

**St. Bonaventure University**  
**CHEMISTRY 101 - 04**  
**GENERAL CHEMISTRY I**  
**Fall 2020**

**Instructor:** Dr. Carolyn Hutchinson  
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**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](https://calendly.com/chemhutchinson)  
**Class Schedule:** MWF 11:30 am – 12:20 pm  
**Classroom:** 024 De La Roche Hall

**Tentative Lecture Schedule\***

| Week | Day | Date           | Reading           | Subject                        |
|------|-----|----------------|-------------------|--------------------------------|
| 1    | M   | Aug 24         | Ch 1              | Matter & Measurement           |
|      | W   | Aug 26         | Ch 1              | Matter & Measurement           |
|      | F   | Aug 28         | Ch 1              | Matter & Measurement           |
| 2    | M   | Aug 31         | Ch 2              | Atoms, Molecules, and Ions     |
|      | W   | Sept 2         | Ch 2              | Atoms, Molecules, and Ions     |
|      | F   | Sept 4         | Ch 2              | Atoms, Molecules, and Ions     |
| 3    | M   | Sept 7         | Ch 3              | Stoichiometry                  |
|      | W   | Sept 9         | Ch 3              | Stoichiometry                  |
|      | F   | Sept 11        | Ch 3              | Stoichiometry                  |
| 4    | M   | Sept 14        | Ch 3              | Stoichiometry                  |
|      | W   | <b>Sept 16</b> | <b>[Ch 1-3]</b>   | <b>Exam 1 – Ch 1-3</b>         |
|      | F   | Sept 18        | Ch 4              | Reactions in Aqueous Solutions |
| 5    | M   | Sept 21        | Ch 4              | Reactions in Aqueous Solutions |
|      | W   | Sept 23        | Ch 4              | Reactions in Aqueous Solutions |
|      | F   | Sept 25        | Ch 4              | Reactions in Aqueous Solutions |
| 6    | M   | Sept 28        | Ch 10             | Gases                          |
|      | W   | Sept 30        | Ch 10             | Gases                          |
|      | F   | Oct 2          | Ch 10             | Gases                          |
| 7    | M   | Oct 5          | Ch 10             | Gases                          |
|      | W   | <b>Oct 7</b>   | <b>[Ch 4, 10]</b> | <b>Exam 2 – Ch 4, 10</b>       |
|      | F   | Oct 9          | Ch 5              | Thermochemistry                |
| 8    | M   | Oct 12         | Ch 5              | Thermochemistry                |
|      | W   | Oct 14         | Ch 5              | Thermochemistry                |
|      | F   | Oct 16         | Ch 6              | Electronic Structure of Atoms  |
| 9    | M   | Oct 19         | Ch 6              | Electronic Structure of Atoms  |
|      | W   | Oct 21         | Ch 6              | Electronic Structure of Atoms  |
|      | F   | Oct 23         | Ch 6              | Electronic Structure of Atoms  |
| 10   | M   | Oct 26         | Ch 7              | Periodic Properties            |
|      | W   | <b>Oct 28</b>  | <b>[Ch 5-6]</b>   | <b>Exam 3 – Ch 5-6</b>         |
|      | F   | Oct 30         | Ch 7              | Periodic Properties            |
| 11   | M   | Nov 2          | Ch 7              | Periodic Properties            |
|      | W   | Nov 4          | Ch 8              | Chemical Bonding               |
|      | F   | Nov 6          | Ch 8              | Chemical Bonding               |
| 12   | M   | Nov 9          | Ch 8              | Chemical Bonding               |
|      | W   | Nov 11         | Ch 8              | Chemical Bonding               |
|      | F   | Nov 13         | Ch 9              | Molecular Geometry             |

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|    |   |        |          |  |
|----|---|--------|----------|--|
| 13 | M | Nov 16 | Ch 9     | Molecular Geometry   |
|    | W | Nov 18 | [Ch 7-9] | Exam 4 – Ch 7-9  |
|    | F | Nov 20 | Ch 9     | Molecular Geometry   |
| 14 | M | Nov 23 | Ch 9     | Molecular Geometry   |
|    | W | Nov 25 | --       | NO CLASS – Thanksgiving Holiday (Nov 25-29)                |
|    | F | Nov 27 | --       | NO CLASS – Thanksgiving Holiday (Nov 25-29)                |
| 15 | M | Nov 30 | --       | Final Exam Review  |
|    | W | Dec 2  | --       | Final Exam Review – Last class day                         |
| 16 | W | Dec 9  | --       | ***Final Exam*** (Comprehensive, Ch 1-10) 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/chem101-f2020>. 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. This course covers the atomic theory of matter, stoichiometry, gases, thermochemistry, atomic and molecular structures, condensed phases and solutions.

