

**EXECUTIVE COMMITTEE
COLLEGE OF NATURAL AND AGRICULTURAL SCIENCE**

**REPORT TO RIVERSIDE DIVISION
MAY 23, 2017**

To be adopted:

Proposed changes to the undergraduate major requirements in Physics.

PRESENT:

Major Requirements

The major requirements consist of a core curriculum and additional requirements for various B.S. degrees. The core requirements for the B.A. and B.S. degrees in Physics are as follows:

1. Lower-division requirements (70 units)
 - a) one of the following sequences: PHYS 041A, PHYS 041B, PHYS 041C, or PHYS 040A, PHYS 040B, PHYS 040C, PHYS 040D, PHYS 040E. The first sequence is preferred for the B.S. in Physics.
 - b) PHYS 39
 - c) ~~MATH 009A, MATH 009B, MATH 009C, MATH 010A, MATH 010B, MATH 046~~
 - d) CHEM 001A, CHEM 001B, CHEM 001C, CHEM 011A, CHEM 011B, CHEM 011C
 - e) CS 010 or CS 010V. A higher-level CS course may satisfy the CS 010 requirement with approval.
2. Upper-division requirements (41 to 42 units)
 - a) PHYS 130A, PHYS 130B, PHYS 132, PHYS 135A, PHYS 135B, PHYS 156A, PHYS 156B
 - b) PHYS 139L (5 units), PHYS 142L (4 units) or PHYS 142W (5 units). Note that PHYS 142W satisfies the ENGL 1C requirement.
 - c) 4 units of upper division Physics electives. Upper division math, science of engineering may be substituted with approval.

Physics : Standard Track (B.S. degree)

1. Additional upper-division requirements (16 to 17 units)
 - a) PHYS 136
 - b) One additional quarter of either PHYS 142L (4 units) or PHYS 142W (5 units). Approved undergraduate research (PHYS 195A, PHYS 195B, PHYS 195C, PHYS 195D) in physics or an internship (PHYS 198-I) in physics at a government or industrial laboratory can be

PROPOSED:

Major Requirements

No Change

- 1.No Change
 - a) No Change
 - b) No Change
 - c) ~~MATH 007A or MATH 009A, MATH 007B or MATH 009B, MATH 009C, MATH 010A, MATH 010B, MATH 046~~
 - d) No Change
 - e) No Change
2. No Change
 - a) No Change
 - b) No change
 - c) No Change

Physics : Standard Track (B.S. degree)

1. No Change
 - a) No Change
 - b) No Change

used in place of up to 4 units of PHYS 142L.
c) 8 additional units of upper division Physics electives. PHYS 156C is highly recommended for those planning to go to graduate school in physics.

c) No Change

Physics: Biophysics Track (B.S. degree)

1. Additional lower-division requirements (25 units)

- a) BIOL 005A, BIOL 005B, BIOL 005C, BIOL 05LA
- b) ~~CHEM 12A, CHEM 12B, CHEM 12C~~

2. Additional upper-division requirements (8 units)

- a) 8 additional upper-division units taken from BCH 110A, BCH 110B, BCH 110C or BIOL 107A (other upper division CHEM/BIOL/BCH may be substituted upon approval)

Physics: Biophysics Track (B.S. degree)

1. No Change

- a) BIOL 005A, BIOL 005B, BIOL 005C, BIOL 05LA or BIOL 020.
- b) CHEM 008A, or 08HA, CHEM 008B or 08HB, CHEM 008C or 08HC
CHEM 08LA or 08HLA, CHEM 08LB or 08HLB, CHEM 08LC or 08HLC

2. No Change

- a) No Change

Physics Education Track (B.S. degree only)

1. Additional lower-division requirements (10 units)

- a) EDUC 003, EDUC 004
- b) LING 020 or LING 021. Note that this satisfies 4 units of the CNAS Humanities requirement.

2. Additional upper-division requirements (8 units)

- a) EDUC 110 or EDUC 110S, EDUC 174 or EDUC 174S.

Physics Education Track (B.S. degree only)

1. No Change

- a) No Change
- b) No Change

2. No Change

- a) No Change

Physics: Applied Physics and Engineering Track (B.S degree)

1. Additional upper-division requirements (16 to 17 units)

- a) One additional quarter of either PHYS 142L (4 units) or PHYS 142W (5 units). Approved undergraduate research (PHYS 195A, PHYS 195B, PHYS 195C, PHYS 195D) in physics or an internship (PHYS 198-I) in physics at a government or industrial laboratory can be used in place of up to 4 units of PHYS 142L.

- b) 4 additional units of upper division Physics electives.
- c) 8 units of upper division Engineering electives.

Physics: Applied Physics and Engineering Track (B.S degree)

1. No Change

- a) No Change

b) No change

c) No Change

Students seeking an emphasis in environmental

No Change

physics or chemical physics should consult with an advisor. The physics electives may be selected on an individual basis to stress one of these concentrations.

Students continuing on to graduate school are encouraged to take additional upper-division courses in Mathematics, such as MATH 146A, MATH 146B, MATH 146C, MATH 165A, MATH 165B, and MATH 113. No Change

Students may wish to earn a Minor in Mathematics which requires an additional 24 units of upper division math. No Change

To graduate, a minimum grade point average of 2.00 (C) is necessary overall and in the upper-division courses taken for the major (courses listed under 2.). No Change

Justification:

Beginning 17F per Biology Department, credit is not awarded for BIOL 05LA if it has already been awarded for BIOL 020 and vice versa. Therefore wherever BIOL 05LA appears as a requirement, the “or BIOL 020” statement should appear as well.

The Department of Chemistry has moved forward to separate Organic Chemistry courses into two unit bearing courses (LEC and LAB) per the Undergraduate Studies Committee's recommendation for 2017 FALL.

Per Exec. Committee: A motion to approve unanimously with the revision to add a math statement that includes MATH 007A or MATH 009A, MATH 007B or MATH 009B instead of just MATH 009A, MATH 009B and add CHEM Honors.

Approvals:

Approved by the faculty of the Department of Physics:	December 1, 2016
Approved by the Executive Committee College of Natural and Agricultural Sciences:	January 10, 2017
Approved by the Committee on Educational Policy:	May 3, 2017