

Southeastern Louisiana University - Dept of Chemistry and Physics (985-549-2159)

Dual Enrollment Chemistry 101 for Fall 2020

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Prerequisites: This course is for 11th and 12th graders with a GPA of at least 2.5, a composite ACT of 19 or greater AND a math ACT sub-score of 19 or greater; graduating seniors must also have at least an English ACT sub-score of 18. **Due to the lack of standardized test during Spring 2020 and Covid-19 pandemic, students may enroll based on "Counselor Recommendation."** (Full details are listed in the 2020-21 Dual Enrollment eligibility guidelines).

Course Transferability: It is incumbent upon all students and parents to determine the transferability of Dual Enrollment courses to other institutions. For in-state institutions, Southeastern courses can be cross-referenced using the Statewide Articulation Matrix to determine transferability (<https://regents.la.gov/master-course-articulation>). Out-of-state institutions should be consulted to determine transferability.

Course Requirements:

- A rental textbook will be provided for you: Introductory Chemistry, 5th edition, by Nivaldo Tro. It must be returned in good shape by the end of your grading semester or you will need to purchase it (approx. \$222).
- You must have a scientific calculator with scientific notation, $\sqrt{\quad}$, & log (like TI-30IIX) and bring it to every class and test.
- You will need to enroll in chem101 digital learning (access given by instructor) to obtain access to the online homework assignments which are part of your grade.
- You must login into moodlede.selu.edu and validate this syllabus **and** the course policies to notify that you have received and read this syllabus.

Homework:

- Homework is found online at chem101 digital learning (www.101edu.co). You need not complete each homework in one sitting. You will spend class time working on the 12 chapter homeworks; you may need to spend time at home to finish the assignments; you will have a few attempts to answer each homework question correctly. You must complete each homework before the due date.
- At the end of the course, the lowest homework grade will be dropped. The average of the best 11 homework assignments is worth 25% of course grade.

Tests and Final Exam: (also see Testing Policy)

- There are 3 tests and 1 final exam, 100 points each:
Chem 101: **Test 1** – Ch 1 – 4* **Test 2** – Ch 5 – 8* **Test 3** – Ch 9-12* **Final:** Ch 1-12
**unless your teacher has chosen to teach the chapters in a different order than the text*
- You will have 50 minutes each for tests, and 120 minutes for the final exam.
- Tests & the final are composed of 20-30 questions (multiple choice or numeric entry). All students will be asked equivalent, but not the same, questions.
- A missed test or final exam must be made up within 2 days (unless prior approval of an extension is granted for extenuating circumstances) or you will receive a zero.
- At the end of the course, the lowest test grade will be dropped. (One missed test score can therefore be dropped)
- The remaining two tests and the final exam are each worth 25% of course grade.

Grading:

Your 2 best tests, your homework average and your final exam scores will be averaged to calculate your grade (each is $\frac{1}{4}$ of your grade).

You will receive 3 credits if you earn an A (>90%), B (>80%), or a C (>70%).

You will receive no college credits if you earn a D (>60%) or an F (<60%).

You can withdraw from the course prior to the deadline, receive a "W" grade and no credit.

Testing Policy

All testing will be done in class, under strict supervision, following guidelines set forth by the Southeastern Louisiana University Chemistry Department. Students are expected to maintain the highest standards of academic integrity. Behavior that violates these standards is not acceptable. Actions that violate our standards of academic integrity include, but are not limited to, the following: use of unauthorized material, use of any website other than MoodleDE.selu.edu, communication with fellow students and/or other individuals during an examination, attempting to benefit from the work of another student, and any similar behavior that defeats the intent of an examination or other class work. Cheating on examinations and plagiarism are considered very serious offenses and shall be grounds for disciplinary action as outlined in Southeastern Louisiana University's current General Catalogue. (http://www.southeastern.edu/resources/policies/policy_detail/acad_integrity.html)

