Experience Southeast…Experience Success

# DEPARTMENT OF CHEMISTRY

## Bachelor of Science in Education (Chemistry)
## Fall 2006

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 Education (Chemistry) 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. It is one of two options in education. A second option is the BS in Ed (Chemistry with Unified Science) that certifies students to teach entry level biology, earth science, and physics in Missouri, but requires an extra semester to complete the 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.

## SUGGESTED 8 SEMESTER SEQUENCE

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

| **First Semester** | **Hrs** |
|---|---|
| UI100 First Year Seminar | 3 |
| CH185 Gen. Chem. I Lec. | 5 |
| CH085 Gen. Chem. I Lab. | 0 |
| CH005 Gen. Chem. I Rec. | 0 |
| MA133 Plane Trigonometry | 0- 2 |
| MA134 College Algebra | 0- 3 |
| EN100 English Comp. | 0- 3 |
| University Studies | 3 |
| | 11 - 19 |

| **Second Semester** | **Hrs** |
|---|---|
| CH186 General Chemistry II | 3 |
| CH187 Qualitative Analysis | 2 |
| MA139 Applied Calculus | 3 |
| EN140 Rhet. & Crit. Thinking | 3 |
| SC105 Fundamentals of Oral Communication | 3 |
| SE 222 Block I | 0 |
| University Studies | 3 |
| | 17 |

| **Third Semester** | **Hrs** |
|---|---|
| CH271 Quant. Analysis (fall) | 4 |
| PH120/020 Intro. To Physics I | 5 |
| PY222 Development of the Adolescent | 3 |
| BS 108 or BS 218 | 3 |
| | 15 |

| **Fourth Semester** | **Hrs** |
|---|---|
| CH341 Organic Chemistry I | 4 |
| CH342 Organic Chemistry Lab I | 1 |
| PH121/021 Intro. to Physics II | 5 |
| GO110 Physical Geology | 3 |
| SE275 Diversity in Schools | 3 |
| | 16 |

| **Fifth Semester** | **Hrs** |
|---|---|
| CH310 Intro. to Physical Chemistry (fall) | 5 |
| Block II (see last page) | 11 |
| | 16 |

| **Sixth Semester** | **Hrs** |
|---|---|
| Block III **(spring)** | 10 |
| University Studies | 3 |
| UI443 Professional Experience in Chemistry | 3 |
| WP003 75 Hour Writing Exam | 0 |
| | 16 |

| **Seventh Semester** | **Hrs** |
|---|---|
| University Studies | 9 |
| Environmental Science | 3 |
| UI331 Biochemistry I (fall) | 3 |
| | 15 |

| **Eighth Semester** | **Hrs** |
|---|---|
| Block IV | 13 |
| UI422 Scientific Reasoning | 3 |
| | 16 |

**TOTAL** **122 - 130**

NOTES:

1. To be admitted to the program, the student must:
   a. have a 2.5 grade point average
   b. take the ACT (American College Test) or the SAT (Scholastic Aptitude Test)
   c. pass all sections of College-Basic Academic Subject Exam (C-BASE), achieve a score of at least 265 on each section or score 235 on all sections of C-BASE with an ACT or SAT score at or above the 66th percentile.
   d. complete EN100, EN140 and SC105 (or equivalents) with a minimum grade of "C"
   e. not be on disciplinary probation
   f. have recommendation from the Block I Field Supervisor
2. University studies courses required for teacher certification include PS103, SC105, US105 or 107, PY222, any PLXXX, any LIXXX, a course from ECXXX or GGXXX or SOXXX.
3. All students must complete the California Critical Thinking Skills Test after completing 75 hours.
4. CL001, CL002, CL003, CL004 (Career Linkage sessions) 0 credit (Required for students entering Southeast in fall, 2005 or later)

Revised Spring 2007

Department of Chemistry — Title of Major: Chemistry Education (B.S.Ed.)

MINIMUM DEGREE REQUIREMENTS

I. University Studies (up to 15 hours can be met within sections II, III, and IV below) **48 hours**

The following University Studies courses are required for teacher certification:

| | | | |
|---|---|---|---|
| EN140 Rhetoric & Critical Thinking | (3) | US105 OR US107 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 — (Spring) UI422 Scientific Reasoning (3)*

**Total Sci. Hist./Phil.: 3 hours**

B. Biology — BS108 – Biology for living (3)*

OR BS218 – Bio Sci: A Process Approach (3)*

**Total Biology: 3 hours**

C. Chemistry

| | |
|---|---|
| | CH185/005/085 General Chemistry I (5)* |
| | CH186 General Chemistry II (3) |
| | CH187 Qualitative Analysis (2) |
| (Fall) | CH271 Quantitative Analysis (4) |
| (Fall) | CH310 Intro to Physical Chemistry (5) |
| | CH341 Organic I (4) |
| | CH342 Organic I Lab (1) |
| (Fall ) | UI331 Biochemistry I (3)* |
| | UI443 Prof Exp in Chemistry (3) |

**Total Chemistry: 30 hours**

D. Physics — PH120/020 Introductory Physics I (5) OR PH230/030 General Physics I (5)

PH121/021 Introductory Physics II (5) OR PH231/031 General Physics II (5)

**Total Physics: 10 hours**

E. Earth Science : choose one of the following:

| | |
|---|---|
| | GO110 Physical Geology (3) |
| (spring) | GO220 Meteorology (3) |
| (fall) | GO320 Oceanography (3) |
| | UI318 Earth Science: A process (3) |

**Total Earth Science: 3 hours**

F. Environmental Science — Choose one of the listed courses

| | |
|---|---|
| | BS105 Environmental Biology (3)* |
| | BI332 General Ecology (3) |
| | CH350 Environmental Chemistry (3) |
| | Or |
| | EV350 Environmental Chemistry (3) |
| | GO150 Environmental Hazards (3)* |
| | GO305 Environmental Geoscience (3) |
| | UI360 Recycling and Waste Manag (3)* |
| | UI372 Earthquakes and Society (3)* |

**Total Envir. Sci.: 3 hours**

III. Required Mathematics (3 hours can also be applied to University Studies)

MA134 College Algebra (3)*

MA 139 Applied Calculus (3)*

**Total Mathematics 6 hours**

*** denotes University Studies Courses**

Revised Spring 2007

**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) |