

# Chemistry, BS - Chemical Education Concentration

This concentration meets the requirements of the American Chemical Society for certification and meets the requirements for an Alabama Class B High School Teacher's Certificate.

## Chemistry: Chemical Education Concentration, BS Requirements:

- All students are encouraged to see an advisor after completion of 24 credits.
- Chemistry, Chemical Education Concentration, BS degree requires 140 credit hours.
- 39 of 128 credit hours must be taken at 300 level or higher (39 credits includes courses taken at the 300+ level in major, minor (if chosen), Pre professional area and electives).
- 12 credit hours of 300 level and above must be taken in the major or 6 credit hours in the major and 6 credit hours in the minor (if chosen).
- 12 of the last 18 credit hours must be taken at UAH, with an overall 25% of coursework taken at UAH.
- Unless otherwise noted a C- or better is required for all College of Science prerequisite courses.
- No more than 64 credit hours from a two-year college can be applied toward a UAH degree.
- For graduation application instructions, see here (<http://catalog.uah.edu/undergrad/policies-procedures/application-graduation/>).

## Degree Requirements

Charger Foundations Requirements

\*Please see Area V for CoS requirements that can also be used to fulfill Charger Foundations Requirements.

Code	Title	Semester Hours
<b>Area I: Freshman Composition</b>		<b>3-6</b>
EH 101 or EH 101S	COLLEGE WRITING I COLLEGE WRITING I W/STUDIO	
EH 102	COLLEGE WRITING II	
EH 103	ACCELERATED COLLEGE WRITING	
EH 105	HONORS ENGLISH SEMINAR	
<b>Area II: Humanities and Fine Arts*</b>		<b>12</b>
Fine Arts		3
ARH 100	ARH SURV:ANCIENT-MEDIEVAL	
ARH 101	ARH SURV:RENAISSANCE-MODERN	
ARH 103	ARH SUR: WORLD ART	
ARS 160	DRAWING: FOUNDATIONS	
TH 122	THEATRE APPRECIATION	
TH 123	INTRO TO FILM STUDIES	
MU 100	INTRO TO MUSIC LITERATURE	
Literature		3-6
EH 207	READINGS LITERATURE/CULTURE I	
EH 208	READINGS LITERATURE/CULTURE 2	
EH 209	HONORS SEM READINGS LIT/CUL I	
EH 210	HONORS SEM READINGS LIT/CUL 2	
EH 242	MYTHOLOGY	
Humanities and Fine Arts		3-6
CM 113	Intro to Rhetorical Communication	
WLC 101S or WLC 101A or WLC 101F or WLC 101G or WLC 101J or WLC 101R	INTRO FOREIGN LANG I: SPANISH INTRO FOREIGN LANG I: ARABIC INTRO FOREIGN LANG I:FRENCH INTRO FOREIGN LANG I:GERMAN INTRO FOREIGN LANG I:JAPANESE INTRO FOREIGN LANG I:RUSSIAN	
WLC 102S or WLC 102A	INTRO FOREIGN LANG II:SPANISH INTRO FOREIGN LANG II: ARABIC	