TESTING RULES: Southeastern Louisiana University Chemistry testing guidelines include, but are not limited to, the following:

1. Arrive on time for your test. Each test is only available for a certain pre-determined amount of time.
2. Your facilitator will provide you with scratch paper. No other paper is allowed.
3. ALL belongings, including cell phones and review materials, must be put away during testing, and should not be near your personal testing area.
4. Absolutely no cell phones are allowed during testing. All cell phones must be turned OFF and put away out of sight. If a cell phone is taken out and/or used during a test, it will result in a charge of academic misconduct and a score of ZERO on the test.
5. No IPODS or other music devices may be used during tests. Use of any such device during a test will result in a charge of academic misconduct and a score of ZERO on the test.
6. No website other than www.moodleDE.selu.edu and no other area of Moodle may be accessed during tests. Accessing any such website during a test will result in a charge of academic misconduct and a score of ZERO on the test.
7. You may not write down any information pertaining to test questions to take with you when you leave the classroom after an exam. All scratch paper will be collected before you are allowed to leave. You may not share any test information with anyone who has not taken the test.
8. All questions or issues during tests should be communicated to the High School DE Course Facilitator and the university Instructor of Record
9. If you are believed to have violated academic integrity, the university Instructor of Record will inform you of the violation and consequences (a ZERO on that assignment for first offense) and you will have an opportunity to appeal.

(http://www.southeastern.edu/resources/policies/policy_detail/acad_integrity.html)

Other Policies:

- All communications with the university Instructor of Record must go through your High School DE Course Facilitator to ensure everyone is informed. Sending an email to both is acceptable; you also can discuss issues with your High School DE Course Facilitator and have them contact the university Instructor of Record.
- If you wish to withdraw from this course, it is your responsibility to complete all school procedures for withdrawing from a course. You cannot be denied the right to withdraw from a dual enrollment course by a school facilitator, coordinator or administrator.

- Students with documented disabilities will be granted special accommodations as per their documentation to ensure equal opportunity for all qualified persons. No accommodations will be granted without documentation. Your High School DE Course Facilitator or Coordinator will submit evidence of an IEP or 504 plan with the Office of Disability Services and we will make accommodations accordingly.
- Appeal and Change of Grade: After a final course grade is recorded in the Records and Registration Office, a change of grade must be approved in sequence by the instructor of record (Dr. Ghimire or Little), the instructor's department head, and the academic dean of the College of Science and Technology. In the event of a contested final course grade, a student's written appeal of the grade must be submitted to the instructor within **thirty (30)** calendar days of final grades for the term being due. The grade appeal should also be submitted to Dr. Jeffrey Temple, Assistant Vice President for Academic Programs. For more information about grade appeals, see http://www.southeastern.edu/admin/rec_reg/university_catalogue/index.html

Important dates to remember:

Last day to enroll for fall-only/year-long courses: August , 2020

Last day to DROP fall-only/year-long courses: August , 2020

Last day to WITHDRAW from fall-only courses: October 30, 2020

Last day to enroll for spring-only courses: January , 2021

Last day to DROP spring-only courses: January , 2021

Last day to WITHDRAW from year-long/spring-only courses: March 26, 2021

Disclaimer: This syllabus is subject to change. Any changes will be provided to you. The course description will not change.

Chemistry 101 Learning Goals

Chemistry in Our Lives

1. Define the term *chemistry* and identify substances as chemicals.
2. Describe some chemical and physical properties of matter.
3. Describe the activities that are part of the scientific method.

Measurements

1. Write the names and abbreviations for the metric or SI units used in measurements of length, volume, mass, temperature and time.
2. Write a number in scientific notation.
3. Identify a number as measured or exact; determine the no. of significant figures in a measured number.
4. Adjust calculated answers to give the correct number of significant figures.
5. Use conversion factors to change from one unit to another.
6. Calculate the density of a substance; use density to calculate mass or volume of a substance.
7. Given a temperature, calculate a corresponding temperature on another scale.

