Experience Southeast…Experience Success

# DEPARTMENT OF CHEMISTRY

## Bachelor of Science in Education (Chemistry with Unified Science)

Chemistry is the branch of natural science that is concerned with the description and classification of matter, with the changes which matter undergoes, and with the energy associated with each of these changes. The BS in Ed (Chemistry with Unified Science) - certifies one to teach entry level biology, earth science, and physics in Missouri, but requires an extra semester to complete the requirements. It is one of two options in education. A second option is the BS in Ed (Chemistry) that provides students with a fundamental background in chemistry, prepares students to teach chemistry at the secondary level, and meets minimum State of Missouri certification requirements.

**FACULTY ADVISOR:**

Dr. Sharon Coleman (573-651-2372)

**CAREER OPPORTUNITIES:**

Primary purpose of degree is to prepare one to teach chemistry at high school level.

**EMPLOYMENT OUTLOOK:**

Excellent; there is a severe nationwide shortage of chemistry teachers.

**SUGGESTED HIGH SCHOOL PREPARATION FOR MAJOR:**

4 units English, 3 units Science (Biology, Chemistry, Physics), and Math through Trigonometry and Pre-calculus.

# CHEMISTRY
## SUGGESTED 9 SEMESTER SEQUENCE

**Major: Chemistry**

**Degree: Bachelor of Science**
**Secondary Education (Unified Science)**
**Fall 2006**

| **First Semester** | **Hrs** | **Second Semester** | **Hrs** |
|---|---|---|---|
| UI100 First Year Seminar | 3 | CH186 General Chemistry II | 3 |
| CH185 Gen. Chem. I Lec. | 5 | CH187 Qualitative Analysis | 2 |
| CH085 Gen. Chem. I Lab. | + | MA139 Applied Calculus | 3 |
| CH005 Gen. Chem. I Rec. | + | EN140 Rhet. & Crit. Thinking | 3 |
| MA133 Plane Trigonometry | 0- 2 | | SC105 |
| Fundamentals of Oral Communication | | 3 | |
| MA134 College Algebra | 0- 3 | | SE 222 |
| Block I | | 0 | |
| EN100 English Comp. | 0- 3 | | |
| | | University Studies Elective | 3 |

| **Third Semester** | **Hrs** | **Fourth Semester** | **Hrs** |
|---|---|---|---|
| CH271 Quant. Analysis | 4 | CH341 Organic Chemistry I | 4 |
| PH120/020 Intro. To Physics I | 5 | CH342 Organic Chemistry Lab I | 1 |
| PY222 Development of the Adolescent | 3 | PH121/021 Intro. to Physics II | 5 |
| BS108 or BS218 | 3 | GO110 Physical Geology | 3 |
| | | SE275 Diversity in America's Schools | 3 |

| **Fifth Semester** | **Hrs** | **Sixth Semester** | **Hrs** |
|---|---|---|---|
| CH310 Intro. to Physical Chemistry **(Fall)** | 5 | Block II | 11 |
| UI331 Biochemistry I **(Fall)** | 3 | BO200 Plant Biology **(Spring)** | 3 |
| University Studies | 6 | UI443 Professional Experience in Chemistry | 3 |
| ZO200 Animal Biology **(Fall)** | 3 | WP003 75 Hour Writing Exam | 0 |

| **Seventh Semester** | **Hrs** | **Eighth Semester** | **Hrs** |
|---|---|---|---|
| CH350 Environmental Chemistry | 3 | Block III **(Spring)** | 10 |
| University Studies | 6 | GO220 Oceanography **(Spring)** | 3 |
| GO320 Meteorology **(Fall)** | 3 | UI422 Scientific Reasoning | 3 |

**Ninth Semester**

| | | | |
|---|---|---|---|
| Block IV | 13 | TOTAL | 128-137 |

NOTES:
1. REQUIREMENTS FOR ADMISSION TO THE TEACHER EDUCATION PROGRAM:
   A. Students must complete PY222 and SE222, pass the CBASE exam (score 235 or better if ACT was 22 or above, or 265 on all parts if ACT is less than 22)
   B. The student must also
      i. have a 2.5 grade point average
      ii. complete EN100, EN140 and SC105 (or equivalents) with a minimum grade of "C"
      iii. not be on disciplinary probation
      iv. have recommendation from the Block I Field Supervisor
   Note: No further education courses (Block II or higher) may be registered for until admission is complete.
2. University studies courses required for teacher certification are listed on page 5.