or WLC 102F	INTRO FOREIGN LANG II:FRENCH	
or WLC 102G	INTRO FOREIGN LANG II:GERMAN	
or WLC 102J	INTRO FOREIGN LANG II:JAPANESE	
or WLC 102R	INTRO FOREIGN LANG II:RUSSIAN	
WLC 201S	INTERM FOREIGN LANG:SPANISH	
or WLC 201A	INTERM FOREIGN LANG I: ARABIC	
or WLC 201F	INTERM FOREIGN LANG:FRENCH	
or WLC 201G	INTERM FOREIGN LANG:GERMAN	
or WLC 201J	INTERM FOREIGN LANG: JAPANESE	
or WLC 201R	INTERM FOREIGN LANG:RUSSIAN	
WLC 202S	INTERM FOREIGN LANG II:SPANISH	
or WLC 202A	INTERM FOREIGN LANG II: ARABIC	
or WLC 202F	INTERM FOREIGN LANG II:FRENCH	
or WLC 202G	INTERM FOREIGN LANG II:GERMAN	
or WLC 202J	INTERM FORGN LANG II:JAPANESE	
or WLC 202R	INTERM FOREIGN LANG II:RUSSIAN	
WLC 204	INTERNATIONAL CINEMA	
PHL 101	INTRODUCTION TO PHILOSOPHY	
PHL 102	INTRO TO ETHICS	
PHL 103	INTRODUCTION TO LOGIC	
PHL 150	TECH, SCIENCE & HUMAN VALUES	
WGS 200	INTRO WOMEN'S & GENDER STUDIES	
AMS 229	ANCIENT & MEDIEVAL WORLDS	
ARH 100	ARH SURV:ANCIENT-MEDIEVAL	
ARH 101	ARH SURV:RENAISSANCE-MODERN	
ARH 103	ARH SUR: WORLD ART	
ARS 160	DRAWING: FOUNDATIONS	
TH 122	THEATRE APPRECIATION	
TH 123	INTRO TO FILM STUDIES	
MU 100	INTRO TO MUSIC LITERATURE	
<b>Area III: Mathematics and Sciences</b>		<b>11-12</b>
Mathematics		3-4
MA 105	NATURE OF MATHEMATICS	
MA 107	ALGEBRA WITH APPLICATIONS	
MA 110	FINITE MATHEMATICS	
MA 112	PRECALCULUS ALGEBRA	
MA 113	PRECALCULUS TRIGONOMETRY	
MA 115	PRECALCULUS ALGEBRA & TRIG	
MA 120	MATH PROFESSIONAL APPLICATIONS	
MA 171	CALCULUS A	
Natural Sciences (Lab)		8
AST 100	SURVEY OF ASTRONOMY	
AST 106	EXPLORING THE COSMOS I	
AST 107	EXPLORING THE COSMOS II	
BYS 109	FUNDAMENTALS OF BIOLOGY	
BYS 119	PRINCIPLES OF BIOLOGY	
BYS 120	ORGANISMAL BIOLOGY	
BYS 215	HUMAN ANATOMY & PHYSIOLOGY I	
CH 101 & CH 105	INTRO TO CHEMISTRY and INTRO CHEMISTRY LAB	
CH 121 & CH 125	GENERAL CHEMISTRY I and GENERAL CHEMISTRY LAB I	

CH 123 & CH 126	GENERAL CHEMISTRY II and GENERAL CHEMISTRY LAB II
CH 151 & CH 105	GENERAL, ORGANIC, BIOCHEMISTRY and INTRO CHEMISTRY LAB
ESS 103	ENVIRONMENTAL EARTH SCIENCE
ESS 111	WEATHER, CLIMATE & GLOBAL CHNG
PH 100	CONCEPTUAL PHYSICS
PH 101	GENERAL PHYSICS I
PH 102	GENERAL PHYSICS II
PH 111 & PH 114	GEN PHYSICS W/CALCULUS I and GENERAL PHYSICS LAB I
PH 112 & PH 115	GEN PHYSICS W/CALC II and GENERAL PHYSICS LAB II
PH 113 & PH 116	GEN PHYSICS W/CALC III and GENERAL PHYSICS LAB III

**Area IV: History and Social and Behavioral Sciences\*** **12**History **3-6**

HY 103	WORLD HISTORY TO 1500
HY 104	WORLD HISTORY SINCE 1500
HY 221	UNITED STATES TO 1877
HY 222	UNITED STATES SINCE 1877

Social and Behavioral Sciences **6-9**

ECN 142	PRINC OF MACROECONOMICS
ECN 143	PRINC OF MICROECONOMICS
GS 200	GLOBAL SYSTEMS AND CULTURES
ESS 105	WORLD REGIONAL GEOGRAPHY
ESS 110	PRINCIPLES OF HUMAN GEOGRAPHY
PSC 101	INTRO TO AMERICAN GOVERNMENT
PSC 102	INTRO TO COMPARATIVE POLITICS
PSC 260	INTRODUCTION TO INTERNATIONAL RELATIONS
PY 101	GENERAL PSYCHOLOGY I
PY 201	LIFE-SPAN DEVELOPMENT
SOC 100	INTRO TO SOCIOLOGY
SOC 102	ANALYSIS OF SOCIAL PROBLEMS
SOC 103	INTRO TO CRIMINOLOGY
SOC 105	

## Area V: Pre Professional Requirements

Code	Title	Semester Hours
Courses in this area may also be used to fulfill Charger Foundations requirements		
<b>Communications</b>		<b>3</b>
CM 113	Intro to Rhetorical Communication	
<b>Biology</b>		<b>8</b>
BYS 119 & 119L & 119R	PRINCIPLES OF BIOLOGY and LABORATORY and RECITATION	
BYS 120 & 120L & 120R	ORGANISMAL BIOLOGY and ORGANISMAL BIOLOGY LAB and RECITATION	
<b>Calculus</b>		<b>8</b>
MA 171	CALCULUS A	
MA 172	CALCULUS B	
<b>Physics</b>		<b>8</b>

