

SUNY Broome General Education
Course Proposal and Revision Form

I. Course Information/Signature Page

Date: 09/12/2022

Course Title: General Chemistry I

Proposed Course Title (only for courses proposing new titles through Curriculum Committee):

[Click here to enter proposed course title.](#)

Department/Subject Designator: Chemistry/CHM 145

Number credits: 4

Pre-requisites/Co-requisites: Adequate chemistry knowledge can be demonstrated by a minimum grade of D in CHM 090 or equivalent background knowledge. Adequate math knowledge can be demonstrated by a minimum grade of C in MAT 096 or equivalent background knowledge.


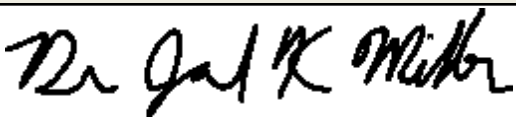

Sponsor Proposer: Robert Congdon & Joel Miller

Sponsor Department(s): Chemistry

Cross-listed proposer (if applicable): [Click here to enter cross-listed proposer.](#)

Cross-listed department (if applicable): [Click here to enter cross-listed department.](#)

Effective semester/year of Proposed GE Addition: Spring/2023

Approvals		Yes	No
Sponsoring Department: (Chair signs for Department) 	Date 09/19/22	X	
Comments:			
Department Chair: 	Date 09/19/22	X	
Comments:			
Sponsoring Division: (Dean signs for Division) 	Date 9/19/22	X	
Comments:			
Cross-listed Department (if applicable): (Chair signs for Department)	Date		
Comments:			
Cross-listed Division (if applicable): (Dean signs for Division)	Date		
Comments:			
These signatures will be obtained upon approval of the course as a General Education course			
General Education Committee: (Chair signs for Committee)	Date		
Comments:			

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Approvals		Yes	No
Registrar:	Date		
Comments:			
VPAA/CAO:	Date		
Comments:			

II. SUNY GER Categories

a. Select a category for which the course is proposed to become a General Education course. *Please note that your course must meet the learning outcomes for the specific General Education category selected and include the SUNY general education learning outcomes.*

- ☐ Mathematics
- ☒ Natural Sciences
- ☐ Diversity: Equity, Inclusion, and Social Justice
- ☐ U.S. History and Civic Engagement
- ☐ Social Sciences
- ☐ World History and Global Awareness
- ☐ Humanities
- ☐ The Arts
- ☐ World Language
- ☐ Communication (Written)
- ☐ Communication (Oral)

b. Select any infused competencies for which your course meets. *Please note that if selected, your course must demonstrate that it meets these learning outcomes.*

- ☐ Critical Thinking
- ☐ Information Literacy

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III. Student Learning Outcomes

a. List the proposed course student learning outcomes.

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

1. Demonstrate scientific reasoning applied to the natural world, including:
 - a) an understanding of the methods scientists use to explore natural phenomena, including observation, hypothesis development, measurement and data collection, experimentation, evaluation of evidence, and employment of data analysis or mathematical modeling and
 - b) the application of scientific data, concepts, and models in one of the natural sciences.
2. Use dimensional analysis to solve a variety of chemistry problems, especially mole relationships.
3. Recall and use the language of chemistry with regard to nomenclature, equation writing and stoichiometry.
4. Recall and apply elemental properties in the context of atomic structure, electron configuration, and in the formation of compounds.
5. Recall and use select chemistry laws and theories related to gasses, thermochemistry, atomic structure, and bonding.
6. Recall and apply principles of chemical compound structure with respect to bonding, molecular geometry, polarity, and intermolecular relationships.
7. Recall and apply the principles of physical changes, such as phase changes, as well as chemical changes including oxidation-reduction reactions, combustion reactions, gas evolving reactions, and acid-base neutralization reactions.

IV. Catalogue Description

a. Please enter the course description as will be or is currently listed in the SUNY Broome College Catalogue.

Comprehensive treatment of general chemistry for the science-oriented student. Builds on the student's prior chemistry knowledge, with emphasis on the basic laws and theories of chemistry and their derivation from experimental evidence. Presents the qualitative and quantitative aspects of matter's composition and changes and their unifying principles. Includes physical and chemical properties, periodicity of elements, stoichiometry, current atomic and bonding theories, laws and theories of physical states and changes of state, solution chemistry, and thermochemistry.

