

Nashville State Community College
STEM Division

CHEM 1110: General Chemistry I

2018 Master Course Syllabus

(RUBRIC Number – Title)

(This master course syllabus template is a general guide for providing an overview of each course offered at Nashville State. Each instructor will further clarify specific criteria for grading, classroom procedures, attendance, exams and dates, etc. on his/her individual course syllabus. Prompts for individual adaptations are italicized and in parentheses; faculty should remove or replace these prompts when creating master syllabi and their own individual syllabi if they have not been removed previously.)

Course Information:

Course Title: General Chemistry I

Credits: 4 credits

Class Hours: 3 class hours, 3 lab hours

Course Description:

An in-depth study of the fundamental concepts of chemistry. Topics include matter and measurement, atomic and molecular structure, nomenclature, formulas and equations, stoichiometry, aqueous reactions, gases, thermochemistry, periodic trends, molecular geometry, and chemical bonding.

Prerequisite: Level 2 placement in English and Reading, and Initial Level 2 placement or higher in Math, or MATH 1000 (MATH 1130 - College Algebra highly recommended).

Instructor Information:

Name:

Email:

Office Phone:

Office Location:

Office Hours:

Required Textbook(s) & Other Materials:

Textbook(s): Chemistry: The Central Science printed edition, eText edition and New Mastering Chemistry access code by Brown et al, 14th edition (Pearson), ISBN: 9780134809694.

OR

Chemistry: The Central Science eText edition **only** and New Mastering Chemistry access code by Brown et al, 14th ed, ISBN: 0134553128.

AND

Experiments for General Chemistry I – Laboratory Manual for CHEM 1110, (Freely available in the NSOnline course shell).

ISBN: 9780134809694

Access Code: New Mastering Chemistry access code by Brown et al, 14th ed, ISBN: 0134553128

Reference Materials:

Supplies: A scientific calculator

[No electronic, internet capable devices are allowed on exams (i.e. no cell phone calculators)]

Once enrolled, all students should verify that they have the correct textbook and materials information by consulting the D2L/NS Online shell for the course. If you are registered with the Access Center and require an alternate format for the textbook and other course materials, please contact the Access Center at 615-353-3721, 615-353-3741, or accesscenter@nsc.edu.

Course Outcomes:

Upon successful completion of this course, students should be able to:

- Identify and define the steps involved in the scientific method.
- Explain matter, its properties, its transformations, and its two classifications based on composition and state.
- Define the concepts of precision, accuracy, significant figures, and scientific notation.
- Apply the rules of chemical nomenclature, writing formulas, balancing equations, writing electron configuration, and periodic trends.
- Apply dimensional analysis and algebraic equations to solve density, molarity, titration, stoichiometry, gas law and calorimetry calculations.
- Describe the rules for determining Lewis Structures, VSEPR structures, bond angles, and polarity for various molecules and compounds.

Course Competencies:

The following are detailed course competencies intended to support the course outcomes:

- Evaluate scientific discovery in terms of its scientific merit and its ethical and global implications.
- Carry out chemical reactions/experiments in the lab, identify all measurable quantities, collect data, recognize sources of error, identify limitations of measuring devices, and develop a valid conclusion based on the lab data.
- Demonstrate safe lab techniques.
- Demonstrate proficiency in the use of computer technology.
- Develop the process skills of science such as observing, measuring, collecting data, analyzing data, testing hypothesis, and controlling variables.
- Identify a question/problem, formulate a hypothesis, test the hypothesis, and formulate a conclusion.
- Plan, execute, and interpret an experiment following the tenets of the scientific methodology.
- Show competence in technical writing and in the communication of scientific information.
- Define matter and its two classifications based on composition and state.
- Label as extensive/intensive properties, chemical/physical properties, chemical/physical

changes.

