To be adopted:

Proposed Changes to Chemistry BS with Chemical Physics and Environmental Chemistry Options

PRESENT:

Major Requirements
Bachelor of Arts
Bachelor of Science

Chemical Physics

Option
Lower Division Requirements (79-80 units)
a) CHEM 001A, CHEM 001B, CHEM 001C, CHEM 01LA, CHEM 01LB, CHEM 01LC (or CHEM 01HA and CHEM 01HLA, CHEM 01HB and CHEM 01HLB, CHEM 01HC and CHEM 01HLC), CHEM 005, CHEM 008A and CHEM 008LA, CHEM 008B and CHEM 008LB, CHEM 008C and CHEM 008LC (or CHEM 08HA and CHEM 08HLA, CHEM 08HB and CHEM 08HLC)
b) MATH 009A, MATH 009B, MATH 009C, MATH 010A, MATH 010B, MATH 046
c) PHYS 041A, PHYS 041B, PHYS 041C or PHYS 040A, PHYS 040B, PHYS 040C, and PHYS 041C

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

PROPOSED:

No Change

Chemical Physics Option
Lower Division Requirements (74-75 units)
a) CHEM 001A, CHEM 001B, CHEM 001C, CHEM 01LA, CHEM 01LB, CHEM 01LC (or CHEM 01HA and CHEM 01HLA, CHEM 01HB and CHEM 01HLB, CHEM 01HC and CHEM 01HLC), CHEM 005, CHEM 008A and CHEM 008LA, CHEM 008B and CHEM 008LB, CHEM 008C and CHEM 008LC (or CHEM 08HA and CHEM 08HLA, CHEM 08HB and CHEM 08HLC)
b) No Change
c) No Change

Upper Division Requirements (45 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

b) Sixteen (16) units of upper-division course work in Mathematics or Physics (110 or above excluding 190 series)

c) CHEM 197 or CHEM 199, with an emphasis on physical chemistry research (4 units). 4 additional units of CHEM 197 or 199 can be used to replace the CHEM 114 requirement, subject to advisor approval.
Environmental Chemistry Option
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 01HLB, CHEM 01HC and CHEM 01HLC), 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 040A, PHYS 040B, PHYS 040C
d) BIOL 005A, BIOL 005LA or BIOL 020, BIOL 005B, BIOL 005C.

Upper Division Requirements (57-58 units) A minimum grade of “C-” for any upper-division 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)

Environmental Chemistry Option
Lower Division Requirements (71 units)
a) No Change
b) No Change
c) No Change
d) Two additional courses from CHEM 113, CHEM 150B, CHEM 166, 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)

Upper Division Requirements (49-50 units) A minimum grade of “C-” for any upper-division course used to fulfill the requirements for the Environmental Chemistry option.
a) CHEM 110A, CHEM 110B, CHEM 111, CHEM 125W, CHEM 135/ENSC 135/ENTX 135, CHEM 136/ENSC 136/ENTX 136/SWSC 136, CHEM 114 or CHEM 140, CHEM 150A, CHEM 191
b) No Change
c) No Change
d) Two additional courses from CHEM 113, CHEM 150B, CHEM 166, 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)
**Justification:**

The Chemical Physics option is currently non-viable, as ~1 student takes this option every 3 years. This is due to a variety of factors, and the original concept for this class has not changed as the Physics major has updated their curriculum. Hence, the degree unit requirements are far too stringent, reducing (even eliminating) student interest. The proposed changes (removing the CHEM 005 (quantitative analysis) requirement, replacing the abstract “9 units of upper division physical chemistry” with a more focused requirement for 4 units physical chemistry research, removing the CHEM 150B (advanced inorganic chemistry) requirement and lowering the number of upper division Math/Physics classes required) will bring the unit requirements (119 proposed, from the current 139) into line with the BS in Chemistry (115 units). This will make this option more palatable without removing its rigor or focus on Chemical Physics.

Similarly, the Environmental Chemistry option requires the Chemistry, Biology, Physics and Math lower division cores, which makes the degree path untenable. As no upper division course in this major requires BIOL 005, it can be removed as a requirement (obviously students can still take the courses if they wish). In addition, non-Environmentally focused classes CHEM 166 and CHEM 113 have been reclassified as options rather than requirements, to bring the overall number of units (120 proposed, from the current 142) more in line with the Chemistry BS (115 units). This will make this option more palatable without removing its rigor or focus on Environmental Chemistry.

**Approvals:**

Approved by the faculty of the Department of Chemistry: November 3, 2020
Approved by the Executive Committee of the College of CNAS: December 8, 2020
Approved by the Committee on Educational Policy: April 5, 2021