Who Am I?
I am Dr. Barbara Gonzalez, a chemistry education researcher, specializing in the impact of visualization on chemical literacy. My latest research explores how formal and informal authentic research experiences affect persistence to degree and the development of a workforce in STEM. I have taught CHEM115 and CHEM120A many times. I care about student success. You are welcome to contact me if you have any questions or problem with regard to this course, participation in a research experience, and your future career. I look forward to getting to know you this semester.

Why Is This Course Important and Relevant to YOU?
A basic knowledge of chemistry is crucial to all scientists and those entering the health professions. Furthermore, in the high-tech world in which we live, we must make decisions that require a basic understanding of chemistry and science. This course is for students with limited background in chemistry who plan to take additional chemistry or other science courses. It does not fulfill chemistry requirements for majors or minors. It does not fulfill general education requirements.

RESPONSE TIME:
Instructor will respond to questions by email or telephone call within 24 hours, except during weekends.

COURSE COMMUNICATION:
All course announcements and individual emails are sent through TITANium, which only uses CSUF email accounts. Therefore, you MUST check your CSUF email on a regular basis, at least daily, for the duration of the course.

PREREQUISITES:
Completion of high school chemistry and intermediate algebra courses.

COURSE DESCRIPTION:
This course covers the following topics: stoichiometry, chemical structure, bonding, and reactivity of molecules, atomic structure, and inter-atomic and inter-molecular interactions.
The teaching staff has two overarching goals with respect to your intellectual development:

1. Development of your procedural knowledge. In other words, we will work to help you with the development of your ability to think, specifically with respect to those thinking patterns commonly used by scientists. Chemists often use skills such as mathematical pattern
recognition and the development and manipulation of mental models of particulate-level phenomena. Students are assumed to possess fundamental algebraic skills, as our job is to help you link algebra and general chemistry.

2. **Development of your content knowledge.** This is knowledge of facts, theories, laws, and other information associated with chemistry.

**COURSE OBJECTIVES:**
The objectives for this course are the following:

1. To understand how the properties of and interactions among atoms and molecules at the particulate level relate to observations made at the macroscopic level.
2. To apply chemical concepts to solve word problems.
3. To develop models to visualize chemistry concepts.
4. To communicate with peers using the language of chemistry.

**STUDENT LEARNING GOALS:**
Students will know and be able to:

1. Express direct and derived measurements using SI units, standard scientific notation, and the appropriate number of significant figures.
2. Recall and explain the subatomic structure of the atom in the Bohr and quantum mechanical models.
3. Relate the physical and chemical properties of the elements to their arrangements on the Periodic Table.
4. Represent ionic and covalent bonds with Lewis structures and determine molecular geometry.
5. Differentiate the macroscopic and particulate characteristics of solids, liquid, and gases.
6. Recognize and distinguish the reactives of composition, decomposition, single replacement, ionic, acid-base, and oxidation-reduction reactions.
7. Solve stoichiometry problems through application of the mole concept.
8. Prepare standard solutions of given concentrations and interpret medicinal dosage.
9. Define and describe the common types of radioactivity and how radioactivity is applied as a tool in medical diagnosis.

**REQUIRED TEXT:**
The Chemistry Libretexts for, Tro, Nivaldo J., *Introductory Chemistry*, Pearson Prentice Hall, 3rd edition. Text will be provided free online. The link is posted on TITANium.

**OTHER REQUIRED MATERIALS:**
Sapling Learning online homework system. The link is posted on TITANium
A nonprogrammable, single-line display, scientific calculator. You may **not** use a programmable calculator or one that displays more than one line of information for exams in this course.
A 12-in/30-cm English-Metric Ruler

**RECOMMENDED MATERIALS:**
*Molecular Model Set for General and Organic Chemistry* for three-dimensional visualization.

**COURSE FORMAT:**
The course is offered on the Web with in class requirements for exams. Exams are scheduled on Thursdays February 15, March 15, April 19, and May 3, 2018, 4:00-6:00 PM in MHS87. The final exam is
also administered on campus at 4:00 PM in MH587 on May 17, 2018. The time and room for all exams will be posted on TITANium.

