St. Bonaventure University
CHEMISTRY 102 – 03
GENERAL CHEMISTRY II
Spring 2021

Instructor:	**Dr. Carolyn Hutchinson**
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E-mail:	chutchin@sbu.edu
Office Hours:	MW 1:00 – 2:30 pm; T 11:30 am – 12:30 pm; 2:00 – 3:00 pm
	Also available by appointment
	Sign up using calendly.com/chemhutchinson
Class Schedule:	MWF 11:30 am – 12:20 pm
Classroom:	G21 Walsh Science Center

Tentative Lecture Schedule*

Week	Day	Date	Reading	Subject
1	M	Jan 25	Ch 1-10	Gen Chem I Review
	W	Jan 27	Ch 1-10	Gen Chem I Review
	F	Jan 29	Ch 9	Molecular Geometry
2	M	Feb 1	Ch 11	Liquids and Intermolecular Forces
	W	Feb 3	Ch 11	Liquids and Intermolecular Forces
	F	Feb 5	Ch 11	Liquids and Intermolecular Forces
3	M	Feb 8	Ch 12	Solids and Modern Materials
	W	Feb 10	Ch 12	Solids and Modern Materials
	F	Feb 12	Ch 12	Solids and Modern Materials
4	M	Feb 15	Ch 13	Properties of Solutions
	W	**Feb 17**	**[Ch 11-12]**	**Exam 1 – Ch 11-12**
	F	Feb 19	Ch 13	Properties of Solutions
5	M	Feb 22	Ch 13	Properties of Solutions
	W	Feb 24	Ch 14	Chemical Kinetics
	F	Feb 26	Ch 14	Chemical Kinetics
6	M	Mar 1	Ch 14	Chemical Kinetics
	W	Mar 3	Ch 14	Chemical Kinetics
	F	Mar 5	Ch 15	Chemical Equilibrium
7	**M**	**Mar 8**	**[Ch 13-14]**	**Exam 2 – Ch 12-15**
	W	**Mar 10**	**--**	**NO CLASS**
	F	Mar 12	Ch 15	Chemical Equilibrium
8	M	Mar 15	Ch 15	Chemical Equilibrium
	W	Mar 17	Ch 15	Chemical Equilibrium
	F	Mar 19	Ch 15	Chemical Equilibrium
9	M	Mar 22	Ch 16	Acid-Base Equilibrium
	W	Mar 24	Ch 16	Acid-Base Equilibrium
	F	Mar 26	Ch 16	Acid-Base Equilibrium
10	M	Mar 29	Ch 17	Additional Aspects of Aqueous Equilibria
	W	**Mar 31**	**[Ch 15-16]**	**Exam 3 – Ch 15-16**
	F	**Apr 2**	**--**	**NO CLASS**
11	M	Apr 5	Ch 17	Additional Aspects of Aqueous Equilibria
	W	Apr 7	Ch 17	Additional Aspects of Aqueous Equilibria
	F	Apr 9	Ch 17	Additional Aspects of Aqueous Equilibria
12	M	Apr 12	Ch 19	Chemical Thermodynamics
	W	Apr 14	Ch 19	Chemical Thermodynamics
	F	Apr 16	Ch 19	Chemical Thermodynamics

13	M **W** F	Apr 19 **Apr 21** Apr 23	Ch 19 **[Ch 17, 19]** Ch 20	Chemical Thermodynamics **Exam 4 – Ch 17, 19** Electrochemistry
14	M **W** F	Apr 26 **Apr 28** Apr 30	Ch 20 **--** Ch 20	Electrochemistry **NO CLASS** Electrochemistry
15	M **W** **F**	May 3 **May 5** **May 7**	Ch 18 -- --	Chemistry of the Environment **Final Exam Review** **Final Exam Review** – Last class day
16	**M**	**May 10**	**--**	***Final Exam*** (ACS Exam) 10:35 am–1:05 pm**

* Schedule is subject to change at the discretion of the instructor. Up-to-date schedule and due dates are available on Moodle.

Interactive Syllabus

An interactive version of this syllabus can be accessed at https://www.cphutchinson.com/chem102-sp2021. This is another way to access the information contained in the course syllabus. It does not replace the official course syllabus.

Course Description

Three hours of lecture per week. A continuation of Chemistry 101. Topics covered include chemical kinetics, acid-base chemistry, gas-phase and solution equilibria, oxidation-reduction reactions, electrochemistry, and some descriptive chemistry.

Course pre-requisite

CHEM-101 must be completed prior to taking this course.

Course co-requisite

CHML-102 must be completed prior to or at the same time as this course.