Atoms and Elements

1. Classify matter as pure substances or mixtures.
2. Given the name of an element, write its correct symbol; from the symbol, write the correct name.
3. Use the periodic table to identify the group and the period of an element and decide whether it is a metal or a nonmetal.
4. Understand Dalton's atomic hypothesis and the relevance of early experiments (cathode rays, electrolysis, oil drop, x-rays, radioactivity, etc.) toward developing a model of the atom.
5. Describe the electrical charge and location in an atom for a proton, a neutron, and an electron.
6. Given the atomic number and mass number of an atom, state the number of protons, neutrons, and electrons.
7. Give the number of protons, electrons, and neutrons in the isotopes of an element.
8. Explain how atomic masses were defined and the standard by which atomic masses are presently defined.

Electronic Structure and Periodic Trends

1. Define and discuss electromagnetic radiation (waves) and properties; discuss the electromagnetic radiation spectrum in terms of frequencies and wavelengths from radio waves to cosmic rays.
2. Explain how atomic spectra correlate with energy levels in atoms.
3. Describe the energy levels, sublevels, and orbitals in atoms.
4. Write the orbital diagrams and electron configurations.
5. Use the electron configurations of elements to explain periodic trends.
6. Predict the number of valence electrons for a representative element given its position on the periodic table.

Ionic Compounds

1. Using the octet rule, predict the ion charge of simple ions for the representative elements.
2. Using charge balance, write the correct formula for an ionic compound.
3. Given the formula of an ionic compound, write the correct name; given the name of an ionic compound, write the correct formula
4. Write a formula of a compound containing a polyatomic ion.

Molecules and Covalent Compounds

1. Given the formula of a covalent compound, write its correct name; given the name of a covalent compound, write its formula.
2. Diagram the Lewis structure for covalent molecules.
3. Write Lewis structures for covalent molecules or ions with multiple bonds and show resonance structures.
4. Predict the shape of a molecule using VSEPR.
5. Use electronegativity to determine the polarity of a bond.
6. Classify a molecule as polar or nonpolar.
Identify types of intermolecular forces and compare their relative strengths

Chemical Quantities

1. Use Avogadro's number to convert between particles and moles.
2. Given the chemical formula of a substance, calculate its molar mass.
3. Use molar mass to convert between mass and moles.
4. Given the formula of a compound, calculate the percent composition.
5. Determine the empirical formula and molecular formula of a compound using appropriate data.

Chemical Reactions

1. Identify a change in a substance as a chemical or physical change.
2. Write and balance chemical equations for chemical reactions.
3. Identify types of chemical reactions and predict their products.
4. Given a quantity in moles of reactant or product, use mole-mole factors from the balanced equation to calculate the moles of another substance in the reaction.
5. Use stoichiometry to determine the amount (moles, mass or volume) of reactants or products involved in a chemical reaction given appropriate data.
6. Given the actual quantity of product, determine the percent yield for a reaction.

Energy and States of Matter

1. Describe different forms of energy and identify units of energy.
2. Use specific heat to calculate heat loss or gain, temperature change, or mass of a sample.
3. Describe solids, liquids, and gases at the level of the bulk material and at the level of the particle.
4. Describe the attractive forces between ions, polar molecules, and nonpolar molecules.
5. Describe various phase changes and calculate the energy involved.
6. Describe the energy changes in exothermic and endothermic reactions.

Gases

1. Describe the kinetic theory of gases and the properties of gases.
2. Define pressure and the units involved.
3. Understand and apply the gas laws involving pressure, volume, temperature, and amount of a gas.
4. Use the ideal gas law to solve for P , V , T , or n of a gas when given 3 of 4 values in the ideal gas equation.
5. Determine the amount (moles, mass or volume) of a gas that reacts or forms in a chemical reaction.
6. Use partial pressures to calculate the total pressure of a mixture of gases.
7. Understand vapor pressure and its relationship to boiling point.