Elementary Chemistry

The University of Toledo
College of Natural Sciences and Mathematics
Department of Chemistry and Biochemistry, Chem1090 - 001-021
CRN 24165-24166, 10717-10727, 14320

Sections 001-012

Instructor: Dr. Elizabeth Zhurova
Email: Elizabeth.Zhurova@UToledo.edu
Office Hours: TR 3:40-5:00PM & W 1:00-3:00PM Online, Blackboard Collaborate
Office Location: Online/BO2096G
Offered: Spring 2021

Course Website: Blackboard Learn
Lecture Location: Online, Blackboard Collaborate
Lecture Day/Time: T, R 2:30 – 3:25 PM
Recitation Location: Varies (see your schedule)
Recitation Day/Time: Wednesday (see your schedule)
Credit Hours: 3

Sections 013-021

Instructor: Dr. Elizabeth Zhurova
Email: Elizabeth.Zhurova@UToledo.edu
Office Hours: TR 3:40-5:00PM & W 1:00-3:00PM Online, Blackboard Collaborate
Office Location: Online/BO2096G
Offered: Spring 2021

Course Website: Blackboard Learn
Lecture Location: Online, Blackboard Collaborate
Lecture Day/Time: T, R 5:45 – 6:40 PM
Recitation Location: Varies (see your schedule)
Recitation Day/Time: Varies (see your schedule)
Credit Hours: 3

CATALOG/COURSE DESCRIPTION

For students who major in science, engineering or other fields which require chemistry as a prerequisite subject who have not had a previous course in chemistry and whose preparation is not sufficient to begin General Chemistry (CHEM 1230).

PREREQUISITES AND COREQUISITES

MATH 1200 with a minimum grade of C, or MATH 1320 with a minimum grade of C, or MATH 1340 with a minimum grade of C, or MATH 1750 with a minimum grade of C, or MATH 1830 with a minimum grade of C, or MATH 1850 with a minimum grade of C, or ACT Math with a score of 20, or Aleks Math Placement Test with a score of 046, or Math - Coll Algebra Placement with a score of 10, or SAT Mathematics with a score of 480, or MATH SECTION SCORE with a score of 510.

In order to succeed in Elementary Chemistry, your Math background should be sufficient. If you are not comfortable *solving linear equations* and *working with exponential numbers*, please contact me as soon as possible. Extra help in the form of online tutoring and SI sessions is available in the class (see below).

TEACHING METHODOLOGY

Lecture sessions will be taught **synchronously online via *Blackboard Collaborate* as scheduled**. Lectures are designed to clarify concepts and provide examples of what is expected of each student. Attendance and participation are required in order to succeed in the class.

Textbook is an important part of this course. The sections to be read are listed on the attached daily schedule. We recommend that you *read the text before the lecture.*

iClicker Polling. In lecture class you will use a personal web enabled device (laptop, tablet, smart phone) to answer questions for credit. A license is required for all types of devices to be used. *I recommend you to use the link listed below to purchase the license.* You need to set up an iClicker account and register for the iClicker course associated with your lecture section number.

Recitation. Recitation sessions are **required** parts of the class, consisting of one meeting per week on the same day at the same time/place. The recitation period you are enrolled in corresponds to a specific section number; the day/time/place is listed on your schedule (Note: some schedules list the recitation period as "lab", this is not a lab)**.** Your recitation instructor will answer questions and ask you to the board to work the assigned homework problems. Most recitations are taught by Teaching Assistants (TAs). **Complete the assigned end-of-book-chapter recitation homework problems on paper before each recitation session**. You will be told in lecture which problems to complete each week. Most recitation classes meet in face-to face format, sections 012, 020 and 021 meet online via Blackboard Collaborate.

