Elementary Chemistry
The University of Toledo
College of Natural Sciences and Mathematics
Department of Chemistry and Biochemistry
Chem1090 – 901 DL

Instructor: Dr. Elizabeth Zhurova
Email: Elizabeth.Zhurova@utoledo.edu
Office Hours: TR 3:30-5:00PM, W – 3:00-5:00PM & by appointment
Office Location: BO 2096G

Office Phone: 419-530-4087
Term: Spring 2018
Class Location: Online - DL
Credit Hours: 3

COURSE/CATALOG 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).

STUDENT LEARNING OUTCOMES
Upon completion of this course, the student will be able to:
1. Classify matter into types
2. Use properties to help identify substances
3. Write the symbols and names for common elements
4. Use dimensional analysis to do unit conversions and solve problems that use exponential notation
5. Use the correct number of digits to indicate the precision of a measurement or a calculated result
6. Solve problems that use density, mass, volume, temperature, energy, wavelength, moles, and other common units, including stoichiometry problems
7. Identify subatomic particles to explain atomic structure
8. Calculate the atomic mass of any element
9. Use quantum numbers to write electronic structures of the atoms in their most stable states
10. Write full and abbreviated electron configurations for the elements
11. Identify shell, subshell, and orbitals and use them to explain electronic configurations
12. Draw energy diagrams for atoms and ions
13. Interpret and write the chemical formulas and names of ionic and covalent compounds
14. Draw electron dot diagrams for atoms and molecules
15. Calculate formula mass
16. Calculate the percent composition by mass from the formula of a compound, determine the empirical and molecular formulas
17. Balance chemical equations and predict the products of the reaction
18. Write net ionic equations for reactions in aqueous solution and to interpret such equations
19. Define molarity and use it to determine the concentration, or the number of moles present in solution
TEACHING STRATEGIES
The TEXTBOOK is an important part of this course. You need to read the sections from the book assigned by the instructor.

LECTURES are designed to clarify the concepts covered and provide examples of what is expected of you. Lecture sessions are recorded in the classroom, and video files are posted on Blackboard.

POWERPOINT Lecture Slides are useful to quickly clarify or check the concept or problem solution. PDF-files of lecture slides are posted on Blackboard.

ALEKS (Assessment and LEarning in Knowledge Spaces) 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 and assessments have deadlines. Make-ups for missed or late assignments or assessments will not be allowed. Please refer to ALEKS privacy policies at https://www.mheducation.com/privacy.html

PREREQUISITES AND COREQUISITES
One of the following: MATH1200 minimum grade of C; MATH1320 minimum grade of C; MATH1340 minimum grade of C; MATH1750 minimum grade of C; MATH1830 minimum grade of C; MATH1850 minimum grade of C; ACT Math 20; ALEKS Math Placement Test 046; Math – Coll. Algebra Placement 10

TECHNICAL SKILLS
To succeed in this course, it will be important for learners to possess the following technical skills:
1. Rename, delete, organize, and save files.
2. Create, edit, and format word processing and presentation documents.
3. Copy, paste, and use a URL or web address.
4. Download and install programs and plug-ins.
5. Send and receive email with attachments.
6. Locate and access information using a web search engine.
7. Use chat or IM software for real-time communication.
8. Use a learning management system (Blackboard).

REQUIRED TEXTS AND ANCILLARY MATERIALS
2. ALEKS online homework registration code
3. Non-programmable, non-graphical scientific calculator
TECHNOLOGY REQUIREMENTS

Browser Check Page
Students need to have access to a properly functioning computer throughout the semester. The Browser Check Page 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 downloading information and completing online 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.

UNIVERSITY POLICIES
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 is committed to providing equal access to education for all students. If you have a documented disability or you believe you have a disability and would like information regarding academic accommodations/adjustments in this course, please contact the Student Disability Services Office.
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 sign the statement before the midterm exam.