**COURSE EVALUATION:**
Evaluation for the purpose of establishing a course grade is based on a maximum of 1000 Points weighted in the categories below:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weightage</th>
<th>Points</th>
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</thead>
<tbody>
<tr>
<td>Midterm Examinations</td>
<td>50%</td>
<td>500</td>
</tr>
<tr>
<td>Final Examinations</td>
<td>25%</td>
<td>250</td>
</tr>
<tr>
<td>Quizzes</td>
<td>15%</td>
<td>150</td>
</tr>
<tr>
<td>Activity - Homework</td>
<td>10%</td>
<td>100</td>
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<tr>
<td><strong>TOTAL POINTS</strong></td>
<td></td>
<td><strong>1000</strong></td>
</tr>
</tbody>
</table>

Description of each component of the course evaluation:

1. **Midterms:** Four midterm exams are administered on campus on dates, times and room specified on the calendar on TITANium. Each midterm exam is comprehensive, covering all material in the course to that date. Exams consist of quantitative and qualitative sections that include problems, short written responses/explanations, multiple choice, matching, and true-false items. If you miss one midterm exam, your final exam score will automatically replace that score. Pens, pencils, erasers, highlighters, and scientific non-programmable calculators are the only permissible items you may use during exams.

2. **Final Exam:** The final exam is cumulative and administered according to the published university schedule; Thursday, May 17, 2018. The final exam is mandatory. Contact Dr. Gonzalez immediately, if circumstances beyond your control affect your presence for the final exam.

3. **Quizzes:** Quizzes are given online on dates specified on the calendar. Questions on the quizzes will be drawn from material covered during class and homework exercises. Each quiz is graded on a twenty-point scale. The three best quiz scores count for the final grade in the course.

4. **Activity – Homework:** Activity assignments are embedded online on TITANium. They include short diagnostic items, short essay explanations, and problems. Sapling Learning is the system for online homework. You must register for an account from Sapling to complete the weekly assignments. **The lowest three homework assignments will be dropped.**

**Class Format:**
This class is taught in an online interactive learning mode and requires students to be active and attentive participants, and cooperative partners. Completion of embedded activities and scheduled quizzes will help to determine your participation. Virtual office hours will be conducted weekly by means of Zoom software. All students are welcome to participate in virtual office hours. Office hours will be recorded and posted on TITANium.

**Make Up Policy**
No make up exams, quizzes, online homework, activities, or extra credit will be given.

**GRADING STANDARDS AND CRITERIA:**
In this course, the plus/minus system will be used. The grade breakdown is as follows:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Weighted Total Percent Range</th>
<th>Weighted Total Points Range</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>85.0% - 100.0%</td>
<td>950 - 1000</td>
<td>Outstanding</td>
</tr>
<tr>
<td>B</td>
<td>70.0% - 84.9%</td>
<td>900 – 949</td>
<td>Good</td>
</tr>
<tr>
<td>C</td>
<td>55.0% - 69.9%</td>
<td>875 – 899</td>
<td>Satisfactory</td>
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<tr>
<td>D</td>
<td>40.0% - 54.94%</td>
<td>850 – 874</td>
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<tr>
<td>F</td>
<td>0.00% - 39.9%</td>
<td>775 – 849</td>
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TECHNICAL REQUIREMENTS:
Students are expected to:
Have basic computer competency, which includes:
1. Have ongoing, reliable access to a computer with Internet connectivity for regular course assignments
2. Use MicroSoft® Office 2013 (for P.C.) or 2011 (for Mac) including Word, PowerPoint, and Excel to learn content and communicate with colleagues and faculty; have the ability to regularly print assignments
3. Maintain and access their CSUF student email account regularly
4. Use Internet search and retrieval skills to complete assignment
5. Apply his/her educational technology skills to complete expected competencies
6. Utilize other software applications as course requirements dictate
7. Utilize Titanium to access course materials and complete assignment

Software for Students:
Free and low-cost software downloads and request forms are available for active CSUF students on the CSUF Student Software website.