Textbook/Materials

- Textbook: *Chemistry: The Central Science*; Brown, LeMay, Bursten, Murphy, Woodward, Stoltzfus; 2014, ISBN 9780134552125
- Scientific Calculator (not graphing). Suggestions are available on Moodle.
- Course Moodle Website Access – https://moodle.sbu.edu/
- Mastering Chemistry – https://www.pearsonmylabandmastering.com/northamerica/masteringchemistry/
    - Sign-up instructions: will be available on Moodle
    - For help https://support.pearson.com/getsupport/s/

Course Objectives

- Students will understand the general principles of chemistry. They will compare, contrast, and predict physical & chemical properties based on atomic and molecular structure
- Student will demonstrate the ability to solve quantitative problems.
- Students will recognize the role of chemistry in real world issues.
- Students will demonstrate knowledge of common reactions and reaction mechanisms of the elements & compounds.
- Students will be prepared for subsequent high-level chemistry courses.

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Student Learning Outcomes (SLOs)

At the end of the course students will be able to:

- Determine molecular and electronic geometries based on Lewis Structures
- Describe the covalent bonding schemes in simple molecules in terms of VSEPR or MO theory
- Interpret and use MO energy-level diagrams
- Relate molecular structure, intermolecular forces, and macroscopic properties such as boiling point and surface tension
- Interpret and use phase diagrams
- Understand solid-state bonding
- Relate equilibrium constants and component concentrations
- Relate equilibrium disturbances to induced reaction direction
- Relate reaction rates, rate constants, rate orders, and component concentrations
- Relate reaction rates, temperature, catalysts, and activation energy
- Relate reaction mechanisms and experimental rate laws
- Understand the molecular nature of entropy and determine the entropy changes of certain processes
- Relate enthalpy changes, entropy changes, temperature, and reaction spontaneity
- Relate cell voltages and component concentrations

Departmental Learning Outcomes

The Chemistry Departmental Learning Outcomes can be found here:
http://www.sbu.edu/academics/schools/arts-and-sciences/departments-majors-minors/chemistry/learning-outcomes

Class Notes

It has been demonstrated through experience that the students who do the following, in the indicated sequence, generally obtain higher grades in the class.

1. Read the relevant chapter once lightly before attending the class (even though it may not be well understood at that point).
2. Regularly attend (and participate in) the lectures to obtain a verbal presentation of the material in a somewhat different fashion with important points emphasized.
3. Read the chapter a second time (more carefully), while simultaneously reviewing the lecture notes, and doing the assigned problems within the chapter.

The lecture notes along with the added notes you mark on them while simultaneously reading the chapter make an excellent study summary to focus on in preparing for the exams.
http://old.chem.byu.edu/faculty/jdl/ChemTutorIII/
https://www.khanacademy.org/science/chemistry

Contacting Your Instructor

The best way to reach your instructor outside of office hours is via the email on the top of this syllabus. You can expect a response within 24 hours. Outside of emergencies, emails will only be answered between 7am and 9pm M-F. Messages sent through Moodle may take up to 1 week to receive a response. Students are strongly encouraged to attend office hours and supplemental instruction sessions if they have any questions.

Attendance & Absences

There is not a grade given for attendance in this class. Attendance information will still be collected. Attendance is critical for success in this class, and it is the student's responsibility to attend the course as much as possible **without putting themselves, classmates, or the instructor at risk**. If you are feeling ill, do not attend class.

If your mode of attendance needs to change for any reason, inform your instructor ASAP and provide documentation; remote access via Zoom will be available by the next class day.

It is the responsibility of each student to notify the instructor if there is a university excused absence for the exams at least **72 hours (3 days) prior**. **RESCHEDULED EXAMINATIONS REQUIRE A VALID REASON** with documentation. All unexcused assignments and examinations will be given a grade of ZERO!

Calculators & Other Technology

Calculators must be scientific. Programmable and graphing calculators are not allowed. Please see the Moodle page or interactive syllabus for suggestions. Phones **cannot** be used as calculators. You are encouraged to use the same calculator for all parts of chemistry (during class, homework, exams, lab, etc.) Laptops and tablets are permitted for notetaking but taking notes by hand is strongly recommended.

Grade Distribution

Grades on all assignments will be given in points. Points in all categories will be approximately equivalent.