3. All students must complete the California Critical Thinking Skills Test (CCTST) after completing 75 hours.
4. CL001, CL002, CL003, CL004 (Career Linkage sessions) 0 credit (Required for students entering Southeast in fall, 2005 or later)

**Department of Chemistry**
**Title of Major: Chemistry Education (B.S.Ed.) (Unified Science)**

MINIMUM DEGREE REQUIREMENTS

I. University Studies (up to 21 hours can be met within sections II, III, and IV below) 48 hours **(27 actual)**

The following University Studies courses are required for teacher certification:

| | | | |
|---|---|---|---|
| EN140 Rhetoric & Critical Thinking | (3) | US105 or 107 American History I or II | (3) |
| LIxxx Literature course (200-500 level) | (3) | PLxxx Philosophy course | (3) |
| PS103 U.S. Political Systems | (3) | SC105 Fundamentals of Oral Communication | (3) |
| ECxxx, GGxxx, or SOxxx | (3) | PY222 Development of the Adolescent | (3) |

II. Required Courses for the Major (up to 15 hours can also be applied to University Studies)

A. History/Philosophy of Science and Technology

UI422 Scientific Reasoning (3)*
**Total Sci. Hist./Phil.: 3 Hours**

B. Biology

BO200 Plant Biology (3)
BS108-Bio. for Living, (3)*
Or BS218 Bio Sci: A Process Approach (3)*
ZO200 Animal Biology (3)
**Total Biology: 9 Hours**

C. Chemistry

CH185/005/085 General Chemistry I (5)*
CH186 General Chemistry II (3)
CH187 Qualitative Analysis (2)
CH271 Quantitative Analysis (4)
CH310 Intro. to Physical Chemistry (5)
CH341/342 Organic Chemistry I and lab (5)
UI331 Biochemistry I (3)*
UI443 Professional Experience in Chemistry (3)*
**Total Chemistry Endorsement: 30 Hours**

D. Physics

PH120/020 Introductory Physics (5)
**OR** PH230/030 General Physics I (5)

PH121/021 Introductory Physic
(5)
**OR** PH231/031 General Physics II (5)
**Total Physics: 10 hours**

E. Earth Science

GO110 Physical Geology (3)
GO220 Meteorology (3)
GO320 Oceanography (3)
**Total Earth Science: 9 hours**

F. Environmental Science

CH350 Environmental Chemistry (3)
or
EV350 Environmental Chemistry (3)
**Total Environmental Science: 3 hours**

| | | |
|---|---|---|
| III. Required Mathematics (3 hours can also be applied to University Studies) | | **9 hours** |
| | MA133 Trigonometry | ( 3) |
| | MA134 College Algebra | (3)* |
| | MA139 Applied Calculus | (3)* |
| IV. Professional Education | | **34 hours** |
| | **Minimum Degree Requirements** | **137-142 hours** |

*** denotes University Studies Courses**

**University Studies Requirements**
**for**
**BS in Secondary Education**
**Chemistry Major**

| | | Hours |
|---|---|---|
| EN100 English Composition | | 0-3 |
| WP003 75-hour Writing Test | | 0 |
| University Studies 100-200 Level | | |
| UI100 Creative and Critical Thinking | | 3 |
| Perspectives on Individual Expression | | |
| Artistic Expression | PL203 recommended (1) | 3 |
| Literary Expression | LIXXX- Note: Cannot take LI243 | 3 |
| Oral Expression | SC105 | 3 |
| Written Expression | EN140 | 3 |
| Perspectives on National Systems | | |
| Behavioral Systems | PY222 | 3 |
| Living Systems | BS108 recommended | 3 |
| Logical Systems | MA134 or MA139 | 3 |
| Physical Systems | CH185/085/005 | 5 |
| Perspectives on Human Institutions | | |
| Devel. of a Major Civilization | US105 or US107 | 3 |
| Economic Systems | ECXXX | 3 |
| Political Systems | PS103 | 3 |
| Social Systems | GGXXX or SOXXX | 3 |
| University Studies 300 and 400 Level | | |
| UI331 Biochemistry I | | 3 |
| UI443 Professional Experience in Chemistry (2) | | 3 |
| UI422 Scientific Reasoning | | 3 |

(1) will also meet required PLXXX
(2) UI443 will replace UI3XX (3) requirement

## Professional Education Requirements

All secondary education majors must take the following core courses. Courses within each block must be taken concurrently. (Exception – family and consumer sciences education and music education majors' requirements differ from those listed. See specific guidelines listed with these majors.)

**Block I: 0 hours** **Recommendation**: Block I should be taken after first semester of the freshman year.

| | |
|---|---|
| SE222 | Secondary Block I Field Experience (0) |

**Block II: 14 hours** Block II should be taken after first semester of the sophomore year.

**Fall or Spring** **Prerequisite to Block II:** *Admission to the Teacher Education Program*

| | |
|---|---|
| EF304 | School and Society (2) |
| SE305 | Secondary Block II Field Experience (2) |
| SE306 | Theories of Learning and Management (2) |
| SE307 | Teaching Reading in Secondary School (2) |
| SE308 | Fundamentals of High School Education (3) |
| SE275 | Diversity in Schools (3) ***with Block II or III*** |

**Block III: 10 hours**

**Spring Only**

| | |
|---|---|
| EX390 | Psychology and Education of the Exceptional Child (3) ***may take out of sequence*** |
| SE320 | Techniques in Teaching Science (3) |
| SE370 | Secondary Block III Field Experience (2) |
| SE300 | Technology to Enhance Learning (2) ***with Block II or III*** |

**Block IV: 13 hours**

**Fall or Spring**

| | |
|---|---|
| SE463 | Student Teaching Secondary (1st) (6) |
| SE464 | Student Teaching Secondary (2nd) (6) |
| EF400 | Seminar in Educational Issues for Student Teachers (1) |