- Apply dimensional analysis to solve chemical problems.
- Define and apply metric prefixes, metric relationships, SI units, and units of concentration.
- Define accuracy, precision, and significant figures as related to experimental data and in solving chemical problems.
- Describe the relationships between atoms, molecules, and ions.
- Recognize subatomic particles; identify atomic number, mass number, number of protons, electrons and neutrons; identify elements by symbols, atomic number, and mass number.
- Describe and use the rules of chemical nomenclature, formulas, equations, and stoichiometry.
- Convert observable laboratory reactions to balanced equations.
- Explain the general concepts of atomic structure and bonding.
- Provide mathematically derived solutions to problems designed to illustrate the theory under study and solve density, molarity, dilution and titration problems.
- Describe various types of chemical reactions; predict if reactions will occur given a set of reactions and, if so, predict the products.
- Describe the general characteristics of acids and bases.
- Classify a substance as an electrolyte.
- Distinguish between exothermic and endothermic reactions.
- Distinguish between kinetic energy and potential energy.
- Solve problems of heat, enthalpy of reactions, and Hess's Law.
- Describe physical states of substances using kinetic molecular theory.
- Define properties of gases and solve gas law, density and partial pressure problems.
- Solve problems of heat, enthalpy of reactions, and Hess's Law.
- Write the electronic structure for an atom or ion.
- Write and interpret the quantum numbers for a specific electron.
- Explain how the periodic table arises from the repeatable patterns in the electron configurations of the elements.
- Define and illustrate how certain properties of elements (atomic size, ionization energy, metallic character, electronegativity and electron affinity) change across a row or down a column of the periodic table.
- Describe the rules for determining Lewis Structures, VSEPR structures, bond angles, and polarity for various molecules and compounds.
- Describe or illustrate the concept of chemical bonding and determine hybridization.

The following are general education competencies intended to support the course outcomes:

- Conduct an experiment, collect, and analyze data, and interpret results in a laboratory setting.
- Analyze, evaluate and test a scientific hypothesis.
- Use basic scientific language and processes, and be able to distinguish between scientific and non-scientific explanations.
- Identify unifying principles and repeatable patterns in nature, the values of natural diversity, and apply them to problems or issues of a scientific nature.
- Analyze and discuss the impact of scientific discovery on human thought and behaviour.

Topics to Be Covered:

- Matter
- Measuring

- Atomic Theory and Atomic Structure
- The Periodic Table
- Nomenclature
- Stoichiometry
- Aqueous Reactions
- Gases
- Thermochemistry
- Electronic Structure
- Periodic Properties
- Chemical Bonding
- Molecular Geometry

Course Assessments:

The expected outcomes for the course may be assessed by various techniques including in-class assignments/activities, online homework, in-class or online quizzes, exams and a comprehensive final examination as well as lab related activities.

The following performance assessments will be used:

Three to Four Exams	40%
Final Exam	15%
Laboratory work	25%
Homework/Quizzes/Discussion	20%

Grading Policy:

(Add your grading policy here)

Late Work Policy & Make-up Procedures for Missed Assignments and Work:

(Each instructor will provide policy)

Attendance Policy

Students are expected to attend all scheduled classes and laboratories. Absences in a course may affect a student's final grade. The student is responsible for all assigned work in the course regardless of excused or unexcused absences. Tardiness may also affect a student's final grade.

In online courses, attendance is signaled by logging on to the D2L/NS Online shell, participating as prompted (e.g., responding to an instructor's email, posting to a discussion board) and/or completing and submitting assignments. Campus closures do not affect attendance and assignment completion in online courses.

(Each instructor will provide policy, especially how attendance influences student assessment and grading.)

Grading Scale:

Letter Grade	Percentage Range
A	90-100
B	80-89
C	70-79
D	60-69
F	Below 60

FA

According to NSCC policy, if a student fails a course, but has not officially withdrawn from the course, and her/his last date of attendance is before the last date to withdraw (*use date appropriate to your section*), the student will receive a grade of FA (i.e., "Failure for Attendance Reasons").

(While the above statement should appear in all syllabi, faculty are encouraged to make additional statements or provide examples that would clarify the policy for students.)