### Course pre-requisite

A high-school chemistry course or CHEM 100.

### 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/>
- Socrative – <https://socrative.com/higher-ed> (FREE)
  - Room Code: TBA
  - Student ID: use your SBU username (e.g., adamgarcia)
  - For help visit <https://help.socrative.com/en/>

### 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:

- Understand and utilize the Scientific Method as applied to chemistry.
- List appropriate units of measurement and demonstrate proficiency in converting these units between the standard and metric systems.
- Describe the structure of the atom.
- Provide chemical formulas of molecular and ionic substances as well as naming compounds from chemical formulas.
- Utilize the mole concept in terms of atoms (atomic mass), molecules (molecular mass), chemical reactions (stoichiometry), and solutions (molarity and dilutions).
- Describe the energy exchange during a chemical reaction utilizing enthalpy and Hess' Law.
- Use quantum numbers to describe the electronic structure of the atom and periodic trends of physical and properties.
- Predict trends in atomic size, ionization energy, and electronegativity.
- Demonstrate how ionic and covalent bonds are formed.
- Draw Lewis structures, predict molecular geometry and polarity using VSEPR theory.

**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 tutoring 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. 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**. If the student is “excused” from an examination, performance on the final examination will be used to replace the exam grade. **MAKEUP EXAMINATIONS REQUIRE A VALID REASON** with documentation! All unexcused assignments and examinations will be given a grade of ZERO!

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**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.) Cell phones are not to be used during class outside of collaborative activities, such as Socrative. 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:                                       | 400 points (40%)   |
| Final Exam:   | 200 points (20%)   |
| Chapter Homework Assignments (Mastering Chemistry): | 175 points (17.5%) |
| Reading Quizzes:                                    | 150 points (15%)   |
| Office Hours:                                       | 50 points (5%)     |
| In-Class Participation (Socrative) & Pop Quizzes:   | 25 points (2.5%)   |
| <b>Total:</b>                                       | <b>1000 points</b> |

Letter grade assignment:

| <b>Grade</b> | <b>Points</b> | <b>Percentage</b> |
|--------------|---------------|-------------------|
| 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.

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### Exams

There will be **four 50-minute (“hourly”) exams**. 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. There will be a **2-hour comprehensive Final Exam**. The Final Exam will be cumulative. You must show all work to receive partial credit; if no work is shown, the question will be given a **zero** on that problem. 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. There will be **NO makeup exams** without valid documentation. A missed exam will count as a **ZERO** (excluding a well-documented serious illness, requiring hospitalization). 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 48 hours.

The hourly exams will be returned graded within 3 days. Grades will not be available before 8am on the day that exams are returned. 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.

### 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 Chapter Homework (HW) assignments **due at 11:59 pm** the Sunday after each chapter is completed in lecture. The tentative schedule is noted above which may change due to class progress. **Updated due dates and times can be found on Mastering Chemistry.** 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.

#### Office Hours (OH)

Each student is **required** to visit the instructor’s office hours twice during the semester. The first visit must occur before October 7. If a student fails to make it to two visits, they will receive a zero in this category. You will not receive full points if you do not come with a question.

#### Attendance & In-Class Quizzes

There is not a grade given for attendance in this class. Attendance information will still be collected through the use of Socrative quizzes. Socrative quizzes will be graded based on completeness (were all questions answered) and scaled by the number of lectures the student attended.

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

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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](http://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](mailto: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,

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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 & Other COVID-19 Considerations**

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.

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.

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. Similarly, if you are quarantined due to COVID-19, contact your instructor ASAP to make arrangements.

I sincerely thank you for all your cooperation during these unprecedented times.