PH 111 & PH 114 and	GEN PHYSICS W/CALCULUS I and GENERAL PHYSICS LAB I	
PH 112 & PH 115	GEN PHYSICS W/CALC II and GENERAL PHYSICS LAB II	
<b>Psychology (required to enter the Education Program)</b>		<b>6</b>
PY 101	GENERAL PSYCHOLOGY I	
PY 201	LIFE-SPAN DEVELOPMENT	
<b>Computer Science: Choose one</b>		<b>3</b>
CS 100 or CS 102 or CS 103 or CS 104	INTRO COMPUTERS & PROGRAM INTRO TO C PROGRAMMING INTRO PROGRAMMING USING JAVA INTRO TO CS USING PYTHON	
<b>Technical Writing</b>		<b>3</b>
EH 301	TECHNICAL WRITING	

## Major Requirements

Code	Title	Semester Hours
<b>Chemistry</b>		<b>25</b>
CH 121 & CH 125	GENERAL CHEMISTRY I and GENERAL CHEMISTRY LAB I	
CH 123 & CH 126	GENERAL CHEMISTRY II and GENERAL CHEMISTRY LAB II	
CH 223 & CH 224	QUANTITATIVE ANALYSIS and QUANTITATIVE ANALYSIS LAB	
CH 331 & CH 335	ORGANIC CHEMISTRY I and ORGANIC CHEMISTRY LAB I <sup>5</sup>	
CH 332	ORGANIC CHEMISTRY II	
CH 361	GENERAL BIOCHEMISTRY	
CH 401	INORGANIC CHEMISTRY	
<b>Chemical Education Courses</b>		<b>13-14</b>
CH 315	CHEMISTRY TEACHING METHODS	
CH 341 or CH 347	PHYSICAL CHEMISTRY I BIOPHYSICAL CHEMISTRY I	
CH 345	EXPERIMENTAL PHYSICAL CHEM I	
Choose one:		<b>3</b>
CH 342	PHYSICAL CHEMISTRY II	
CH 348	BIOPHYSICAL CHEMISTRY II	
CH 363	GEN BIOCHEMISTRY II	
CH 421	INSTRUMENTAL ANALYSIS	
Choose at least 3 credits from:		<b>3</b>
CH 336	ORGANIC CHEMISTRY LAB II <sup>5</sup>	
CH 346	EXPERIMENTAL PHYSICAL CHEM II	
CH 362	GENERAL BIOCHEMISTRY LAB	
CH 364	GEN BIOCHEMISTRY LAB II	
CH 402	INORGANIC CHEMISTRY LAB	
CH 421	INSTRUMENTAL ANALYSIS	

## Education Certification Requirements

Code	Title	Semester Hours
<b>Education courses</b>		<b>40</b>
ED 301	INTRO TO EDUCATION PRACTICUM	
ED 307	MULTICULTURAL FND EDUCATION	
ED 308	EDUCATIONAL PSYCHOLOGY	
EDC 301	TCHG THE EXCEPTIONAL CHILD	
EDC 311	INSTR STRATEGIES INCLUSIVE CLR	
ED 410	FOUNDATIONS EDUC EVALUAT	
ED 423	TCHNG SCIENCE MID & SEC SCH I	
ED 350	TECHNOLOGY IN CLASSROOM	
ED 309	CLASSROOM & BEHAVIOR MGMT	
ED 408	TCHG READING/CONTENT AREA	
ED 497	HIGH SCHOOL INTERNSHIP	

## Overall Requirements

Code	Title	Semester Hours
All College of Science degrees must have at least 128 credits.		
At least 39 of the 128 credits must be at the 300+ level. These may be taken in any area including electives.		
<b>Total Semester Hours</b>		<b>128</b>

- Students must take one literature and one history course. Students must also take either a second literature or history course to complete a sequence. Acceptable Literature sequences must include one early literature (EH 207 or EH 242 or EH 209) and one later literature (EH 208 or EH 210). Acceptable history sequences are (HY 103 + HY 104), or (HY 221 + HY 222)
- Based on Math placement (<http://www.uah.edu/science/departments/math/undergraduate-students/placement/>), prerequisite (MA 112 and/or MA 113) Mathematics courses may be required.
- No more than 6 hours can be taken in a single discipline.
- For choices see the World Languages and Cultures (<http://catalog.uah.edu/undergrad/colleges-departments/arts-humanities-social-sciences/foreign-languages-literatures/#coursestext>) department.
- Courses in organic chemistry completed at the 2-year college level may be used to satisfy semester hour and prerequisite requirements for upper level chemistry courses at UAH but do not count toward the 300-level requirements of the minor.

