

DEPARTMENT OF CHEMISTRY

Bachelor of Science in Education

CHEMISTRY MAJOR

2005-2006

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 Chemistry Education major provides students with a fundamental background in chemistry, prepares one 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.

HIGH SCHOOL PREPARATION FOR MAJOR:

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

CHEMISTRY MAJOR
Requirement for Chemistry Major, B.S. IN EDUCATION DEGREE
(Fall 2003)

	<u>Hours</u>
University Studies	30
EN-100 English Comp.	0-3
Required Courses (pre-requisites)	43-48
CH185/005/085 General Chemistry I (MA095 or equiv)	5*
CH186 General Chemistry II (CH185)	3
CH187 Qualitative Analysis (CH186 pre or co)	2
CH271 Quantitative Analysis (CH187), offered Fall only	4
CH310 Intro to Physical Chemistry (CH271, MA139, PH 121), offered Fall only	5
CH341 Organic Chemistry I (CH186)	4
CH342 Organic Chemistry Lab I (CH341 pre or co)	1
UI331 Biochemistry, offered Fall only	3*
UI443 Professional Experience in Chemistry offered Spring only	3*
MA133 Plane Trigonometry (MA095 or equiv +1 unit of geometry)	0-2
MA134 College Algebra (MA095 or equiv)	0-3*
MA139 Applied Calculus (MA133 and MA134)	3*
PH120/020 Introductory Physics I (MA133 and MA134 or equiv)	5
PH121/021 Introductory Physics II (PH120)	5
Additional Course Requirements	
Biology Course	3
Earth Science Course	3
Environmental Science Course	3
Professional Education Core	37**
WP-003 75 Hour Writing Test	0
Minimum Degree Requirement	124-127 HOURS

* University Studies Course.

** Block III which includes SE320 Techniques of Teaching Science is offered Spring semester only.

Note: 1. Required courses offered in both Fall and Spring semesters unless otherwise specified.

SUGGESTED 9 SEMESTER SEQUENCE

Major: Chemistry

Degree: Bachelor of Science
Secondary Education
Fall 2003

First Semester	Hrs.	Second Semester	Hrs
UI100 First Years 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	University Studies Elective	3
MA134 College algebra	0-3		
MA100 English Comp	0-3		
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
University Studies Electives	6	PH121/021 Intro. to Physics II	5
		University Studies Electives	6
Fifth Semester	Hrs	Sixth Semester	Hrs
Block I	5**	Block II	7
CH310 Intro. to Physical Chemistry	5	Earth Science Course	3
UI331 Biochemistry I	3	UI443 Professional Experience in Chemistry	3
University Studies Elective	3	University Studies Elective	3
		WP003 75 Hour Writing Exam	0
Seventh Semester	Hrs	Eighth Semester	Hrs
Block III	7	Block IV	15
Environmental Science Course	3		
Biology Course	3		
UI422 Scientific Reasoning	3		
		TOTAL	124

NOTES:

- To be admitted to the program, the student must:
 - have a 2.5 grade point average
 - take the ACT (American College Test) or the SAT (Scholastic Aptitude Test)
 - 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.
 - complete EN100, EN140 and SC105 (or equivalents) with a minimum grade of "C"
 - not be on disciplinary probation
 - have recommendation from the Block I Field Supervisor
- Since all Chemistry courses numbered 200 and above may be offered only one semester a year, students should obtain a Chemistry advisor early in the freshman year. Dr. Sharon Coleman is the chemistry education advisor.
- University studies courses required for teacher certification include PS103, SC105, USXXX, any PLXXX, any LIXXX, a course from ECXXX or GGXXX or SOXXX.

Department of Chemistry

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

MINIMUM DEGREE REQUIREMENTS

I. University Studies

48 hours-18 * below = 30 hrs

The following University Studies courses are required for teacher certification:

EN140 Rhetoric & Critical Thinking	(3)	GH105 American Civilization or USxxx	(3)
Llxxx 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)		

II. Required Courses for the Major (up to 21 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

BS108 – Bio for living, 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)

CH271 Quantitative Analysis (4)

CH310 Intro to Physical Chemistry (5)

CH340 Essentials of Organic (5)

UI331 Biochemistry I (3)*

UI443 Professional Experience (3)*

Total Chemistry 30 hours

D. Physics

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

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

Total Physics: 10 hours

E. Earth Science

GO110 Physical Geology or GO220 Meteorology or GO320 Oceanography
or UI318 Earth Science: A Process Approach* (3)

Total Earth Science: 3 hours

F. Environmental Science

One of the following courses

UI372 Earthquakes and Society (3)

GO305 Environmental Geoscience (3)

BS105 Environmental Biology (3)*

BI332 General Ecology (3)

UI360 Recycling and Waste Manag (3)*

GO150 Environmental Hazards (3)

CH350 (or EV350) Environmental Chemistry (3)

Total Envir. Sci.: 3 hours

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

6 hours

MA134 College Algebra (3)*

MA 139 Applied Calculus (3)

IV. Professional Education

37 hours

Minimum Degree Requirements

125 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- <u>Note</u> : Cannot take LI243		3
Oral Expression	SC105		3
Written Expression	EN140		3
Perspectives on National Systems			
Behavioral Systems	PY222 (in Block I)		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