V. Topical Outline

Please describe the specific topics which will be addressed within this course. *You should ensure that your topical list meets the General Education category student learning outcomes.*

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- o Physical and chemical properties
- o Periodicity of elements
- o Stoichiometry
- o Current atomic and bonding theories
- o Laws and theories of physical states and changes of state
- o Solution chemistry
- o Thermochemistry

VIII. SUNY Broome General Education Assessment Plan

Please complete the General Education Assessment Plan form.

Submission Instructions: Email the completed **General Education Course Proposal Form** to the Chair of the General Education Committee.

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SUNY Broome General Education Course Assessment Map & Plan
SUNY Broome GE Course SLO Alignment with SUNY-GER Course Alignment/SUNY Broome ILOs

Course Title and Number: Please list the course number and title here: *CHM 145, General Chemistry I*

SUNY-GER Category: Please list the name of the SUNY-GER category here: *Natural Science (and scientific reasoning)*

Assessment Schedule: Please list the assessment schedule here, including semester and year it will occur; if assessment is done each semester, please indicate this.
SLO 1: Once every 3 academic years, starting in Fall of 2023. Data will be collected from all semesters of the academic year and compiled into one assessment result. SLOs 2-6: Data will be collected every semester and compiled into one assessment every academic year.

Which SUNY Broome ILO do you believe this course maps to, if any: ILO 4: Scientific & Quantitative Reasoning: Students will be competent in scientific and quantitative reasoning through analysis of data in various forms.

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<p style="text-align: center;">SUNY Broome Course SLO (every course SLO should be listed, as stated within the college catalogue & course syllabus)</p>	<p style="text-align: center;">SUNY Broome ILO (If an SLO maps to a SUNY Broome ILO, indicate it here by naming the ILO; otherwise leave blank)</p>	<p style="text-align: center;">Assessment Timeline (indicate the frequency in which assessment occurs, including semester and year within assessment cycle) *All SLOs must be assessed at least once every 3 years</p>	<p style="text-align: center;">Learning Activity (indicate the learning activity used to assess the SLO)</p>	<p style="text-align: center;">Criteria for Success/Benchmark (indicate the <u>criteria</u> used to assess SLO & the <u>benchmark</u> for success)</p>
<p>1) Demonstrate scientific reasoning applied to the natural world, including:</p> <p>a) an understanding of the methods scientists use to explore natural phenomena, including observation, hypothesis development, measurement and data collection, experimentation, evaluation of evidence, and employment of data analysis or mathematical modeling and</p> <p>b) the application of scientific data, concepts, and models in one of the natural sciences.</p>	<p>Scientific Reasoning</p>	<p>Once every 3 academic years, starting in Fall of 2023. Data will be collected from all semesters of the academic year.</p>	<p>Laboratory Experiments</p>	<p>70% of students earn a laboratory average of least 70%</p>

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2) Use dimensional analysis to solve a variety of chemistry problems, especially mole relationships.	Click here to enter text.	Every academic year. Data will be collected from all semesters of the academic year.	Exam	70% of students correctly respond to relevant exam question(s)
3) Recall and use the language of chemistry with regard to nomenclature, equation writing and stoichiometry.	Click here to enter text.	Every academic year. Data will be collected from all semesters of the academic year.	Exam	70% of students correctly respond to relevant exam question(s)
4) Recall and apply elemental properties in the context of atomic structure, electron configuration, and in the formation of compounds.	Click here to enter text.	Every academic year. Data will be collected from all semesters of the academic year.	Exam	70% of students correctly respond to relevant exam question(s)
5) Recall and use select chemistry laws and theories related to gasses, thermochemistry, atomic structure, and bonding.	Click here to enter text.	Every academic year. Data will be collected from all semesters of the academic year.	Exam	70% of students correctly respond to relevant exam question(s)
6) Recall and apply principles of chemical compound structure with respect to bonding, molecular geometry, polarity, and intermolecular relationships.	Click here to enter text.	Every academic year. Data will be collected from all semesters of the academic year.	Exam	70% of students correctly respond to relevant exam question(s)
7) Recall and apply the principles of physical changes, such as phase changes, as well as chemical changes including oxidation-reduction reactions, combustion reactions, gas	Click here to enter text.	Every academic year. Data will be collected from all semesters of the academic year.	Exam	70% of students correctly respond to relevant exam question(s)

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evolving reactions, and acid-base neutralization reactions.				
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