

**EXECUTIVE COMMITTEE
COLLEGE OF NATURAL AND AGRICULTURAL SCIENCE
REPORT TO THE RIVERSIDE DIVISION
MAY 26, 2020**

To be adopted:

Proposed Change to Chemistry Major

PRESENT:

Major Requirements

The major requirements for the B.A. and the B.S. degree in Chemistry are as follows:

Bachelor of Arts

1. Lower-division requirements (63 units)

a) CHEM 001A, CHEM 001B, CHEM 001C, CHEM 01LA, CHEM 01LB, CHEM 01LC (or CHEM 01HA and CHEM 1HLA, CHEM 01HB and CHEM 1HLB, CHEM 01HC and CHEM 1HLC), CHEM 005, CHEM 008A and CHEM 08LA, CHEM 008B and CHEM, CHEM 008C and CHEM 08LC (or CHEM 08HA and CHEM 08HLA, CHEM 08HB and CHEM 08HLB, CHEM 08HC and CHEM 08HLC)

b) MATH 009A, MATH 009B, MATH 009C, MATH 010A

c) PHYS 040A, PHYS 040B, PHYS 040C (or PHYS 002A, PHYS 002B, PHYS 002C, PHYS 02LA, PHYS 02LB, PHYS 02LC)

2. Upper-division requirements (36 units)

A minimum grade of "C-" for any upper-division course used to fulfill the requirements for the B.A. degree.

a) CHEM 110A, CHEM 110B, CHEM 113, CHEM 125W, CHEM 150A, CHEM 191, and either CHEM 111 or CHEM 140 or CHEM 166

b) Ten (10) additional upper-division units

PROPOSED:

No Change

No Change

Chemistry with Education Focus Option
Students must consult with their Chemistry advisor before electing this option.

1. Lower Division Requirements (66 units)

- a) CHEM 001A, CHEM 001B, CHEM 001C, CHEM01LA, CHEM 01LB, CHEM 01LC (or CHEM 01HA, CHEM 01HB, CHEM 01HC and CHEM 1HLA, CHEM 1HLB, CHEM 1HLC), CHEM 005, CHEM 008A and CHEM 08LA, CHEM 008B and CHEM 08LB, CHEM 008C and CHEM 08LC (or CHEM 08HA and CHEM 08HLA, CHEM 08HB and CHEM 08HLB, CHEM 08HC and CHEM 08HLC)
- b) MATH 009A or MATH 007A, MATH 009B or MATH 007B, MATH 009C, MATH 010A
- c) PHYS 040A, PHYS 040B, PHYS 040C (or PHYS 002A and PHYS 02LA, PHYS 002B and PHYS 02LB, PHYS 002C and PHYS 02LC)
- d) EDUC 003

2. Upper Division Requirements (41 or 42 units)

A minimum grade of "C- "for any upper-division course used to fulfill the requirements for Chemistry with Education Focus option.

- a) CHEM 110A, CHEM 110B, CHEM 113, CHEM 125W, CHEM 150A, CHEM 191, CHEM 111 or CHEM 140 or CHEM 155 or CHEM 166, CHEM 143 or BCH 100 or BCH 110A
- b) EDUC 105, EDUC 162, and one course from EDUC 132 or EDUC 147

Bachelor of Science

1.Lower-division requirements (71-72 units)

a)CHEM 001A, CHEM 001B, CHEM 001C, CHEM 01LA, CHEM 01LB, CHEM 01LC (or CHEM 01HA and CHEM 1HLA, CHEM 01HB and CHEM 1HLB, CHEM 01HC and CHEM 1HLC), CHEM 005, CHEM 008A and CHEM 08LA or, CHEM 008B and CHEM 08LB, CHEM 008C and CHEM (or CHEM 08HA and CHEM 08HLA, CHEM 08HB and CHEM 08HLB, CHEM 08HC and CHEM 08HLC)

b)MATH 009A, MATH 009B, MATH 009C, MATH 010A, and two out of the following: MATH 010B, MATH 031, MATH 046