ALEKS (**A**ssessment and **LE**arning in **K**nowledge **S**paces) **online homework** system is designed to create assignments tailored to the unique needs of each student. It is based on *artificial intelligence*. The first time you log in, ALEKS will ask series of questions designed to assess exactly what you do and do not know about Math and Chemistry. After this initial assessment, you will have a list of topics to work through based on what you are ready to learn. *ALEKS will not ask you to work on material you already know, nor will it ask you to work on advanced material until you are ready to do so*. All ALEKS homework assignments have deadlines, usually twice a week - on Wednesdays and Sundays at midnight (see ALEKS syllabus for more detailed information). **Please include 2-3 hours, 2-4 times a week of ALEKS work into your schedule.** Please refer to ALEKS privacy policies at https://www.mheducation.com/privacy.html

TEXTS AND ANCILLARY MATERIALS

1. Properly functioning **computer with Internet access.** This course contains streaming video and audio content.
2. **Book**: ISBN-10: 1319333486, ISBN-13: 9781319333485, David Goldberg, Fundamentals of Chemistry, UT ed., 2019 (the original book ISBN-10: 0072828501, ISBN-13: 9780072828504, David Goldberg, Fundamentals of Chemistry, 5th Ed., 2007 can also be used).
3. ***ALEKS*** online homework is a part of Inclusive Access program, and *you already paid for ALEKS subscription*. It is available to you through Blackboard.
4. **iClicker** license.
5. Non-programmable, non-graphical scientific **calculator.**

A **package** containing hard copy book, access card for e-book (same book) and iClicker code is available through **UT bookstore.**
E-book can be also purchased here: https://www.vitalsource.com/custom/9781319291709
If you cannot afford the book at this time, Carlson Library at UT main campus has several hard copy books on reserve. These books can be checked out for 2 hours at a time for an exchange of ID.
iClicker subscription: https://store.macmillanlearning.com/us/storefront/201801213
If you use this link to purchase your subscription, you get a special cheaper deal for our class. If you are taking another class that is using iClicker, only one iClicker subscription is needed for all your classes.

TECHNOLOGY REQUIREMENTS

Browser Check Page

Students need to have access to a properly functioning computer throughout the semester. The Browser Check Page http://www.utoledo.edu/dl/helpdesk/browser-check.html will enable you to perform a systems check on your browser, and to ensure that your browser settings are compatible with Blackboard, the learning management system that hosts this course.

Software

Student computers need to be capable of running the latest versions of plug-ins, recent software and have the necessary tools to be kept free of viruses and spyware. The computer needs to run the following software, available in the UT Online Download Center.

- Word Processing Software
- Adobe Acrobat Reader
- Java Plugin Console
- Adobe Flash Player
- Adobe Shockwave Player
- Google Chrome Browser – Recommended

Internet Service

High-speed Internet access is recommended, as dial-up may be slow and limited in viewing lectures, downloading information and completing online homework and tests. This course does contain streaming audio and video content.

Use of Public Computers

If using a public library or other public access computer, please check to ensure that you will have access for the length of time required to complete tasks and tests. A list and schedule for on-campus computer labs is available on the Open Lab for Students webpage.

UT Virtual Labs

Traditionally, on-campus labs have offered students the use of computer hardware and software they might not otherwise have access to. With UT's Virtual Lab, students can now access virtual machines loaded with all of the software they need to be successful using nothing more than a broadband Internet connection and a web browser. The virtual lab is open 24/7 and 365 days a year at VLAB: The University of Toledo's Virtual Labs.

Learner Technical Support can be found here http://www.utoledo.edu/dl/students/learnersupport.html

ACADEMIC POLICIES

Academic Honesty: You are urged to refer to the university's policy on Academic Honesty at http://www.utoledo.edu/dl/students/dishonesty.html. **Violation of this policy can result in a** course grade of **F** with additional university sanctions possible. **You will be required to read and agree to follow class policy during the first week of classes.**

Examination Policy: examination dates are given on the schedule. Exams will be conducted online within ALEKS homework system. Midterm exams will take approximately 1-2 hours and comprehensive final exam will take 2-3 hours of your time. Each exam will be available for 24 hours, you will be allowed to use the book and your notes and there will be no time limit (before the deadline). **Extensions for the exams** will be given to students who miss an exam under the conditions listed below.

- Students who will not be able to take an exam during scheduled time due to an irresolvable conflict with a *major responsibility* must provide some *written* documentation to verify the conflict. This situation may occur for

student on official university business, including athletes. *Approval must be obtained **at least 7 days** before the scheduled test date.* The exam will be given at another arranged time.

- Students who cannot take an exam due to *illness*, car accident or similar *extreme* circumstance should inform their instructor of their difficulties as soon as possible. These difficulties must also be **documented** by a physician's note, an accident report, etc. *Absences due to COVID-19 quarantine or isolation requirements **are** considered excused absences*. You should notify me as soon as possible if you are in quarantine or isolation and these absences may not require written notice.