UNIVERSITY INFORMATION:
TITANium
All registered CSUF students are enrolled in TITANium. Access TITANium for all classes by clicking on the Student Portal found on the CSUF website. A short video explains TITANium access. Contact the Student Help Desk for help with technical problems by telephone at (657) 278-8888 or email at StudentITHelpDesk@fullerton.edu.

Drops
February 5th is the last day to drop using TITAN without a grade of W.
After February 5th, you have made the decision to stay in the course until the end. After this date, you must have documented justification of a circumstance beyond your control to withdraw from the course. Here are the guidelines on what the CSUF Admissions office regards as appropriate verification:
Authorization to withdraw after the second week of classes shall be granted for only the most serious and compelling reasons, e.g. a documented physical, medical, emotional, or other condition which has the effect of limiting the student’s full participation in the class. Poor academic performance, e.g. lack of effort or poor attendance is not evidence of a serious reason for withdrawal.
If this is the case, submit your completed withdraw petition and a copy of the documentation to the instructor immediately before or after class. The final deadline to drop the course in April 20, 2018.

Students with Special Needs:
Please inform the instructor during the first week of classes about any disability or special needs that you may have that may require specific arrangements related to attending class sessions, carrying out class assignments, or writing papers or examinations. According to California State University policy, students with disabilities must document their disabilities at the Disability Support Services (DSS) Office in order to be accommodated in their courses. Additional information can be found at the DSS website, by calling 657-278-3112 or email dsservices@fullerton.edu.

Academic Dishonesty Policy:
Academic dishonesty includes such things cheating, inventing false information or citations, plagiarism, and helping someone else commit an act of academic dishonesty. It usually involves an attempt by a student to show a possession of a level of knowledge or skill, which he/she in fact does not possess.
Cheating is defined as the act of obtaining or attempting to obtain credit for work by the use of any dishonest, deceptive, fraudulent, or unauthorized means. Plagiarism is defined as the act of taking the work of another and offering it as one’s own without giving credit to that source. An instructor who believes that an act of academic dishonesty has occurred (1) is obligated to discuss the matter with the student(s) involved; (2) should possess reasonable evidence such as documents or personal observation; and (3) may take whatever action (subject to student appeal) he/she deems appropriate, ranging from an oral reprimand to an F in the course. Additional information on this policy is available from University Policy Statement 300.021.

Library Support:
The Pollak Library has many services to offer students. Assistance available for online students includes online instruction guidelines available on the library website.

University Learning Center:
The goal of the University Learning Center is to provide all CSUF students with academic support in an inviting and contemporary environment. The staff of the University Learning Center will assist students with their academic assignments, general study skills, and computer user needs. The ULC staff work with all students from diverse backgrounds in most undergraduate general education courses including those in science and math; humanities and social sciences; as well as other subjects. They offer one-to-one peer tutoring, online writing review, and many more services. More information can be found on the University Learning Center website.

Emergency Preparedness:
To be able to respond effectively in an emergency, be sure to note (a) fire alarm pull station locations, (b) evacuation map including the class’s outside meeting area, (c) emergency procedures for fire, medical emergency, hazardous materials release, earthquake and dangerous situations, and (d) location of nearest emergency phone. Any person with special needs is encouraged to speak with the instructor privately. All campus personnel are required to participate in all campus-wide drills. More emergency preparedness information can be found at the Classroom Preparedness website. The emergency procedures (c above) that you need to follow in our class are detailed in the classroom guide at the end of this syllabus.

If an emergency disrupts normal campus operations or causes the University to close for a prolonged period of time (more than three days), students are expected to complete the course assignments listed on the syllabus as soon as it is reasonably possible to do so.