Each category will be weighted as stated below:

Hourly Exams:	300 points (30%)
Final Exam:	200 points (20%)
Chapter Homework Assignments (Mastering Chemistry):	200 points (20%)
Reading Quizzes:	150 points (15%)
Element Project:	150 points (15%)
Total:	**1000 points**

Letter grade assignment:

Grade	Points	Percentage
A	930-1000	93-100%
A-	900-929	90-92%
B+	870-899	87-89%
B	830-869	83-86%
B-	800-829	80-82%
C+	770-799	77-79%
C	730-769	73-76%
C-	700-729	70-72%
D+	670-699	67-69%
D	630-669	63-66%
D-	600-629	60-62%
F	0-599	0-59%

To be graded on the grading scale defined above, you must pass the final exam (> 130 points).
Failing to meet this requirement will result in a student not to be graded by the grading scale described in the previous section. Grades in these cases are determined on an individual basis and are at the instructor's discretion. Thus, failing the final or skipping an excessive number of homework assignments or class assignments may result in a grade lower than the number of accumulated points would otherwise indicate.

If you feel that an error was made in the grading of homework or exams, you may request a re-grade by notifying the instructor within one week of receiving it.

Hourly Exams

There will be **four 50-minute ("hourly") exams** worth 100 points each. The tests will be a combination of short answer, calculation-based problems, multiple choice, and true/false questions. The hourly exams only cover the material covered between the previous exam and the current exam. You must show all work to receive partial credit; if no work is shown, the question will be given a **zero** on that problem. The three highest scores will be included in the final grade calculation. You will be given a periodic table and a sheet with formulas and constants for every exam. You do not need to memorize these, but you are expected to know how and when to use them.

All exams must be taken during the regularly scheduled times. Exams cannot be taken outside the scheduled time without instructor permission. There will be **NO makeup exams** without valid documentation. If classes are cancelled by the University on the day of a scheduled exam, then the test is automatically scheduled for the next class lecture period. For university excused absences it is the students' responsibility to notify the instructor and make arrangements within 72 hours.

The hourly exams will be returned graded within 3 days. Grades will not be available until all exams have been graded. Once the exam is returned, you have one week to correct the written portion of the exam outside of class time and return the exam for up to an additional 10 points, up to a total of 100 points. Corrections must be attached as a separate sheet for credit. You are welcome to work in groups to correct exams, but you will only receive credit for your individual corrections. Corrections may not be an option for every exam.

Final Exam

The final exam will consist of the American Chemical Society exam. The ACS examination is a comprehensive examination that includes material from General Chemistry I and General Chemistry II. The examination is completely multiple choice. It is highly suggested that you order the "General Chemistry Study Guide: Preparing for Your ACS Examination in General Chemistry" (ISBN: 978-1-7327764-0-1) at this link: http://shopping.na1.netsuite.com/s.nl/c.3773982/sc.11/category.190/.f
You will want to start studying for the exam at least a month in advanced. Study guides will also be provided in the chemistry lounge in De La Roche 312.

Grading for the final exam will be based on percentile scores and the formula below:

$$\text{Exam Score} = (\%\text{-tile Score} + (100 - \%\text{-tile Score}) \cdot \frac{\%\text{-tile Score}}{100}) \cdot \frac{200}{100}$$

Therefore, if you landed in the 50th percentile you would get a C as a grade or 150 out of 200 possible points.

Assignments

Reading Quizzes (RQ)

Reading quizzes will be available through Moodle. These cover important concepts in every chapter. These quizzes are intended to be completed after your initial reading of the chapter and before the chapter is started in class. They will be due by **11:30 am** the day of the lecture starting each chapter. See Moodle for due dates and up-to-date schedule.

Homework Assignments (HW)

There will be Homework (HW) assignments due at **11:59 pm** two weeks after a homework assignment is available. The first homework assignment will open on Jan 31. **Updated due dates**

and times can be found on MasteringChemistry. Homework problems should be answered while we are covering the chapter in class. You are encouraged to work on these daily as they are quite long to do in one sitting. You are strongly encouraged to ensure you understand how to work all homework problems as problems and questions on the exams will be based upon homework and examples worked in class.

Element Project
You will be randomly assigned an element on February 1, 2021. Throughout the semester, you will research your element and develop a concept map for your element. A detailed rubric will be posted to Moodle after elements are assigned.

Class courtesy is also an important aspect of the course. The use of cellular phones, unrelated discussions, and interruption of the questions of fellow students is discouraged. If you are disruptive to the class, you will be asked to leave in order to maintain a productive learning environment. Every student is welcome in this class. Therefore, sexism, racism, homophobia, transphobia, and other forms of discrimination are not permitted. Inappropriate remarks will not be tolerated and may result in grade penalties.

