### PHYSICS MAJOR (2017-2018)

**Foundations of Written Communication**

(6 credit hours required – Writing Across the Curriculum - WAC)

- ENC 1101 ..... College Writing I *(Required)*
- ENC 1102 ..... College Writing II+

**The Following Courses Below May Be Substituted For ENC 1102:**

- English Department
  - ENC 1930+ ..... University Honors Seminar in Writing *(Permit Only)*
  - ENC 1939+ ..... Special Topic: College Writing
  - ENC 2452+ ..... Honors Composition for Science

- Anthropology Department
  - ANT 1471+ ..... Cultural Difference in a Globalized Society

- History Department
  - HIS 2050+ ..... Writing History

*Note:* Students must take four Writing-Across-the-Curriculum (WAC) courses, two of which must be taken from Foundations of Written Communication.

### Foundations of Mathematics & Quantitative Reasoning

(6 credit hours required – Grade of “C” or higher is required)

- Student must take 2 of the following courses; 1 must be from group A. The second course may be from group A or group B.

**Pretest is required before taking your first Math course**

**Group A**

- MAC 1105 ..... College Algebra
- MAC 2311 ..... Calculus with Analytic Geometry 1 (4 credits) *(Required)*
- or any mathematics course for which one of the above courses is the direct prerequisite

**Group B**

- MAC 1140 ..... Precalculus Algebra
- MAC 1114 ..... Trigonometry
- MAC 1147 ..... Precalculus Algebra & Trigonometry (5 credits)
- MAC 2233 ..... Methods of Calculus
- MAC 2312 ..... Calculus with Analytic Geometry 2 (4 credits) *(Required)*

### Foundations of Science & The Natural World

(6 credit hours required - One of the courses must have a lab)

- Student must take 2 of the following courses; 1 must be from group A. The second course may be from group A or group B.

**Group A**

- Biology Department *(see note)*
  - BSC 1010 & L & D Biological Principles *(4 cr. Incl. Lab & Dis)*
  - Chemistry Department *(see note)*
  - CHM 2045 & L General Chemistry 1 *(4 cr. Incl. Lab)*

**Group B**

- Biology Department *(see note)*
  - BSC 1011 & L & D Biodiversity *(4 cr. incl Lab & Dis)*
  - Physics Department *(see note)*
  - PHY 2048 & L *(REQUIRED)* General Physics 1 *(5 credits incl. Lab)*

*Must select either both Biology courses or both Chemistry courses from below: BSC 1010 & BSC 1011 (with labs) or CHM 2045 & CHM 2046 (with labs) “CANNOT MIX BIOLOGY AND CHEMISTRY COURSE”*

(D) = Discussion, (L) = Lab

Courses indicating a (D) or (L) are linked with a lecture, a lab, and/or a discussion. If you select one of these courses, you must register for the lecture, lab, and/or discussion. You must attend the lecture, lab, and/or discussion.
The number of elective credits allowed varies by major. Please consult with an academic advisor to determine the number of elective credits required for your major. Certain majors do not allow any electives.

Students must take 2 of the following courses; 1 must be from group A or group B.

**Group A**
- **ANT 2410** .............. Culture and Society
- **EDF 2854** .............. Educated Citizen in Global Context
- **GEO 2000** .............. World Geography
- **INR 2002** ................
- **SYP 2450** ............... Global Society
- **WAC 2002** .............. Global Perspectives on Language (online course)

**Group B**
- **ARC 2208** ................ Culture & Architecture
- **DAN 2100** .............. Theatre Appreciation
- **FIL 2000 & D** ......... Film Appreciation
- **LIT 2000** .............. Theatre Appreciation
- **MUL 2010** ...............
- **THE 2000** .............. Theatre Appreciation