CLASSROOM EMERGENCY PREPAREDNESS GUIDE:
Information provided by the University Police Emergency Management Coordinator

EMERGENCY PREPAREDNESS – CHEM 120A General Chemistry
On the first day of every semester:

- Know the emergency exits and evacuation areas for every classroom.
- Devise "buddy systems" so that everyone is accounted for in an evacuation.
- Evaluate the challenges that you might face during an evacuation and speak with your instructor.
- Add the CSUF Emergency Information number – 877-278-1712 – to your cell phone to hear recorded information regarding campus conditions or closure.
- Personal Preparation website

Emergency Communication
Campus emergency communication is done via a voice message, text and/or an email. Go to your Portal to review your contact information. A guide to update your personal information
Evacuations – Drills or Reality

- You may not know if this is a drill or not, so take every call to evacuate seriously.
- Take your personal belongings and immediately leave the building.
- Know where the evacuation area is for every building. A map of all campus evacuation areas
- Re-enter buildings only when directed by Building Marshals or other campus authority.
- Leave the campus only if instructed.

For this class, the closest two exits are: one front door, one back door

We will meet at: MH-587

Earthquake
As soon as you feel shaking, DROP, COVER and HOLD ON: Immediately seek shelter (under a desk or table) cover your head and hold on. Evacuate if directed, or you feel it is safe to do so.

Fire
- When you see smoke or fire, immediately evacuate the building.
- If not already activated, pull the fire alarm switch to alert others of the situation.
- Use a fire extinguisher only if you know how to use it and the fire is small.

Shelter in Place or Dangerous Situation
- If directed, or you feel it is best to do so, seek shelter in a room with a lock.
- Turn off the lights and silence all cell phones.
- Hide as best as possible until the all clear signal has been given by authorities.
- If possible, move away from the dangerous situation as fast as you can.
- If you cannot safely hide or escape, be prepared to take action to protect yourself.
- See some helpful videos on sheltering in place

When you need help Immediately or to report a dangerous situation, CALL 911.
University Police non-emergency line: (657) 278-2515

For more information
Ask your instructor, or go to Campus Preparedness website
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<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Chapter</th>
<th>Quiz #</th>
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<tbody>
<tr>
<td></td>
<td><strong>Spring 2018 CHEM 115 Schedule</strong></td>
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<td></td>
<td><strong>Date</strong></td>
<td><strong>Topic</strong></td>
<td><strong>Chapter</strong></td>
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<tr>
<td>Week 1</td>
<td>Introduction/Expectations</td>
<td>1</td>
<td></td>
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<tr>
<td></td>
<td>Measurements and Problem Solving</td>
<td>2</td>
<td></td>
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<tr>
<td>Week 2</td>
<td>Measurements and Problem Solving</td>
<td>2</td>
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<td></td>
<td>Matter and Elements</td>
<td>3</td>
<td>1</td>
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<tr>
<td>Week 3</td>
<td>Matter and Elements</td>
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<td>Atoms and Elements</td>
<td>4</td>
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<tr>
<td>Week 4</td>
<td>Atoms and Elements</td>
<td>4</td>
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<td></td>
<td><strong>EXAM 1 February 15, 2018, 4:00-6:00 PM MH587</strong></td>
<td>Ch. 1 - 3</td>
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<tr>
<td>Week 5</td>
<td>Molecules and Compounds</td>
<td>5</td>
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<tr>
<td>Week 6</td>
<td>Chemical Compounds</td>
<td>6</td>
<td>2</td>
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<tr>
<td>Week 7</td>
<td>Chemical Reactions</td>
<td>7</td>
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<tr>
<td>Week 8</td>
<td>Quantities in Chemical Reactions</td>
<td>8</td>
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<td></td>
<td><strong>EXAM 2 March 15, 2018, 4:00-6:00 PM MH587</strong></td>
<td>Ch. 1 - 6</td>
<td></td>
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<tr>
<td>Week 9</td>
<td>Quantities in Chemical Reactions</td>
<td>8</td>
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<td></td>
<td>Electrons in Atoms and the Periodic Table</td>
<td>9</td>
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<td><strong>SPRING RECESS March 26-30, 2018</strong></td>
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<td>Week 10</td>
<td>Electrons in Atoms and the Periodic Table</td>
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<td>3</td>
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<tr>
<td></td>
<td>Chemical Bonding</td>
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<tr>
<td>Week 11</td>
<td>Chemical Bonding</td>
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<td></td>
<td>Gases</td>
<td>11</td>
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<tr>
<td>Week 12</td>
<td><strong>EXAM 3 April 19, 2018, 4:00-6:00 PM MH587</strong></td>
<td>Ch. 1 - 10</td>
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<td></td>
<td>Gases</td>
<td>11</td>
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<tr>
<td>Week 13</td>
<td>Liquid and Intermolecular Forces</td>
<td>12</td>
<td>4</td>
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<tr>
<td>Week 14</td>
<td>Solutions</td>
<td>13</td>
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<td></td>
<td><strong>EXAM 4 May 3, 2018, 4:00-6:00 PM MH587</strong></td>
<td>Ch. 1 - 12</td>
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<td>Week 15</td>
<td>Solutions</td>
<td>13</td>
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<td>Review</td>
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<tr>
<td>05/17/18</td>
<td><strong>FINAL EXAM</strong></td>
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<td></td>
<td>May 17, 2018, 4:00 – 6:00 PM MH587</td>
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Remember, YOU are the most important factor in your academic success; incorporate at least 25-35 hours of studying/homework per week. Learn about productive study tips and the academic resources available to assist students at Student Success Central

