Chemistry, B.A. *major*

A total of 120 semester credits are needed for the **Chemistry B.A.** degree and include the following:

- 40 upper division credits (level 3000/4000)
- 31 required major core credits
- Completion of Core Curriculum credits (Minnesota Transfer Curriculum [MnTC] Goal Areas 1-10) - required for all baccalaureate degrees
- Completion of BSU Focus and Nisidotaading Course Requirements

Dual Degrees
Students wishing to complete two degrees concurrently, (example: Bachelor of Science and Bachelor of Arts) must complete a minimum of an additional 30 credits above the required 120 credits.

Multiple Credentials
Any additional major, minor or certificate in a degree must have at least 6 credits of course work not used to meet the requirements of another major, minor or certificate in the degree.

Required Credits: 31
Required GPA: 2.25

I REQUIRED COURSES

Note: Students enrolled in CHEM 1111 who elect this major should enroll in CHEM 2212 during the second semester.

Select one of the following:

- CHEM 1111 General Chemistry I (4 credits)
- CHEM 2211 Principles of Chemistry I (4 credits)

Complete the following courses:

- CHEM 2212 Principles of Chemistry II (4 credits)
- CHEM 3100 Journal Club (1 credit)
- CHEM 3110 Laboratory Management and Safety (2 credits)
- CHEM 3311 Organic Chemistry I (3 credits)
- CHEM 3312 Organic Chemistry II (3 credits)
- CHEM 3371 Organic Chemistry Laboratory I (1 credit)
- CHEM 3372 Organic Chemistry Laboratory II (1 credit)
- CHEM 3507 Analytical Chemistry (3 credits)
- CHEM 3570 Analytical Chemistry Laboratory (1 credit)

Select one of the following courses:

- CHEM 3811 Intermediate Inorganic Chemistry (3 credits)
- CHEM 4411 Biochemistry I (3 credits)

II REQUIRED ELECTIVES

Select 5 semester credits of electives from CHEM 3100 or above. Up to 4 semester credits of research CHEM 3980 or CHEM 4980 may be used in this area

Program Learning Outcomes | Chemistry, B.A.

1. Use the structure of atoms and their subatomic particles to explain chemical and physical properties.

2. Explain how atoms interact via chemical bonds and the energy changes associated with making and breaking bonds.

3. Relate the three dimensional geometric structures of chemical compounds to their chemical and physical behaviors.

4. Evaluate how intermolecular forces dictate the physical behavior of matter.

5. Categorize and analyze the chemical reactions involved in transforming matter into products with new chemical and physical properties.

6. Evaluate the energy changes that accompany chemical reactions.

7. Assess the various ways that affect how reaction rates vary with time.

8. Analyze the various factors that affect the equilibrium of chemical reactions.

9. Perform laboratory experiments that involve collecting and analyzing data and practicing chemical safety.

10. Evaluate chemical constructs at the particulate and macroscopic levels using models, graphs to visualize data, and mathematical equations.

11. Develop written reports and oral presentations that effectively communicate scientific principles and processes.

Suggested Semester Schedule | Chemistry, B.A.

The following is a list of required courses for the Chemistry Major, B.A., arranged by year. This schedule is intended to assist students in planning their academic program and may be altered somewhat to fit the students background and circumstances.

Freshman

- CHEM2211
- CHEM2212
- Core Curriculum requirements
- Electives

Sophomore

- CHEM3311
- CHEM3312
- CHEM3371
- CHEM3372
- CHEM3507
- CHEM3570
- Core Curriculum requirements

Junior/Senior

- CHEM3100
- CHEM3110
- CHEM4411
  or CHEM4811
- Chemistry electives
- Complete Core Curriculum requirements
- Electives