

Student Learning Outcomes

Program Name:

Departments determine the number of major learning outcomes

SL01	Students will be able to infer properties of a molecule from its structure.
1a	<ul style="list-style-type: none">• Demonstrating an understanding of periodic trends
1b	<ul style="list-style-type: none">• Ranking the relative reactivity of a series of related molecules, identifying the role a given molecule will play in a reaction
1c	<ul style="list-style-type: none">• Evaluating and predicting inter- and intra-molecular interactions such as hydrogen bonding, protein folding, and enzyme activity
SL02	Students will demonstrate knowledge in the area of bonding.
2a	<ul style="list-style-type: none">• Student will demonstrate knowledge in the shape, symmetry, and energetics of molecular orbitals as compared to atomic orbitals
2b	<ul style="list-style-type: none">• Students will demonstrate knowledge of the continuum of forces that bond atoms together including ionic, covalent, and metallic bonding
SL03	Students will demonstrate an understanding of chemical equilibrium that includes:
3a	<ul style="list-style-type: none">• The relationship between chemical equilibrium and reaction energetics
3b	<ul style="list-style-type: none">• Mathematical descriptions of chemical equilibrium
3c	<ul style="list-style-type: none">• How chemical equilibrium can be used to predict and explain the outcome of chemical reactions
SL04	Students will demonstrate an understanding of chemical kinetics that includes:
4a	<ul style="list-style-type: none">• The relationship between chemical kinetics and equilibrium.
4b	<ul style="list-style-type: none">• Mathematical descriptions of chemical kinetics
4c	<ul style="list-style-type: none">• How chemical kinetics can be used to assess possible reaction mechanisms.
SL05	Students will demonstrate the ability to determine the structure of an unknown compound and characterize local electrical and magnetic properties.
SL06	Students completing the major will be able to apply the scientific method to answer a chemical question. Using relevant literature, they will be able to:
6a	<ul style="list-style-type: none">• Design an experiment
6b	<ul style="list-style-type: none">• Carry out the experiment
6c	<ul style="list-style-type: none">• Interpret their experimental results
SL07	Students will be able to communicate their results in writing.
SL08	Students will be able prepare, present and defend a 15 minute PowerPoint presentation of experimental results they obtained.
SL09	Students will work effectively in a team.
SL010	Students will be able to keep a professional laboratory notebook.
SL011	Students will persevere in the face of difficult challenges.
SL012	Students will demonstrate scientific curiosity- why is something the way it is.
SL013	Students will recognize that science is process of rigorous investigation, not a collection of facts, and solutions to problems are based on evidence.
SL014	Students will conduct work in the laboratory in a safe and well-organized manner. They will be able to understand and follow safety protocols.
SL015	Students should be able, after leaving SUNY Cortland, to have the knowledge basis to assess advances in science, science education, and the environment.

SL016

Students will conduct themselves in an ethical manner.

ll play in a reaction (e.g. nucleophile, electrophile, acid, base, oxidant, reductant)
olding, and enzyme substrate interactions.

onstructed on the basis of atomic orbitals.

ntermolecular forces, covalent, ionic, and metallic bonding and how these affect the structures of organic, inorganic, and biological molecules.

ronics of a molecule using spectroscopic data.

it literature, they will be able to

btained in the laboratory.

ems can be open ended and have multiple plausible answers.

l explain the safe handling of chemicals, the safe operation of instrumentation encountered in the lab and demonstrate a familiarity with how to res
e in the news, etc.

Search general information about chemical hygiene (e.g. MSDS sheets).