No Change

c)PHYS 040A, PHYS 040B, PHYS 040C

2.Upper-division requirements (41-43 units) A minimum grade of “C-” for any upper-division course used to fulfill the requirements for the B.S. degree.

a) CHEM 110A, CHEM 110B, CHEM 111, CHEM 113, CHEM 125W, CHEM 150A, CHEM 191

b)Two laboratory courses from CHEM 114 or CHEM 140, CHEM 166, BCH 162

c)One course from BCH 100, BCH 110A, CHEM 143

d)One 4-unit course from CHEM 135/ ENSC 135/ENTX 135, CHEM 136/ENSC 136/ENTX 136/SWSC 136, CHEM 150B, CHEM 197, CHEM 199. CHEM 197 and CHEM 199 must be taken for a grade and a written report submitted.

Chemical Physics Option

Students must consult with their Chemistry advisor before electing this option.

No Change

1.Lower-division requirements (79-80 units)

a)CHEM 001A, CHEM 001B, CHEM 001C, CHEM 01LA, CHEM 01LB, CHEM 01LC (or CHEM 01HA and CHEM 1HLA, CHEM 01HB and CHEM 01HLB, CHEM 01HC and CHEM 1HLC), CHEM 005, CHEM 008A and CHEM 08LA, CHEM 008B and CHEM 08LB, CHEM 008C and CHEM 08LC (or CHEM 08HA and CHEM 08HLA, CHEM 08HB and CHEM 08HLB, CHEM 08HC and CHEM 08HLC)

b)MATH 009A, MATH 009B, MATH 009C, MATH 010A, MATH 010B, MATH 046

c) PHYS 041A, PHYS 041B, PHYS 41C or PHYS 040A, PHYS 040B, PHYS 040C, and PHYS 041C

2.Upper-division requirements (59 units)

A minimum grade of “C-” for any upper-division course used to fulfill the requirements for the Chemical Physics option.

a)CHEM 110A, CHEM 110B, CHEM 111,
CHEM 113, CHEM 114, CHEM 150A,
CHEM 150B, CHEM 191

b)Twenty-one (21) units of upper-division course
work in Mathematics or Physics (110 or above
excluding 190 series)

c)Nine (9) additional units in physical chemistry

Environmental Chemistry Option

No Change

Students must consult with their Chemistry
advisor before electing this option.

1.Lower-division requirements (84 units)

a)CHEM 001A, CHEM 001B, CHEM 001C,
CHEM 01LA, CHEM 01LB, CHEM 01LC (or
CHEM 01HA and CHEM 1HLA, CHEM 01HB
and CHEM 1HLB, CHEM 01HC and CHEM
1HLC), CHEM 005, CHEM 008A and CHEM
08LA, CHEM 008B and CHEM 08LB, CHEM
008C and CHEM 08LC (or CHEM 08HA and
CHEM, CHEM 08HB and CHEM 08HLB,
CHEM 08HC and CHEM 08HLC)

b)MATH 009A, MATH 009B, MATH 009C,
MATH 010A, MATH 010B, MATH 046

c)PHYS 040A, PHYS 040B, PHYS 040C

d)BIOL 005A, BIOL 05LA or BIOL 020, BIOL
005B, BIOL 005C.

1.Upper-division requirements (57-58 units)

A minimum grade of "C-" for any upper-di-
vision course used to fulfill the requirements for
the Environmental Chemistry option.

a)CHEM 110A, CHEM 110B, CHEM 111,
CHEM 113, CHEM 125W, CHEM 135/ ENSC
135/ENTX 135, CHEM 136/ENSC 136/ENTX
136/SWSC 136, CHEM 114 or CHEM 140,
CHEM 150A, CHEM 166,
CHEM 191

b)One course from ENSC 104/SWSC 104 or GEO
137

c)One course from BCH 100, BCH 110A or
CHEM 143

d)Two additional courses from CHEM 150B, CHEM 197, CHEM 199, ENSC 100, ENSC 101, ENSC 102, ENSC 140/SWSC 140, ENSC 163, ENTX 101, GEO 132, GEO 157 (4 units total from CHEM 197 and/or CHEM 199)