**Sample four year plan for Chemistry, Chemical Education Concentration BS degree:**

Note: This is only an example and variations are possible.

**Year 1**

Fall		Semester Hours
FYE 101S	CHARGER SUCCESS - SCIENCE	1
EH 101	COLLEGE WRITING I	3
MA 171	CALCULUS A	4
CH 121 & CH 125	GENERAL CHEMISTRY I and GENERAL CHEMISTRY LAB I	4
BYS 119 & 119L & 119R	PRINCIPLES OF BIOLOGY and LABORATORY and RECITATION	4
Term Semester Hours:		16
<b>Spring</b>		
EH 102	COLLEGE WRITING II	3
MA 172	CALCULUS B	4
CH 123 & CH 126	GENERAL CHEMISTRY II and GENERAL CHEMISTRY LAB II	4

BYS 120 & 120L & 120R	ORGANISMAL BIOLOGY and ORGANISMAL BIOLOGY LAB and RECITATION	4
Term Semester Hours:		15
<b>Year 2</b>		
<b>Fall</b>		
CH 331 & CH 335	ORGANIC CHEMISTRY I and ORGANIC CHEMISTRY LAB I	4
PH 111 & PH 114	GEN PHYSICS W/CALCULUS I and GENERAL PHYSICS LAB I	4
PY 101	GENERAL PSYCHOLOGY I	3
CM 113	Intro to Rhetorical Communication	3
Fine art		3
See Requirements tab for approved list.		
Term Semester Hours:		17
<b>Spring</b>		
CH 332 & CH 336	ORGANIC CHEMISTRY II and ORGANIC CHEMISTRY LAB II	4
CH 223 & CH 224	QUANTITATIVE ANALYSIS and QUANTITATIVE ANALYSIS LAB	4
PH 112 & PH 115	GEN PHYSICS W/CALC II and GENERAL PHYSICS LAB II	4
PY 201	LIFE-SPAN DEVELOPMENT	3
Term Semester Hours:		15
<b>Year 3</b>		
<b>Fall</b>		
CH 347 & CH 345	BIOPHYSICAL CHEMISTRY I and EXPERIMENTAL PHYSICAL CHEM I	4
CH 401	INORGANIC CHEMISTRY	3
History		3
See Requirements tab for approved list.		
Literature		3
See Requirements tab for approved list.		
Term Semester Hours:		13
<b>Spring</b>		
CH 348 & CH 346	BIOPHYSICAL CHEMISTRY II and EXPERIMENTAL PHYSICAL CHEM II	4
CH 361 & CH 362	GENERAL BIOCHEMISTRY and GENERAL BIOCHEMISTRY LAB	4
2nd History or 3rd Social and Behavioral science		3
See Requirements tab for approved list.		
Humanities, 2nd Fine art or 2nd Literature		3
See Requirements tab for approved list.		
Term Semester Hours:		14
<b>Year 4</b>		
<b>Fall</b>		
ED 301	INTRO TO EDUCATION PRACTICUM	1
ED 307	MULTICULTURAL FND EDUCATION	3

ED 308	EDUCATIONAL PSYCHOLOGY	3
EDC 301	TCHG THE EXCEPTIONAL CHILD	3
EDC 311	INSTR STRATEGIES INCLUSIVE CLR	3
Term Semester Hours:		13
<b>Spring</b>		
ED 410	FOUNDATIONS EDUC EVALUAT	3
ED 423	TCHNG SCIENCE MID SEC SCH I	3
ED 350 or ED 309	TECHNOLOGY IN CLASSROOM or CLASSROOM & BEHAVIOR MGMT	3
CS 100 or CS 102 or CS 103 or CS 104	INTRO COMPUTERS PROGRAM or INTRO TO C PROGRAMMING or INTRO PROGRAMMING USING JAVA or INTRO TO CS USING PYTHON	3
Term Semester Hours:		12
<b>Fifth Year</b>		
<b>Fall</b>		
ED 408	TCHG READING/CONTENT AREA	3
ED 350 or ED 309	TECHNOLOGY IN CLASSROOM or CLASSROOM & BEHAVIOR MGMT	3
CH 315	CHEMISTRY TEACHING METHODS	3
EH 301	TECHNICAL WRITING	3
Term Semester Hours:		12
<b>Spring</b>		
ED 497	HIGH SCHOOL INTERNSHIP	12
Term Semester Hours:		12
Total Semester Hours:		139