

Chemistry

Program Description:

According to the 2006 *National Occupational Employment and Wage Estimator*, more people are employed as chemists and chemical technicians than in any other job classification in the life and physical science occupations (<http://stats.bls.gov>). With many free electives and a common general education core, a chemistry degree can also be used in combination with other majors or minors such as pre-law, engineering, literature, business, biology, etc. to match student interest and career plans.

Graduates with a bachelor of arts in chemistry work in many disciplines and industries, and many proceed on to graduate school in natural sciences, law, engineering and medicine. Internships in chemistry are encouraged where students can gain valuable real-world work experience while gaining college credit. In addition, each student participates in an applied research project in close collaboration with faculty members to address meaningful chemical-based problems. These projects, through the excellent preparation they provide our students, are often cited as important factors in successful job searches and entry into graduate programs.

Career Descriptions:

Chemist — Works in business and industry, and environmental and commercial laboratories conducting basic and applied chemical analysis, research and product development.

Lawyer — Applies basic chemical knowledge to the practice of law related to scientific and natural resource issues.

Patent Specialist — Works with patent applications related to the chemical industry, and the application of chemistry to new and novel problems.

Environmental Scientist — Combines knowledge of chemistry and biology to address significant issues from the perspective of each discipline, particularly the chemical foundations of biological processes.

Physician — Uses chemistry as a foundation for the practice of medicine. A degree in chemistry is a useful precursor to medical school, the study of pharmacology, and the development of drugs to promote health and quality of life.

Science Teacher — Responsible for developing and implementing science curriculum in grades 7-12; daily classroom operations; and developing professional relationships with students, parents, district faculty and staff.

**Bachelor of Arts
Pre-Professional
Secondary Teaching
Bachelor of Science
Secondary Teaching**

Career Choices:

Chemist
Lawyer
Patent Specialist
Environmental Scientist
Physician
Junior/Senior High School
Science Teacher

Student Profile:

Do you ...

- enjoy chemistry?
- have an aptitude for problem solving and team work?
- enjoy courses in math and science?
- possess strong writing, listening and speaking skills?
- enjoy helping others learn and apply what they learn?

Chemistry

Chemistry Bachelor of Science

Chemistry Degree Requirements (55-57 credits)

| | | |
|---------|--|-----|
| CHEM115 | General Chemistry I | 5 |
| CHEM116 | General Chemistry II | 4 |
| CHEM225 | Organic Chemistry I | 4 |
| CHEM226 | Organic Chemistry II | 4 |
| CHEM231 | Quantitative Analysis | 4 |
| CHEM332 | Instrumental Analysis | 4 |
| CHEM361 | Physical Chemistry I | 4 |
| CHEM362 | Physical Chemistry II | 3 |
| CHEM395 | Junior Seminar | 1 |
| CHEM451 | Introductory Biochemistry | 4 |
| CHEM461 | Advanced Inorganic Chemistry | 3 |
| CHEM462 | Advanced Inorganic and Physical Chemistry Lab | 1 |
| CHEM495 | Senior Project | 1-3 |
| CHEM499 | Senior Seminar | 1 |
| CHEM | Electives 300 level or higher | 12 |

Support Courses (19 credits)

| | | |
|---------|---------------------|---|
| BUSN211 | Business Statistics | 3 |
| MATH151 | Calculus I | 4 |
| MATH152 | Calculus II | 4 |
| PHYS231 | Applied Physics I | 4 |
| PHYS232 | Applied Physics II | 4 |

General Electives (25 credits)

Other General Education (25-28 credits)

| | | |
|---------|-------------------------------|-----|
| COMM101 | Fund. of Speech Communication | 3 |
| ENGL110 | Freshman Composition I | 3 |
| ENGL111 | First-Year Composition II | 3 |
| HUMN251 | Humanities I | 4 |
| | Approved Humanities* | 3 |
| | Approved Social Science* | 6-8 |
| | Approved Soc. Sci. Diversity* | 3-4 |

*consult list for approved courses

Free elective credits must be completed for a minimum of 124 total credits.