Late Work Policy
Late work will receive a penalty of 20% per day and will not be accepted after 5 days. This DOES include weekends for anything submitted via Moodle.

Inclusion Policy
As a student at St. Bonaventure University, you have the right to an evaluation of academic performance free from discrimination on the basis of race, religion, color, gender, age, national or ethnic origin, marital status, sexual orientation, veteran status, political affiliation, or disability status. (www.sbu.edu/codeofconduct)

Students with Disabilities
St. Bonaventure is firmly committed to providing an equal opportunity for a college education to all qualified students. The philosophy of the Office of Student Disability Services reflects the interpretation of Section 504 of the Rehabilitation Act of 1973 in terms of providing reasonable and individualized accommodations. We welcome students with disabilities into our campus community and our programs. In this spirit, we are committed to providing reasonable opportunities to qualified students to participate in campus programs and activities. We recognize that the needs for each person with a disability are unique; therefore, services and/or accommodations are provided on an individualized basis. Students with disabilities are encouraged to participate in all aspects of campus life. Self-identification is essential and self-advocacy is encouraged.

Students with disabilities who feel they need academic accommodations should contact Adriane Spencer (aspencer@sbu.edu), Director of Disability Support Services Office, 100D Plassmann Hall (Student Success Center), 716-375-2065. Please reach out early in the semester so that we can assist you as soon as possible. Documentation from the Disability Support Services Office is required before the instructor can make accommodations.

For further information, please visit the Office for Disability Services Web site: http://www.sbu.edu/life-at-sbu/services-for-students/disability-support-services

Online Help & Academic Honesty
Online websites for homework should be a **last resort** after your SI instructor, tutors, and your instructor. The "Experts" on these sites do not have the experience and expertise you can find at St. Bonaventure University. In my experience, the answers are nearly always incorrect. Uploading exam and quiz problems is a violation of the Academic Honesty Policy. If any of my course materials are uploaded

without my permission, any student **who uploads or uses** the answers from these websites will receive a **ZERO** for the assignment.

Online resources are not permitted for use for any exam. Any student suspected of cheating will receive a zero on the exam and a violation will be submitted to the Academic Honesty Committee.

Academic Honesty Policy

Enrollment at St. Bonaventure University requires adherence to the University's standards of academic integrity. These standards may be intuitively understood and cannot, in any case, be listed exhaustively. The following examples, detailed in full in Appendix A of the Code of Conduct (http://www.sbu.edu/codeofconduct), represent some basic types of unacceptable behavior: cheating, plagiarism, fabrications, obtaining an unfair advantage, aiding and abetting academic dishonesty, falsification of records and official documents, and unauthorized access to records. Academic dishonesty is a serious matter and will be dealt with accordingly, with University sanctions ranging from grade alteration to the possibility of expulsion. Students should familiarize themselves with these very important provisions of the Academic Honesty Policy, which is outlined in the Code of Conduct for reference only. Acts of academic dishonesty are not processed through the University Judicial process; the process for handling alleged violations is outlined within the policy.

All academic honesty policy violations will be reported to the department chair, the student's adviser, the Dean, and the Registrar.

Face Coverings & Social Distancing

According to the St. Bonaventure policy, you are required to wear a face covering that completely covers your nose and mouth at all times during class. If you come to class without a face covering, you will not be allowed to attend the class that day. If you fail to wear your face covering correctly for the entire class period, you will be required to leave immediately. If this occurs during an exam day, you will receive a **ZERO** for the exam. Masking and distancing requirements must be followed even if you have previously tested positive for COVID-19 at any point in time or have received a complete series of COVID-19 vaccinations.

The face covering cannot be made of mesh, an open knit, or another material that does not decrease the spread of droplets. Masks with vents are allowed but you are encouraged to use a second mask with them to minimize the spread of droplets. Any exemptions to this policy must come from the Office of Student Disability Services.

You must remain 6 feet from other people at all times during class. Group work will be facilitated using technology listed on the Course Materials page. This class will be paperless as much as possible. Office hours will be held exclusively online via Zoom. You will be asked to sanitize your desk in order to begin class.

COVID-19 Symptoms, Testing, Quarantine & Isolation

Students placed on a mandatory quarantine or in isolation for potential exposure to or contraction of COVID-19 should electronically send their instructor documentation showing their status and **accommodations will be made**. If you travel to a restricted state that requires quarantine according to Governor Cuomo's Executive Order 205, issued June 25, 2020, contact your instructor ASAP to make arrangements.

Students who have symptoms of COVID-19 but are not officially quarantined or isolated should **not** attend class. Contact your instructor electronically to make them aware of your absence.