Chemistry with Education Focus Option

Students must consult with their Chemistry advisor before electing this option

1. Lower Division Requirements (74 – 75 units)

A) CHEM 001A, CHEM 001B, CHEM 001C, CHEM01LA, CHEM 01LB, CHEM 01LC (or CHEM 01HA, CHEM 01HB, CHEM 01HC and CHEM 1HLA, CHEM 1HLB, CHEM 1HLC), CHEM 005, CHEM 008A and CHEM 08LA, CHEM 008B and CHEM 08LB, CHEM 008C and CHEM 08LC (or CHEM 08HA and CHEM 08HLA, CHEM 08HB and CHEM 08HLB, CHEM 08HC and CHEM 08HLC)

B) MATH 009A, MATH 009B, MATH 009C, MATH 010A, and two of the following: MATH 010B, MATH 031, MATH 046

C) PHYS 040A, PHYS 040B, PHYS 040C

D) EDUC 003

2. Upper Division Requirements (53 – 55 units)

A minimum grade of “C- “for any upper-division course used to fulfill the requirements for the Chemistry with Education Focus option.

A)CHEM 110A, CHEM 110B, CHEM 111, CHEM 113, CHEM 150A, CHEM 125W, CHEM 191

B) EDUC 105, EDUC 162 and one course from EDUC 132 or EDUC 147

C) Two laboratory courses from CHEM 114 or CHEM 140, CHEM 166 or CHEM 155, BCH 162

D) One course from BCH 100, BCH 110A, CHEM 143

E) One course from CHEM 135, CHEM 136, CHEM 150B, CHEM 197 or CHEM 199 (4 units total allowed)

Justification:

Teaching at the secondary level is a viable career option for our majors and providing them an opportunity to earn a degree with an education focus would help put these students on a pathway to earning a teaching credential. Creating this degree pathway is expected to make our undergraduate majors more aware of the California-Teach Science-Math Initiative (Cal-Teach SMI), a UCOP-funded program that has existed at UCR since 2008. This new degree pathway will therefore support the University of California's ongoing mission to recruit science majors into secondary education careers. Students who pursue this new degree pathway will have the opportunity to gain valuable classroom experience and professional development through the Cal-Teach SMI program here at UCR, and many of the courses that can be used to fulfill the education minor will also satisfy some of the requirements for the UCR post-baccalaureate teacher credential program. This will not only make our chemistry majors more attractive candidates for the credential program, but will also help ensure they will be able to earn their teaching credential in the typical time frame.

For the BA degree, CHEM 143 (or BCH 100 or BCH 110A) was chosen in lieu of requiring 10 additional upper division units in order to ensure students take a biochemistry course, which is required for an ACS certified degree, and to ensure the total number of upper division units was not increased by more than 5-6 units.

For both the BS and BA degrees, EDUC 003 (Intro to Science Teaching) was chosen as a lower division requirement because this course will provide students an introduction to STEM teaching issues and pedagogy and requires them to participate in field work. This helps students make a more well-informed decision about whether they will wish to continue this degree/career path. EDUC 105 (Intro to Science Pedagogy) was chosen as an upper division requirement because this course will give students a chance to learn about more advanced science classroom pedagogies. EDUC 162 (Learning Theory and Psychology) was chosen as an upper division requirement because this course will give students a better foundation in the science of how students learn, which is critical for designing effective classroom activities and assessments. EDUC 132 (Exceptional Child) and 147 (Education in a Diverse Society) were chosen as upper division electives because these courses can help students become better prepared to teach students from a more varied academic background, and because these courses would count toward the teaching credential program at UCR, taking these courses would help ensure our students complete the post-baccalaureate program on time.

Approvals:

Approved by the faculty of the Department of Chemistry:

October 29, 2019

Approved by the Executive Committee of the College of CNAS:

November 12, 2019

Approved by the Committee on Educational Policy:

April 10, 2020