You may use a **calculator** during the exams, it has to be *non-graphical* and *non-programmable*. The following calculator models are **prohibited** for use during exams: all TI Pro models (e.g., TI-30X Pro, TI-36X Pro), TI-College Plus, TI-36X II, Casio fx-991ES, Casio fx-115, and other programmable models. Use of graphical and programmable calculators, and cell phones is not allowed during exams.

Extensions, make ups or late assignments

Exam extension will only be provided if an absence is deemed excusable (see examination policy above). Missed exam must be taken not later than 2 weeks after its scheduled day and not later than last week of classes.

Two (2) ALEKS extensions for missed or late assignments will be provided over semester. If you need more extensions, please provide a doctor note or other documented excuse. You need to request an extension within two weeks after the due date. It is highly recommended that you complete all ALEKS assignments on time.

Quiz extension may be provided if a documented absence is deemed excusable. Contact your instructor *within two weeks period* since the quiz date.

Writing assignment: an extension may be provided if a documented absence is deemed excusable. Contact your instructor *within two weeks period* from the due date. A different version of the writing assignment may be provided.

The comprehensive list of academic policies that pertain to you in this class and throughout your academic journey is listed here: http://www.utoledo.edu/policies/academic/undergraduate/.

COURSE EXPECTATIONS

1. **Attendance and participation are required for the lecture and recitation classes**
2. Read the book before the lecture, the schedule is listed below
3. You need to come to the recitation class prepared by completing homework end-of-chapter problems. Problems will be listed in lecture and posted on Blackboard. Bring the textbook to the recitation class
4. ALEKS online homework assignments have to be completed before the deadline
5. Exams and quizzes need to be taken on scheduled days

If you need extra help, **email your instructor** at any time. You will not be graded or judged based on the questions that you ask! Seek online help in the **Chemistry Help Center, LEC center** and/or **Supplemental Instruction (SI)** sessions. Links are provided on Blackboard.

OVERVIEW OF COURSE GRADE ASSIGNMENT

Midterm Grading

Midterm grades are assigned on the 8th week of class and are used to assist students with determining their academic standing. Attendance is also recorded during the 8th week to meet state and federal laws regarding financial aid disbursement. Please note, if you are not attending class it could affect your financial aid (scholarships, grants, loans or

Federal Work Study). If you decide you are not going to attend this class (or any other class you have registered for), you must formally withdraw (drop) from the course.

Your midterm grade will be calculated as follows:

Participation points (Recitation + iClicker)	approx. 38 pts
Writing assignment on Blackboard	2 pts
ALEKS homework (objective score completion)	100 pts
Pre-term Quiz on Blackboard	6 pts
Midterm exam in ALEKS	100 pts
TOTAL	approx.246 pts

Recitation grading: students who attend recitation and can show the completed homework at the beginning of class will earn 3 recitation points each week: 1 point for attendance and 2 points for completed homework with all work shown. **iClicker grading:** for each question answered in lecture class, 0.1 point is assigned for any answer, 0.3 point - for correct answer and 0 points - for no response).

Final Grading

Participation points (Recitation + iClicker)	60 pts	8.6%
ALEKS homework	200 pts	28.6%
Writing assignments	20 pts	2.9%
Quizzes on Blackboard (2)	20 pts	2.9%
Midterm exams in ALEKS, 2 @ 100 pts each	200 pts	28.6%
Comprehensive final exam in ALEKS	200 pts	28.6%
TOTAL	700 pts	100%

The final score for ALEKS homework will be calculated according to the following:
Total objective completion score (100% = 100pts) + Pie completion score (100% = 100pts) = 200 pts.
Participation in any **SI session** is worth 1 point, which will be added to the **Participation Points**.

It is a very high priority to your instructor to ensure fairness and equity in all grading aspects of the course. Anyone who has the prerequisites for this course and effectively studies the material can achieve a reasonable level of achievement and therefore an acceptable grade, i.e., a C or above. I don't curve grades, so each of you can achieve the grade you are willing to earn!
Midterm exams will cover the material listed in the schedule below; the final exam is comprehensive and includes all of the material studied in class during the semester. All exams will be conducted online within ALEKS homework system.

