

Nashville State Community College
School of STEM
Chemistry

Spring 2023 Master Course Syllabus

CHEM1120 - General Chemistry II

The purpose of the syllabus is to tell you how the course is organized, what the expectations are, and how you will be graded. In addition, there is important information about how the college will operate during severe weather and how the college will communicate with you. The syllabus is not a contract. Instead, it is meant to help you succeed in this course. If any of the content changes during the semester, you will be notified.

Course Information: The purpose of this course is to prepare students for future professional practice in chemistry or other STEM and health-related fields. It is the second semester of a two-semester course sequence (CHEM 1110/1120). A variety of classes (delivery formats) may be offered as listed below.

- **Fully In-Person Classes (A&N 01-40 sections):** This class uses the traditional way of learning. Students attend face-to-face classes and labs on a set schedule. **Credit: 4** credits, 3 class hours, 3 lab hours. However, since summer is a ten-week term, more (nine) contact hours are required every week. Students must complete all laboratory experiments successfully to pass the course. Only one face-to-face laboratory experiment can/may be missed due to a serious emergency.
- **Hybrid Classes (A&N 80 sections):** A hybrid course uses a blended format of online instruction and on-campus meetings or requirements. Typically, all or most of the lecture content is delivered online, 100% asynchronous through the NS Online/D2L course; however, there will be required in-person labs on a set schedule. Many experiments will be completed face-to-face, but up to four may be done virtually through videos and simulations (at the instructor discretion to allow time for taking tests). Students must complete all laboratory experiments successfully to pass the course. Only one face-to-face laboratory experiment can/may be missed due to a serious emergency.
- **Fully Online or Web Classes (W sections):** This class is 100% asynchronous (no on-campus class and labs). Online content and interactions will be accessed through the [NS Online \(D2L\)](#) course. Throughout the course students will be engaging with assigned readings (and PowerPoint lectures) and videos, participating in discussions and activities, and submitting assignments. Students will read the weekly experiments in the lab module, watch all related videos and perform simulations (if available), complete the worksheets, and take a lab quiz before the due date to earn lab points/credit. Since a

web class is taught entirely online, students are encouraged to check with their transfer university to make sure this mode of class will be accepted and transferred.

- **Virtual Classes (V sections):** A virtual class uses a hybrid combination of online material and live via Zoom/Teams meetings on a set schedule.

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. The laboratory will consist of a number of quantitative experiments designed to teach basic techniques.

Prerequisite: CHEM 1110 and **Credits:** 4.

Other prerequisites: 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:

Instructor Zoom Room link:

Class Session Zoom Link Information (if virtual):

Required Textbook(s) & Other Materials:

Textbook(s): *Chemistry: The Central Science*, e-text edition and Mastering Chemistry access by Brown et al, 15th edition (Pearson). **MasteringChemistry** is used for homework and reading assignments.

ISBN: 9780137542932

Lab Manual: Experiments (Word documents) for General Chemistry II Laboratory are freely available in the NS Online course shell.

Supplies: A scientific Calculator.

Once you have registered for your courses, you should make sure you have the correct textbook and materials for each course. Before courses begin, you can do this by looking up your courses on the [bookstore's website](https://www.bkstr.com/nscstore/shop/textbooks-and-course-materials) (<https://www.bkstr.com/nscstore/shop/textbooks-and-course-materials>) using your A# or by entering your course information. If you are registered with the Access Center and need 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.

Digital Course Materials: These ensure you pay less for your course materials and have easy access through D2L throughout the semester. When you registered for this course, the charge for these materials appeared on your account. If you decide you do not want to purchase the course materials embedded in NS Online, you can opt out of the program **until the end of the second week of classes**. If

you opt out, you will be responsible for purchasing the required course materials on your own. For more information, please visit www.nsc.edu/dcm.

Honors Option: Honors credit is available in some classes. If you are interested in participating in the Honors Program, please see your instructor within the first four weeks of class.

Course Outcomes: At the end of the semester, this is what you should know and/or be able to do:

- 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, or specific skills or knowledge, intended to help you achieve 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_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.
- Describe/Define nuclear reactions and nuclear decay processes.
- Identify functional groups for common classes of organic compounds.

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

- Apply scientific thought processes to a range of situations.
- Apply mathematical concepts to problems and situations.
- Use critical thinking skills.

Topics to Be Covered:

- Intermolecular forces
- Liquids
- Solids
- Solutions
- Colligative properties
- Kinetics
- Equilibrium
- Le Chatelier's Principle
- Acid-Base Chemistry
- Acid-Base Equilibria
- Common-Ion Effect and Buffers
- Titrations
- Solubility Equilibria
- Thermodynamics
- Electrochemistry
- Nuclear Chemistry

- Introduction to Organic Chemistry

Course Assessments: We will use the following assessments to demonstrate your understanding, knowledge, and skills:

- Lab Activities = 25%
- Exams = 40%
- Final Exam = 15%
- Chapter Quizzes, Homework (10%), and Discussions= 20%
- Total= 100%

Grading Scale:

Letter Grade	Percentage Range
A	90-100
B	80-89.9
C	70-79.9
D	60-69.9
F	0-59.9

FA

If you stop attending class or if you are in an online class and stop submitting assignments, but do not turn in a withdrawal form by the deadline, you are still enrolled in class. You will be given a grade of FA, which means you have failed due to not attending class and not completing your assignments. Please refer to the current academic calendar available on the Nashville State web site, looking for the date that indicates it is the “Last Day to Earn F for Attendance (FA).” If you stop attending your course after this date, you will receive an F.

FN

An FN is awarded if you have never attended your course or done any of the work in an online course.