FN

An FN is awarded to students who never attended class.

Technology Statement

Nashville State's classes are considered to be web-enhanced. Faculty have an expectation that students will use a computer and the Internet to complete assignments, engage in online discussions, and access various course materials through D2L/NS Online course shells. Computers are available for student use at each campus during campus open hours.

D2L/NSOnline and myNSCC

It is students' responsibility to check D2L/NS Onlinecourse shells for all enrolled coursesand myNSCC, including student email, on a regular basis. These are the official communication channels between the college and students, who are responsible for the information communicated through those channels. D2L/NS Online contains specific course information and myNSCC contains information important for other purposes.

ADA Compliance Statement

Nashville State complies with the Americans with Disabilities Act (ADA). If you require accommodations for any courses in which you are enrolled, contact the Access Center at 615.353.3741 or 615.353.3721, or e-mail accesscenter@nsc.edu. If you are registered with the Access Center and require an alternate format for the textbook and other course materials, please contact the Access Center.

Classroom Misconduct

Nashville State Community College has a zero-tolerance policy for disruptive conduct in the classroom. Students whose behavior disrupts the classroom will be subject to disciplinary measures. Please review the [Nashville State Student Code of Conduct policy](#). Please be aware that children are not allowed in class or to be left unattended on campus.

Academic Misconduct

Any form of academic dishonesty, cheating, plagiarizing, or other academic misconduct is prohibited. Students are responsible for understanding and abiding by the [Academic Misconduct Policy](#) in the Nashville State Student Code of Conduct. In addition to other possible disciplinary measures that may be applied through regular college procedures as a result of academic dishonesty, the instructor has the authority to assign an “F” or a “zero” for the exercise, paper, or examination, or to assign an “F” for the course. Students may appeal through the appropriate college grade appeal procedures.

(Each instructor will outline his/her expectations for academic integrity and provide individualized information about consequences for academic misconduct.)

Academic Early Alert System

Nashville State Community College uses an Early Alert System to let students know of a faculty member’s concern in one or more of these academic areas: lack of attendance, lack of classroom participation, late or missing assignments, and/or poor performance on assignments/tests. *Please note that Early Alerts do not affect a student’s academic standing. If you receive an Early Alert email, please see your instructor and your academic advisor as soon as possible.

RAVE Emergency Alert System

Emergency events can happen at any time and Nashville State Community College wants to be able to notify students if and when they occur. For this reason, all students have been enrolled in the free RAVE alert system. If you have not already done so, please log in at <https://www.getrave.com/login/nsccto> to confirm and update your contact information and notification preferences. It is critical that your information be correct so that you will receive any emergency notifications. Your RAVE Username is your NSCC email address. If you've never received an email from RAVE with your password, or if you need to reset your password, select “Forgot your password?” and a new password will be emailed to you. Should the RAVE system indicate “user not found”, select Register and create your own RAVE account.

Inclement Weather & Campus Closings

Nashville State will use the RAVE alert system to send a text message to students, staff, and faculty about adjusted hours of operation and/or closings at individual campuses. All students should check the Nashville State web site home page at www.nscce.edu for announcements on campus closures, which may vary from campus to campus. Campus closures will also be announced on local television stations. Students should use their own best judgment in determining whether to report to campus during inclement weather when classes are not cancelled.

Even when campuses are closed, students are still responsible for completing all assigned work. When classes are cancelled, faculty will post online assignments and any additional instructions in the D2L/NS Online course shell. Check D2L/NS Online for a message from your instructor regarding your online assignment requirements. Faculty have discretion over adjusting deadlines or due date for assignments, but students are responsible for completing all assigned work by the due date established by the instructor.

ClassCancellation Policy

If the class is cancelled, the instructor will notify all students by posting in the D2L/NS Online course, e-mailing through D2L/NS Online, and/or by posting a sign on the classroom door. In the event of class cancellation, students must access D2L/NS Online to complete classwork and the assignment that will be posted in the course D2L site.