Grade Scale: these are the minimum percentages and total number of points needed to receive the indicated grade

A	93% or 651 pts	**A-**	90% or 630 pts		
B+	87% or 609 pts	**B**	83% or 581 pts	**B-**	80% or 560 pts
C+	77% or 539 pts	**C**	73% or 511 pts	**C-**	70% or 490 pts
D+	67% or 469 pts	**D**	63% or 441 pts	**D-**	60% or 420 pts
F	<60% or <420 pts				

A grade of C (73% or 511 pts) or above AND taking the final exam are needed to enter CHEM 1230. If your grade in CHEM 1090 is C- or lower, you must repeat CHEM 1090 before continuing to CHEM 1230.

A course grade of **Incomplete** can be given only to those students who have completed all but a very small percentage of course requirements (usually final exam only) for an acceptable documented reason. The **Incomplete** must be removed before you take CHEM 1230.

UNIVERSITY POLICIES

Policy Statement on Non-Discrimination on the Basis of Disability (ADA)

The University is an equal opportunity educational institution. Please read The University's Policy Statement on Nondiscrimination on the Basis of Disability Americans with Disability Act Compliance.

Academic Accommodations

The University of Toledo embraces the inclusion of students with disabilities. I am committed to ensuring equal opportunity and seamless access for full participation in all courses. For students who have an accommodations memo from Student Disability Services, I invite you to correspond with me as soon as possible so that I can communicate confidentially about implementing accommodations in this course. For students who have not established affiliation with Student Disability Services and are experiencing disability access barriers, or are interested in a referral to healthcare resources for a potential disability, or would like information regarding eligibility for academic accommodations, please contact the Student Disability Services Office (419.530.4981, StudentDisability@utoledo.edu).

Your safety and well-being is very important; please take a minute to review Title IX, the Student Code of Conduct and other policies that apply to you as a student of the University: https://www.utoledo.edu/title-ix/policies.html

ACADEMIC AND SUPPORT SERVICES

Course scheduling assistance: Chemistry Department Secretary Ms. Samples is in the Room BO 2022, telephone 419-530-2698, email: Pamela.Samples@utoledo.edu. If you have further questions or if you need assistance, please talk to her. She takes care of all scheduling changes.

Supplemental Instruction (SI) is a student assistance program offered through First Year Experience support. Advanced students provide several structured study sessions on the material each week. Your participation is optional – though very strongly encouraged. Data indicates this assistance has been very valuable to students. Participation in each SI session is worth 1 participation point, and you can attend as many sessions as you want. All sessions will be conducted online.

Chemistry Help Center is a great place to receive *online* assistance. It is generally open all day Monday through Friday & evenings Monday through Thursday. No appointment is necessary. Follow this link:
https://us.bbcollab.com/guest/80670d8c3ff9469dbb520091a0612503

Online tutoring support for all UT students is available through the **Learning Enhancement Center**.
Please follow this link to view a comprehensive list of Student Academic and Support Services.

Instructor Office Hours Online are times when you can join Blackboard Collaborate with questions about the course material. Our office hour times are listed at the top of the syllabus. *Please send a brief email first.*

SAFETY AND HEALTH SERVICES FOR UT STUDENTS

In addition to the university policies developed to ensure your health and well-being as a student, there are also a number of on and off campus resources available to support you, including a food pantry! Please use the following link to see some additional resources available to you:

Campus Health and Safety Contacts . Link to Food Pantry: http://www.utoledo.edu/studentaffairs/food-pantry/.

SPECIAL COURSE EXPECTATIONS DURING COVID-19 PANDEMIC

This is an unprecedented time for our Rockets community at the University of Toledo. In times of challenge, such as this, we come together to support each other and help keep the more vulnerable members of our community safe during the COVID-19 pandemic. If we all do our part, we will help to minimize the spread of infection and maintain engaging face to face class environments this spring. That is why we are asking all faculty, staff and students to adhere to the special course expectations described below. Please review the policies described below.

