IIS (solar) or TI-30X IIB (battery) or TI-30Xa -- NO OTHER CALCULATOR TYPE IS ALLOWED -- ALL calculators will be checked before/during the exam. Non-approved calculators will be removed immediately from the student, to be returned at some point after the exam period (possibly in class) -- if your calculator is removed, you will be required to finish the exam WITHOUT a calculator (i.e., we do not have calculators to provide, and another student cannot provide you with a calculator once the exam has started) • If you arrive late for the Final exam, you will be allowed to take the exam but will have proportionally less time to finish.
Peer Instructional Support (PLTL Program)	Peer Led Team Learning (PLTL) is a program designed to provide an active learning experience in which students can gain the skills and confidence to be successful learners in General Chemistry and other science courses. In weekly ninety-minute PLTL sessions, small groups of students will work together to solve problems written by the course professors. An undergraduate PLTL leader who has training in group dynamics and mastery of course content will lead them. This is an optional component to the course. However, if you choose to participate, you are required to stay in the program throughout the semester—the integrity of the group depends on it. **It is critical to attend every session**—skipping a PLTL session limits the utility of that session for everybody else. We want people who sign up for the program to be fully committed to attending. ***You are allowed only 2 absences during the whole semester; students in the PLTL program that miss more than 2 PLTL sessions will not be allowed to drop their lowest ALEKS objective grade. Bottom line: only sign up for PLTL if you are committed to attending every session.*** To participate in a PLTL group, you will need to apply online. More details of this program, and the enrollment procedure, will be announced in class. You can learn more about PLTL at the following link for the Student Success Center: http://www.utdallas.edu/studentsuccess/leader/pltl.html
Other Assistance	We have many other resources available to you in this class: • Chemistry TA office hours (3rd floor SLC, outside TA offices) -- hours will be set in near future and posted online -- available for walk-in assistance • Chemistry Tutors provided by Student Success Center -- hours will be set in near future and posted online at Success Center website http://www.utdallas.edu/studentsuccess/leader/tutors.html -- available for walk-in assistance • Supplemental Instructors provided by Student Success Center -- hours will be set in near future and posted online at Success Center website http://www.utdallas.edu/studentsuccess/leaders/si.html In short: with 4 instructors, an army of Chemistry TAs, PLTL, Chemistry Tutors and SIs, there should be NO STUDENT that cannot find help. Our goal is to put the resources in place to help every student that wants to succeed in a position where they can do so!
Regrade Policy	Requests to have 1 or more questions of an exam regraded have to be made within 1 week of receiving the graded assignment. The request should be in the form of an email from your UTD email account to the instructor; the subject line should read "exam X regrade", where X is the assignment number; the body of the email should contain your full name, the problem number and an explanation of how the problem was graded incorrectly

UT Dallas Syllabus Policies and Procedures	The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus: http://go.utdallas.edu/syllabus-policies Policies covered include: student conduct and discipline, academic integrity, copyright notice, email use, student grievance procedures, and religious holy days. Some additional information regarding some of these topics is included in related sections below.
Academic Integrity	The faculty expects from its students a high level of responsibility and academic honesty. Because the value of an academic degree depends upon the absolute integrity of the work done by the student for that degree, it is imperative that a student demonstrate a high standard of individual honor in his or her scholastic work. *Scholastic Dishonesty*: Any student who commits an act of scholastic dishonesty is subject to discipline. Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, submitting for credit any work or materials that are attributable in whole or in part to another person, taking an examination for another person, or any act designed to give unfair advantage to a student or the attempt to commit such acts.
Email Use	Our policy in this class is to ***not*** communicate any details regarding your grade through email. We will only discuss these details in person with a student.
Technical Support	If you experience any problems with your UTD account, you may send an email to: assist@utdallas.edu or call the UTD Computer Helpdesk at 972-883-2911.
Withdrawal from Class	The administration of this institution has set deadlines for withdrawal of any college-level courses. These dates and times are published in that semester's course catalog. Administration procedures must be followed. It is the student's responsibility to handle withdrawal requirements from any class. In other words, I cannot drop or withdraw any student. You must do the proper paperwork to ensure that you will not receive a final grade of "F" in a course if you choose not to attend the class once you are enrolled. ***Undergraduates last day to drop without a "W": Wed Jan 25*** ***Undergraduates last day to withdraw with WL: Mon Mar 27***
Incomplete Grades	As per university policy, incomplete grades will be granted only for work unavoidably missed at the semester's end and only if 70% of the course work has been completed. An incomplete grade must be resolved within eight (8) weeks from the first day of the subsequent long semester. If the required work to complete the course and to remove the incomplete grade is not submitted by the specified deadline, the incomplete grade is changed automatically to a grade of **F**.
Office of Student AccessAbility (OSA)	It is the policy and practice of The University of Texas at Dallas to make reasonable accommodations for students with properly documented disabilities. However, written notification from the Office of Student AccessAbility (OSA) is required. If you are eligible to receive an accommodation and would like to request it for a course, please discuss it with an OSA staff member and allow at least one week's advanced notice. Students who have questions about receiving accommodations, or those who have, or think they may have, a disability (mobility, sensory, health, psychological, learning, etc.) are invited to contact the Office of Student AccessAbility for a confidential discussion. The primary functions of the Office of Student AccessAbility are to provide: 1. academic accommodations for students with a documented permanent physical, mental or sensory disability 2. non-academic accommodations 3. resource and referral information and advocacy support as necessary and appropriate. OSA is located in the Student Services Building, suite 3.200. They can be reached by phone at (972) 883-2098, or by email at disabilityservice@utdallas.edu.

These descriptions and timelines are subject to change at the discretion of the Professor.