**Examination Policy**: Midterm and final exams have to be taken on the scheduled dates at **UT campus**. 

*In the case of conflict, you must:*

1) **Inform your instructor within the first two weeks of the semester**

2) With the instructor’s permission, take exam in the Testing Center (FH1080 at UT Main campus) **on the scheduled day**

3) In the case of long distance, arrange for a proctored exam at a close location **on the scheduled day**. Inform your instructor as soon as possible. The following form http://www.utdl.edu/lv/proctor/student.php has to be completed within the first two weeks of the class, and the Department of Learning Ventures will assist you in arrangement for off-site proctored exam. It is solely your responsibility to arrange for a proctored exam on the scheduled day, including possible extra costs.

**Excused absences:**

1) **UT athletes** and other students travelling on **official UT business** must provide **written** documentation to verify the conflict. Exam will be given at another arranged time before the exam day.

2) Students who do not 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. The exam will be also given at another arranged time. **Failing to take the exam on the scheduled day** without a documented excuse listed above will result in the **zero grade** for that exam.

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; these items may be confiscated during and for the duration of the exam.

**COURSE EXPECTATIONS**

You are required to work **regularly 6-9 hours per week** throughout the semester. **All assignments have deadlines**. The work includes:

a) Reading the book and watching the recorded lectures using provided lecture notes as a reference;

b) Complete online homework (**ALEKS**) including assessments;

c) Take the midterm and final proctored exams on paper at **UT campus** (you have to make arrangements in the case of a conflict).
If you need extra help, see your instructor during her office hours or email her at any time. You will not be graded or judged based on the questions that you ask! Seek help in the Chemistry Help Center (BO2043) if you are on campus.

**GRADING**

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 every one of you can achieve the grade you are willing to earn!

**Course points:**

<table>
<thead>
<tr>
<th>Course Points</th>
<th>Points</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALEKS homework</td>
<td>200pts</td>
<td>35%</td>
</tr>
<tr>
<td>Midterm exam</td>
<td>150pts</td>
<td>26%</td>
</tr>
<tr>
<td>Comprehensive final exam</td>
<td>200pts</td>
<td>35%</td>
</tr>
<tr>
<td>Writing assignment</td>
<td>20pts</td>
<td>4%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>570pts</td>
<td>100%</td>
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</tbody>
</table>

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. For the midterm grade, only the Total objective completion score will be used (100 pts).

Midterm exam 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. Both exams consist of combined multiple choice questions and hand-written answers and calculations.

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

<table>
<thead>
<tr>
<th>Grade</th>
<th>Minimum Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>88%</td>
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<tr>
<td>A-</td>
<td>85%</td>
</tr>
<tr>
<td>B+</td>
<td>82%</td>
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<tr>
<td>B</td>
<td>79%</td>
</tr>
<tr>
<td>B-</td>
<td>76%</td>
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<tr>
<td>C+</td>
<td>73%</td>
</tr>
<tr>
<td>C</td>
<td>70%</td>
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<tr>
<td>C-</td>
<td>67%</td>
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<tr>
<td>D+</td>
<td>63%</td>
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<tr>
<td>D</td>
<td>59%</td>
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<tr>
<td>D-</td>
<td>55%</td>
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</table>

F <55%

A grade of C (70% or 399 pts) or above AND attendance at 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 who have completed all but a very small percentage of course requirements for an acceptable reason. The **Incomplete** must be removed before you take CHEM 1230.
COMMUNICATION GUIDELINES
As your instructor, I am here to help, and will do my best to respond to email within 24 hours. **You must 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.

Netiquette:
It is important to be courteous and civil when communicating with others. Students taking online courses are subject to the communication regulations outlined in the Student Handbook. To ensure your success when communicating online, take time to familiarize yourself with the “dos" and "don'ts" Internet etiquette at [https://www.utoledo.edu/dl/students/netiquette.html](https://www.utoledo.edu/dl/students/netiquette.html).

STUDENT SUPPORT SERVICES
Course scheduling assistance: Chemistry Department Secretary, Ms. Samples, is in 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.

**Chemistry Help Center, Room BO 2043** is a great place to receive assistance. It is generally open all day Monday through Friday & evenings Monday through Thursday. No appointment is necessary. **Tutoring support** for all UT students is available through the **Learning Enhancement Center** located in the Carlson Library.