www.fullerton.edu/ssc/success_programs/index.php
How To be Successful in CHEM115:

1) **Read the on-line textbook.** At the very least SCAN the appropriate section BEFORE coming to lecture.

2) **Complete all online modules.** Remember that this requires a minimum five hours of your time each week.

3) **Ask questions!** There are no bad / stupid questions! Critical listening, critical thinking, and active involvement will increase your understanding and retention. Submit questions by email, discussion post, or during Zoom office hour sessions.

4) **Form study groups.** I encourage all of you to work together on the homework and on reviewing the course material. Although you may discuss how to do the problems together and compare answers, each student must do all the assigned problems individually, because no collaboration is allowed in the exams! (You may look up for inspiration, down in desperation, but not side to side for information.)

5) **Recopy your notes.** Topics that make sense when you’re following along in lecture may not make sense a week later when you’re studying for an exam. Recopy the material when it is fresh in your mind AND ask questions on topics that don’t make sense.

6) **Participate in virtual office hours.** Students who frequently attend my office hours earn higher grades in the class. It is another chance to get a better understanding of the material and get your personal questions addressed. You are welcome to come to my in person office hours, too.

7) **Do as many problems as possible.** It is not enough to be able to follow along with a sample worked problem. It’s like looking at a solution and thinking ‘that makes sense.’ You must figure out how to do them on your own as well. Many of the online homework problems are tutorials. These will help you learn. But, you must think while you work!!! Ask yourself … Why am I doing this step? Does this make sense?

8) **Check the solutions** to quizzes and midterm exams that will be posted on Titanium. ALWAYS check the solutions, and rework problems that you did not understand WITHOUT the solutions to make sure you understand how to do the homework and exams.

9) **Chemistry / Library Computer Room.** The computers will be especially helpful in doing homework problems and the chemistry tutorials will help you review material you need to know for this class.

10) **You Tube and the Internet.** If you need additional help with concepts and problems, there are many wonderful sites that have videos, simulations, animations and visualizations to help you learn chemistry. Share the ones you prefer with all of us.

11) **Use what works for you.** Draw a picture, sing a song, write a poem. If it works for you it could work for someone else too . . . share your “trick”! (I’d love to hear them.)