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

Attendance Policy

General Policy

- *Absences in a course may affect your final grade.*
- *Tardiness may also affect your final grade.*
- *You are responsible for all work/tests that occur during any missed course session(s) regardless of reason(s) for absence.*
- *If you are not well enough to attend a course session (class), you must notify the instructor as soon as possible before the scheduled course time.*
 - *If you are unable to notify an instructor before the scheduled course time, you must contact the instructor as soon as reasonably possible.*

- *If you have an unavoidable conflict with a scheduled course session, you must notify the instructor before the course session.*
 - *If you are unable to notify an instructor before the scheduled course time, you must contact the instructor as soon as reasonably possible.*

Instructor's Policy

The attendance policy for this course is:

For financial aid purposes, **attendance** is measured by participation in the course. Instructors can determine your level of participation in several ways. Some of those ways are:

- continued attendance
- participation in on-ground or virtual class sessions
- participating in D2L as prompted
- responding to an instructor's email
- posting to a discussion board
- completing and submitting assignments

Technology Statement

- All classes at the College are web enhanced. "Web enhanced" means that components of the course, such as assignments and online discussions, may be located online in the class D2L/NS Online course shell and used in the course, even if the course meets in a classroom on ground.
- You must have access to a computer and an internet connection to complete assignments, engage in online discussions, and access various course materials through D2L/NS Online course shells.
- You may also be required to use free video conferencing platforms (examples: Zoom, Teams, etc.) for course sessions and meetings.
- You will be responsible for appropriate dress while on video. This means that you are expected to dress as if you were in a classroom.
- You will be responsible for a distraction free environment while on video. This means that the professor and others in the course should not be able to hear noise in your home, such as cell phones, TVs, or barking dogs. The best way to do this is to keep yourself on "mute" until you need to speak.
- You will be responsible for making sure your background is neutral. Keep in mind that students and professors come from all around the world, and you are all a part of our community. Therefore, please avoid having images in your background that may be offensive to your classmates.
- Certain publisher materials, such as textbook figures, may not work on cellphones and may require a laptop or a tablet.
- If you have questions or concerns regarding access to a computer or internet resources, please contact your instructor. Additional information is available on the [access to internet and technology website](#).

Computer Labs

Computers are available for all Nashville State students to use at each campus during open hours. Open computer lab availability may vary from campus to campus.

You should check the NSCC website for current hours of operation.

D2L/NS Online and myNSCC

It is your responsibility to check your email in **both** D2L/NS Online course shells and your @my.nsc.edu (student email) on a regular basis. These are the official communication channels between the college and you. You are responsible for the information communicated through these email channels. D2L/NS Online emails contain specific course information and @my.nsc.edu emails contain important information from college offices, such as Financial Aid.

ADA Compliance Statement

If you need accommodations due to a disability, please do not hesitate to reach out to our Access Center. Disabilities for which you can receive accommodations include documented physical, emotional, and/or learning conditions. Nashville State is committed to supporting your success, and we encourage you to get assistance if needed. If you require accommodations for any courses in which you are enrolled, contact the Access Center at 615.353.3363, or e-mail accesscenter@nsc.edu.

Classroom Misconduct

Disruptive conduct is not allowed in the classroom. Disruptive conduct is any behavior that prevents students from learning and interferes with the ability of the instructor to teach. This may change from course to course; therefore, your individual instructors will give you guidance on what qualifies as “disruptive conduct” in their courses. 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

You have started this academic journey to prepare for a future career. Because of this, it is important that you learn the materials being presented in your courses. For this reason, cheating, in any form, robs you of your opportunity to learn and master the material that will enable you to succeed in that future career. Nashville State has a clear [Academic Misconduct Policy](#) that you are expected to follow. In addition, your instructors will clarify what Academic Misconduct looks like and the consequences for violations in each course that you take. The instructor has the authority to assign an “F” or a “zero” for such violations or for the semester grade.

Academic Early Alert System

If you are not doing well in your course, your instructor may send you an Early Alert through your @my.nsc.edu email. This email will go to your academic advisor and Student Success advisor, as well. If you get an Early Alert, contact your instructor immediately. Instructors send these when they want to help you figure out how to get extra support to pass the course. An Early Alert does not mean that you have already failed the course. Rather, it means you are in danger of failing the course if you do not change your learning strategy. Please use an Early Alert to your advantage and as an opportunity to improve your grade.

RAVE Emergency Alert System

You can log in to this free alert system to receive text messages about emergencies related to NSCC campuses: <https://www.getrave.com/login/nscc>. The instructions for this are listed below.

- 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.

Student Wellness

Your well-being is important to us. With this in mind, the college has several resources available to provide support when needed:

- [Free tutoring](#) provides assistance beyond the classroom to help you make the most of your college education.
- [These resources](#) include NSCC email, scheduling, online courses, textbooks, tech check out and support, computer labs on campuses, academic advising, financial advising, COVID-19 information and procedures on campuses.
- [Services](#) that help with bus passes, food, childcare, textbooks, housing, financial counseling, personal counseling, suicide prevention, health insurance.

Equity Statement

Nashville State Community College strives to ensure that each student receives what that student needs to be successful, with goals of success beyond the classroom. We understand and practice ideals of equity and inclusion for our students by embracing a full spectrum of experiences, viewpoints, and intellectual approaches in order to overcome barriers to success.

Inclement Weather & Campus Closings

You get notices about campus closings in these places: text messages from RAVE and www.nsc.edu. Even when campuses are closed, you are still responsible for completing all assigned work. Check D2L/NS Online for a message from your instructor so you do not miss important assignments and due dates, which may change due to the campus closure.

Class Cancellation Policy

Our instructors post messages about cancelling classes in the D2L/NSOnline course shells and/or on the classroom door on campus. These messages can be found in the News and Content section or the Email tab in the online shell. Please check these to be sure that you take advantage of opportunities for learning and points toward your grade.