COURSE SCHEDULE

<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Text and/or Lecture Topic</th>
<th>Text Chapter</th>
<th>ALEKS</th>
<th>Additional Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1/15-1/21</td>
<td>Introduction</td>
<td></td>
<td>Initial assessment (Â)</td>
<td>Preterm quiz on Bb due Sunday, 1/21/2018</td>
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<td></td>
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<td></td>
<td>Objective 1 (Math, Ch.2.2)</td>
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<tr>
<td>2</td>
<td>1/22-1/28</td>
<td>Basic Concepts</td>
<td>1</td>
<td>Objective 2 (Ch. 1)</td>
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<tr>
<td>3</td>
<td>1/29-2/4</td>
<td>Measurement</td>
<td>2</td>
<td>Objective 3 (Ch. 2.1, 2.3-2.6), Â</td>
<td>Last day to drop: Tuesday, 1/30/2018</td>
</tr>
<tr>
<td>4</td>
<td>2/5-2/11</td>
<td>Atoms and Atomic Masses</td>
<td>3</td>
<td>Objective 4 (Ch. 3)</td>
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<tr>
<td>5</td>
<td>2/12-2/18</td>
<td>Electronic Configuration</td>
<td>4</td>
<td>Objective 5 (Ch. 4.1-4.3)</td>
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<tr>
<td>6</td>
<td>2/19-2/25</td>
<td>Electronic Configuration</td>
<td>4</td>
<td>Objective 6 (Ch. 4.3-4.8), Â</td>
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<tr>
<td>7</td>
<td>2/26-3/4</td>
<td>Chemical Bonding</td>
<td>5</td>
<td>Objective 7 (Ch. 5)</td>
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<tr>
<td>8</td>
<td>3/5-3/11</td>
<td>Spring break – no classes</td>
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<tr>
<td>8</td>
<td>3/12-3/18</td>
<td>Nomenclature</td>
<td>6</td>
<td>Objective 8 (Ch. 6), Â</td>
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<tr>
<td>Week</td>
<td>Date</td>
<td>Event details</td>
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<td>9</td>
<td>Wed., 3/21</td>
<td>Midterm exam (Chapters 1-6), 5:00-6:30 PM, room - TBA</td>
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<td></td>
<td>3/19-3/25</td>
<td>Formula Calculations 7 Objective 9 (Ch. 7.1, 7.3)</td>
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<tr>
<td>10</td>
<td>3/26-4/1</td>
<td>Formula Calculations 7 Objective 10 (Ch. 7.2, 7.4-7.5) Last day to Withdraw:</td>
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<td></td>
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<td>Sunday, 3/30/2018 Friday, 3/30/2018</td>
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<td>Sunday, 4/1 - Ch. 7 extra credit assignment due</td>
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<tr>
<td>11</td>
<td>4/2-4/8</td>
<td>Chemical Reactions 8 Objective 11 (Ch. 8.1-8.3), Â</td>
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<tr>
<td>12</td>
<td>4/9-4/15</td>
<td>Chemical Reactions, Net ionic Equations 8, 9 Objective 12 (Ch. 8.3-8.4, Ch. 9)</td>
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<td>Sunday, 4/15 – Ch. 8-9 writing assignment due</td>
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<tr>
<td>13</td>
<td>4/16-4/22</td>
<td>Stoichiometry 10 Objective 13 (Ch. 10.1-10.2)</td>
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<tr>
<td>14</td>
<td>4/23-4/29</td>
<td>Stoichiometry 10 Objective 14 (Ch. 10.4-10.5), Â</td>
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<td>Sunday, 4/29 – Ch. 10 extra credit assignment due</td>
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<tr>
<td>15</td>
<td>Wed., 5/2</td>
<td>ALEKS pie due</td>
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<tr>
<td>15</td>
<td>Thurs., 5/3</td>
<td>Comprehensive Final Exam, 5:00-7:00 PM in WO 1201</td>
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Â is an ALEKS assessment

MAKE SURE THAT YOUR TRAVEL AND EMPLOYMENT PLANS DO NOT CONFLICT WITH THIS SCHEDULE!

WELCOME! I look forward to engaging and learning with you throughout the semester!