Chemistry Secondary Teaching Bachelor of Science

Chemistry Requirements (40 credits)

| | | |
|---------|--|---|
| CHEM115 | General Chemistry I | 5 |
| CHEM116 | General Chemistry II | 4 |
| CHEM225 | Organic Chemistry I | 4 |
| CHEM226 | Organic Chemistry II | 4 |
| CHEM231 | Quantitative Analysis | 4 |
| CHEM332 | Instrumental Analysis | 4 |
| CHEM361 | Physical Chemistry I | 4 |
| CHEM362 | Physical Chemistry II | 3 |
| CHEM451 | Introduction to Biochemistry | 4 |
| CHEM462 | Advanced Inorganic and Physical Chemistry Lab | 1 |

Complete one methods course from the following:

| | | |
|---------|---|---|
| EDUC443 | Science Methods for Secondary Teachers | 3 |
| EDUC453 | Directed Study in Science Methods | |

Chemistry Cognates (37 credits)

| | | |
|---------|------------------------------|-----|
| CHEM395 | Junior Seminar | 1 |
| CHEM461 | Advanced Inorganic Chemistry | 3 |
| CHEM495 | Senior Project | 1-3 |
| CHEM499 | Senior Seminar | 1 |
| CHEM | Chemistry Electives | 12 |
| MATH151 | Calculus I | 4 |
| MATH152 | Calculus II | 4 |
| MATH207 | Principles of Statistics | 3 |
| PHYS231 | Applied Physics I | 4 |
| PHYS232 | Applied Physics II | 4 |

Other General Education (25-28 credits)

| | | |
|---------|-------------------------------|-----|
| COMM101 | Fund. of Speech Communication | 3 |
| ENGL110 | Freshman Composition I | 3 |
| ENGL111 | First-Year Composition II | 3 |
| HUMN251 | Humanities I | 4 |
| | Approved Humanities* | 3 |
| | Approved Social Science* | 6-8 |
| | Approved Soc. Sci. Diversity* | 3-4 |

*consult list for approved courses

Free elective credits must be completed for a minimum of 124 total credits.

Bachelor of Science Degree:

At least eight (8) semester credits *in addition* to courses used for general education requirements from categories of social science, natural science or mathematics.

These bachelor of science degree requirements can be used for majors or minors, but not general education.

Chemistry Bachelor of Arts

| | |
|--------------------------------------|---------------------|
| Chemistry Degree Requirements | (39 credits) |
| CHEM115 General Chemistry I | 5 |
| CHEM116 General Chemistry II | 4 |
| CHEM225 Organic Chemistry I | 4 |
| CHEM226 Organic Chemistry II | 4 |
| CHEM231 Quantitative Analysis | 4 |
| CHEM332 Instrumental Analysis | 4 |
| CHEM353 Introductory Toxicology | 3 |
| CHEM451 Introduction to Biochemistry | 4 |
| CHEM361 Physical Chemistry | 4 |
| CHEM395 Junior Seminar | 1 |
| CHEM495 Senior Project | 1-3 |
| CHEM499 Senior Seminar | 1 |

| | |
|--|--------------------|
| Directed Electives | (8 credits) |
| <i>Choose eight credits from the following:</i> | |
| INTD399 Internship in Chemistry | 2-4 |
| CHEM Electives (300-level or higher beyond courses listed above) | |

| | |
|-----------------------------|---------------------|
| Other Departments | (27 credits) |
| BUSN211 Business Statistics | 3 |
| MATH151 Calculus I | 4 |
| MATH152 Calculus II | 4 |
| PHYS231 Applied Physics I | 4 |
| PHYS232 Applied Physics II | 4 |
| Foreign Language I | 4 |
| Foreign Language II | 4 |

| | |
|---------------------------------------|------------------------|
| Other General Education | (25-28 credits) |
| ENGL110 Freshman Composition I | 3 |
| ENGL111 First-Year Composition II | 3 |
| HUMN251 Humanities I | 4 |
| COMM101 Fund. of Speech Communication | 3 |
| Approved Humanities* | 3 |
| Approved Social Science* | 6-8 |
| Approved Soc. Sci. Diversity* | 3-4 |

**consult list for approved courses*

Free elective credits must be completed for a minimum of 124 total credits.

