

**Nashville State Community College
STEM Division**

CHEM 1120: General Chemistry II

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 II
Credits: 4 credits
Class Hours: 3 class hours, 3 lab hours

Course Description:

A continuation of CHEM 1110. Topics include solutions, acids and bases, chemical equilibrium, thermodynamics, kinetics, electrochemistry, oxidation and reduction reactions, nuclear chemistry and an introduction to organic chemistry.
Prerequisite: CHEM 1110.

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 II – Laboratory Manual for CHEM 1120, (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 the intra-and intermolecular forces; and the effects on properties.
- Write mathematically derived solutions to problems designed to illustrate the theory under study: colligative properties, kinetics, and chemical equilibrium.
- Identify acids, bases, and buffers; solve problems involving pH, buffers, hydroxide and hydronium ion concentrations.
- Identify the different ways of expressing concentration of a solution.
- Solve thermodynamic, electrochemistry, and nuclear chemistry problems.
- Define the main organic functional groups.

Course Competencies:

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

- Identify the intra-and intermolecular forces.
- Identify Articulate the importance of intermolecular interactions and predict trends in physical properties.
- List the factors that affect solubility.
- Calculate molar and molal concentrations of chemicals in various solutions and mixtures, and to work stoichiometric problems using afore-mentioned concentrations.
- Calculate the molar mass of an unknown substance based on the colligative properties.
- List factors that affect reaction rates.
- Write rate laws.
- Determine the order of a chemical reaction and calculate the rate constant from initial rates.
- Compare first and second order reactions.
- Determine, using the collision model, the effect of temperature on rates of reactions.
- Define reaction mechanisms.
- Describe a catalyst.
- Write equilibrium constant expressions.

- Perform equilibrium constant calculations for chemical reactions involving gases and for chemical reactions occurring in solution.
- Calculate equilibrium constants.
- Solve acid-base and other aqueous equilibria problems.
- Compare and contrast the 3 acid–base models.
- solve problems involving pH, buffers, hydroxide and hydronium ion concentrations.
- Distinguish between strong and weak acids and bases.
- Show the mathematical relationship between K_a and K and K_a and K_b .
- Using the common-ion effect, calculate the concentrations of ions in buffer solutions.
- Construct pH titration curves for the titration of both monoprotic and polyprotic weak acids.
- Calculate the pH of solutions containing acids, bases, and salts.
- Apply Le Chatelier’s Principle to chemical systems at equilibrium.
- Apply the laws of thermodynamics to determine whether or a chemical reaction is spontaneous under the given set of experimental conditions.
- Solve thermochemical problems.
- Compare entropy and enthalpy.
- Solve problems using the Gibbs Free Energy relationships.
- Calculate the equilibrium constant based on thermodynamic data.
- Determine oxidation numbers of atoms in common compounds.
- Balance redox equations.
- Distinguish between voltaic and electrolytic cells.
- Compute the potential of an electrochemical cell using standard reduction potentials.
- Distinguish between voltaic and electrolytic cells.
- Describe/Define nuclear reactions and nuclear decay processes.
- Draw the structures for common classes of organic compounds.

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:

- Intermolecular forces
- Liquids
- Solids
- Solutions
- Colligative properties
- Kinetics
- Equilibrium
- Le Chatelier’s Principle
- Acid-base Equilibria

- Common-ion effect and Buffers
- Titrations
- Solubility Equilibria
- Thermodynamics
- Electrochemistry
- Nuclear Chemistry
- Introduction to Organic Chemistry

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/nsc> 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.nsc.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.