Course Attendance

In order to ensure that we self-quarantine if symptomatic, students, faculty and staff must perform a daily health assessment, based on based on **CDC guidelines,** before coming to campus each day, which includes taking your temperature. Students who are symptomatic/sick should **not** come to class and should contact the Main Campus Health Center at 419-530-3451. The University of Toledo has a missed class policy. It is important that you understand the attendance requirements for this course. Please engage with me if you have any questions about these requirements. *Absences due to COVID-19 quarantine or isolation requirements **are** considered excused absences*. You should notify me if you are in quarantine or isolation and these absences may not require written notice.

Face Coverings

To help keep each other safe, everyone must wear face coverings while on campus, except while eating, alone in an enclosed space, or outdoors practicing social distancing. *Students will not be permitted in class without a face covering.* If you have a medical reason that prevents you from wearing a face covering due to a health condition deemed high-risk for COVID-19 by the Centers for Disease Control and Prevention (CDC), you should submit a request for accommodation through the Student Disability Services Office (SDS) by completing this online application. You will need to provide documentation that verifies your health condition or disability and supports the need for accommodations. If you are already affiliated with SDS and would like to request additional accommodations due to the impact of COVID-19, please contact their accessibility specialist to discuss your specific needs.

Social Distancing

As further efforts to keep everyone safe, students should practice social distancing inside and outside the classroom, including when you enter and exit. Please maintain at least 6 feet of distance between yourself and others, follow posted signage, and pay attention to the seating arrangements in the classroom. It's important that you do not remove stickers or tape from seats and/or tables, as they are there to provide guidance on the appropriate classroom capacity based on recommended social distancing between individuals. Please be conscious of your personal space and respectful of the space of others in the class.

Desks and Work Spaces

An important part of keeping our classroom spaces safe involves keeping them sanitized. We ask all students to sanitize their desks and/or work space before class begins, with the sanitizing spray and paper towels provided in the classroom.

Special Note

Although we have developed a gold standard plan for keeping each other safe during COVID-19, it's important to note

that, based on the unpredictability of the virus, things can change at any time. So please be patient and understanding as we move through the semester. If at any point you have any concerns about class, completing course work/assignments, and/or health concerns related to COVID, please let me know right away.

Please also know that we recognize the COVID-19 situation has placed additional burdens on many of our students. If, at any point in the semester, you experience difficulties meeting your basic needs, managing your different responsibilities, or maintaining your physical or mental health, we have a variety of resources that can help. Please review and utilize our Student Success resources and let me know if you have any questions.

COMMUNICATION GUIDELINES

As your instructor, I am here to help, and will do my best to respond to your email quickly. **Please include the course section number in the email subject line.** Students are expected to check their UT email account frequently for important course information. In addition, if you are having difficulty in the course or trouble understanding any aspect of it, please let me know as soon as possible. I would be happy to arrange a time to meet with you virtually if you feel that you have questions that would best be answered in real-time. Please email first to make an appointment. I want you to be successful in this course, so **let's work together!**

Covid-19 pandemic and recent political and social events have caused fear, stress, and pain in many of us. Under these circumstances, it is completely normal to feel overwhelmed or anxious, and to have difficulty concentrating. I have designed this course with these challenges in mind, and I am committed to continuing to work with all of you to create a positive and supportive learning environment throughout the term. If your health, well-being, or school work are being impacted by recent events, I encourage you to contact me and make use of the resources University of Toledo provides, which I have included in this syllabus.

COURSE SCHEDULE

WEEK	DATES	TOPIC	LEARNING OUTCOME(S) (See below)	ALEKS assignments	ASSIGNMENTS DUE
1	1/18-1/24	Introduction; Math prerequisites; Ch.1: Basic Concepts	1-2	Initial assessment (**Â**) due Wed., 1/20; Obj. 1 (Math, Ch.2.2) due Sun., 1/24	Preterm **QUIZ** & WA Intro. Yourself! due Sun., 1/24
2	1/25-1/31	Ch.1: Basic Concepts; Ch.2: Measurement	1-5	Obj. 2 (Math) due Wed., 1/27; Obj. 3 (Ch.1) due Sun., 1/31	We start using iClicker in lecture on 1/26
3	2/1-2/7	Ch.2: Measurement	3-5	Obj. 4 (Ch.1) due Wed., 2/3; Obj. 5 (Ch.2) due Sun., 2/7	
4	2/8-9/14	Ch.3: Atoms and Atomic Masses; Ch.4: Electronic Configuration	5-6	Obj. 6 (Ch.2) due Wed., 2/10; Obj. 7 (Ch.2) due Sun., 2/14	
5	2/15-2/21, no classes on 2/16	Ch.4: Electronic Configuration	7-8	Obj. 8 (Ch.3) due Wed., 2/17; **Â**; Open pie due Sun., 2/21	
6	2/22-2/28, no lecture on 2/25	Ch.4: Electronic Configuration	7-8	Obj. 9 (Ch.4) due Wed., 2/24; Open pie due Sun., 2/28	**EXAM 1 (Ch.1-3, part of 4) is on Thurs., 2/25**