Chemistry Secondary Teaching Bachelor of Arts

| | |
|---|---------------------|
| Chemistry Requirements | (40 credits) |
| CHEM115 General Chemistry I | 5 |
| CHEM116 General Chemistry II | 4 |
| CHEM225 Organic Chemistry I | 4 |
| CHEM226 Organic Chemistry II | 4 |
| CHEM231 Quantitative Analysis | 4 |
| CHEM332 Instrumental Analysis | 4 |
| CHEM361 Physical Chemistry I | 4 |
| CHEM362 Physical Chemistry II | 3 |
| CHEM451 Introduction to Biochemistry | 4 |
| CHEM462 Advanced Inorganic and Physical Chemistry Lab | 1 |

| | |
|--|---|
| <i>Complete one methods course from the following:</i> | |
| EDUC443 Science Methods for Secondary Teachers | 3 |
| EDUC453 Directed Study in Science Methods | |

| | |
|----------------------------------|---------------------|
| Chemistry Cognates | (25 credits) |
| CHEM353 Introductory Toxicology | 3 |
| CHEM395 Junior Seminar | 1 |
| CHEM495 Senior Project | 1-3 |
| CHEM499 Senior Seminar | 1 |
| MATH151 Calculus I | 4 |
| MATH152 Calculus II | 4 |
| MATH207 Principles of Statistics | 3 |
| PHYS231 Applied Physics I | 4 |
| PHYS232 Applied Physics II | 4 |

| | |
|---------------------------------------|------------------------|
| Other General Education | (25-28 credits) |
| COMM101 Fund. of Speech Communication | 3 |
| ENGL110 Freshman Composition I | 3 |
| ENGL111 First-Year Composition II | 3 |
| HUMN251 Humanities I | 4 |
| Approved Humanities* | 3 |
| Approved Social Science* | 6-8 |
| Approved Soc. Sci. Diversity* | 3-4 |

**consult list for approved courses*

| | |
|--|--------------------|
| Directed Electives | (8 credits) |
| INTD399 Internship in Chemistry | |
| CHEM Electives (300-level or higher beyond courses listed above) | |

Secondary Teaching Certification
To be recommended for secondary teacher certification, students must complete an approved minor in a second teachable subject and the approved teacher education courses. You earn a bachelor of arts degree, then participate in a fifth-year teaching internship with accompanying graduate-level course work.

Chemistry Pre-Professional Bachelor of Arts

| | |
|--------------------------------------|---------------------|
| Chemistry Degree Requirements | (39 credits) |
| CHEM115 General Chemistry I | 5 |
| CHEM116 General Chemistry II | 4 |
| CHEM225 Organic Chemistry I | 4 |
| CHEM226 Organic Chemistry II | 4 |
| CHEM231 Quantitative Analysis | 4 |
| CHEM332 Instrumental Analysis | 4 |
| CHEM353 Introductory Toxicology | 3 |
| CHEM451 Introduction to Biochemistry | 4 |
| CHEM361 Physical Chemistry | 4 |
| CHEM395 Junior Seminar | 1 |
| CHEM495 Senior Project | 1-3 |
| CHEM499 Senior Seminar | 1 |

| | |
|--|--------------------|
| Directed Electives | (8 credits) |
| <i>Choose eight credits from the following:</i> | |
| INTD399 Internship in Chemistry | 2-4 |
| CHEM electives (300-level or higher beyond courses listed above) | |

| | |
|------------------------------------|---------------------|
| Pre-Professional Courses | (16 credits) |
| BIOL131 General Biology: Cells | 4 |
| BIOL132 General Biology: Organisms | 4 |
| BIOL220 Genetics | 4 |
| BIOL421 Cell Biology | 4 |

| | |
|-----------------------------|---------------------|
| Support Courses | (27 credits) |
| BUSN211 Business Statistics | 3 |
| MATH151 Calculus I | 4 |
| MATH152 Calculus II | 4 |
| PHYS231 Applied Physics I | 4 |
| PHYS232 Applied Physics II | 4 |
| Foreign Language I | 4 |
| Foreign Language II | 4 |

| | |
|---------------------------------------|------------------------|
| Other General Education | (25-28 credits) |
| COMM101 Fund. of Speech Communication | 3 |
| ENGL110 Freshman Composition I | 3 |
| ENGL111 First-Year Composition II | 3 |
| HUMN251 Humanities I | 4 |
| Approved Humanities* | 3 |
| Approved Social Science* | 6-8 |
| Approved Soc. Sci. Diversity* | 3-4 |

**consult list for approved courses*

Free elective credits must be completed for a minimum of 124 total credits.

Bachelor of Arts Degree:

One year (8 credits) of a modern language other than English. If taken at LSSU, this would be:

CHIN151-152, FREN151-152 or 251-252, GRMN141-142 or 241-242, NATV141-142 or 201-202, or SPAN161-162.

One-half year of two different languages will not meet this requirement.