WEEK	DATES	TOPIC	LEARNING OUTCOME(S) (See below)	ALEKS assignments	ASSIGNMENTS DUE
7	3/1-3/7	Ch.4: Electronic Configuration; Ch.5: Chemical Bonding	7-10	Obj. 10 (Ch.4) due Wed., 3/3; Obj. 11 (Ch.4) due Sun., 3/7	
8	3/8-3/14, no classes on 3/10	Ch.5: Chemical Bonding	9-10	No ALEKS due Wed., 3/10; Obj. 12 (Ch.5) due Sun., 3/14	**Extra credit mini-EXAM is on Mon., 3/8**
9	3/15-3/21	Ch.5: Chemical Bonding; Ch.6: Nomenclature	9-10	Obj. 13 (Ch.5) due Wed., 3/17; Obj. 14 (Ch.5) due Sun., 3/21	
10	3/22-3/28	Ch.6: Nomenclature; Ch.7: Formula Calculations	5, 9	Obj. 15 (Ch.6) due Wed., 3/24; Obj. 16 (Ch.6) due Sun., 3/28	**Nomenclature QUIZ due Sun., 3/28**
11	3/29-4/4	Ch.7: Formula Calculations; Ch.8: Chemical Reactions	5, 11	Obj. 17 (Ch.7) due Wed., 3/31; Obj. 18 (Ch.7) due Sun., 4/4; **Â**	
12	4/5-4/11, no lecture on 4/8	Ch.8: Chemical Reactions	11	Open pie due Wed., 4/7; Obj. 19 (Ch.8) due Sun., 4/11	**EXAM 2** (Ch.1-7) is on Thurs., 4/8
13	4/12-4/18	Ch.8: Chemical Reactions; Ch.9: Net Ionic Equations	11-12	Obj. 20 (Ch.8) due Wed., 4/14; Obj. 21 (Ch.8) due Sun., 4/18	
14	4/19-4/25	Ch.9: Net Ionic Equations; Ch.10: Stoichiometry	5, 12	Obj. 22 (Ch.8-9) due Wed., 4/21; Obj. 23 (Ch.10) due Sun., 4/25; **Â**	**Writing Assignment** (Ch.8-9) due Fri., 4/23
15	4/26-5/2, no classes on 4/29	Ch.10: Stoichiometry	5	Obj. 24 (Ch.10) due Wed., 4/28	
16	5/3-5/9	Final week	1-12	Open pie due Wed., 5/5	**FINAL EXAM (Ch. 1-10)** is on Tues., 5/4

Â is an ALEKS assessment

All assignments are **due midnight** unless your instructor told otherwise

Make sure that your travel and employment plans do not conflict with this schedule!

STUDENT LEARNING OUTCOMES

Upon completion of this course, the student will be able to:

1. Classify matter into types
2. Write the symbols and names for common elements
3. Use dimensional analysis to do unit conversions and solve problems that use exponential notation
4. Use the correct number of digits to indicate the precision of a measurement or a calculated result
5. Solve problems that use density, mass, volume, temperature, energy, wavelength, moles, atomic and molar masses, percent composition, the empirical and molecular formulas, including stoichiometry problems
6. Explain the atomic structure using subatomic particles
7. Write full and abbreviated electron configurations for the elements; identify shell, subshell, and orbitals using quantum numbers
8. Draw energy diagrams for atoms and ions
9. Interpret and write the chemical formulas and names of ionic and covalent compounds

10. Draw electron dot (Lewis) diagrams for atoms and molecules
11. Balance chemical equations and predict the products of the reaction
12. Write net ionic equations for reactions in aqueous solution and to interpret such equations