**Legend**

- ENC 1101 is a prerequisite.
- Two Foundations of Written Communications classes are required before taking this course.
- Sophomore standing (30 credits earned) is a requirement to take this course.
- Nursing majors are required to take this course in their first semester.
- MAC 2311 is a prerequisite for this course. If a lab is needed, then take General Physics 1 Lab (PHY 2048 Lab).
- MAC 1105 and MAC 1114 are prerequisites for this course. If a lab is needed, then take General Physics 1 Lab (PHY 2048 Lab).
- Co-requisite of College Algebra (MAC 1105) or a prerequisite of Introductory Chemistry (CHM 1025).
- (WAC) Writing across the curriculum course.
FOREIGN LANGUAGE (4 - 8 credits, 1 or more courses in the same language) - REQUIRED FOR MAJOR
Students with more than one year of a foreign language in high school should enroll in the second half of the beginners foreign language class (ARA/CHI/FRE/GER/HBR/ITA/JPN/LAT/SPN 1121) or a higher level course. Proficiency for a first-level course can be earned by successfully completing a second-level course. For questions related to this requirement, consult an academic advisor. CLEP exam credits meet this requirement: see the catalog.

NOTE: Native Speakers of a foreign language must consult the Languages, Linguistics, and Comparative Literature Department regarding this requirement.

NOTE: Honors Seminars SHALL BE ACCEPTED AS MEETING THE WAC/GRW REQUIREMENT. See the University Advising Services Office for details.

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<th>BA</th>
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<tr>
<td>32 credits</td>
<td>Intellectual Foundations Program &amp; Foreign Language (Excluding Math &amp; Science)</td>
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<tr>
<td>12 credits</td>
<td>Mathematics – Calculus (B.A. and B.S. Degree)</td>
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<td>30 credits</td>
<td>Physics Major</td>
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<td>24 credits</td>
<td>Upper Division Restricted Free Electives</td>
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<td>22 credits</td>
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<tr>
<td>BA</td>
<td>32 credits</td>
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NOTE: See the catalog for specific requirements, course descriptions, and additional information. The requirements for some Intellectual Foundations Program (IFP) courses & other courses may be satisfied by passing the appropriate AP or CLEP exam. Check with your advisor and college.

The Charles E. Schmidt College of Science has the following requirements:

(1) Any course work in the major field transferred from another institution must be approved by the major department;
(2) No major course may be taken pass/fail;
(3) The maximum amount of credit which may be earned through co-op is 10 credits; some departments allow some of these credits to substitute for major courses, check with department for specifics;
(4) A grade of “C” or better is required in all the physics, mathematics, and chemistry courses taken as part of the course requirements for a degree within the department.
## MAJOR COURSES, COLLEGE REQUIREMENTS and ELECTIVES

### BACHELOR OF SCIENCE (BS) DEGREE (47 credits total, 14 courses)

**Introductory Physics Courses** - (6 credits)
- PHY 1090  First-Year Physics Seminar (1 credit)
- PHY 2049 & L  General Physics II & Lab – **PHY 2048 with lab is a prerequisite** (5 credits)

### BACHELOR OF SCIENCE (BS) DEGREE (41 credits total, 12 courses)

**Additional Mathematics Introductory Course** (3 credits)
- MAP 3305  Engineering Mathematics I (3 credits)

**Bachelor of Science Additional Intermediate Core Requirements** (38 credits)
- PHY 3101C  Survey of Modern Physics – **PHY 2049 & lab & MAC 2313 are prereqs** (5 credits)
- PHY 3221  Classical Mechanics – **PHY 2048 with lab & MAC 2313 are prerequisites** (4 credits)
- PHY 3323  Electromagnetism I – **PHY 2049 with labs & MAC 2313 are prerequisites** (4 credits)
- PHY 3324  Electromagnetism II – **PHY 3323 is a prerequisite** (4 credits)
- PHY 3932  Third-Year Physics Seminar – **PHY 3101C is a prerequisite** (1 credit)
- PHY 4523  Statistical Physics – **PHY 3101C is a prerequisite** (3 credits)
- PHY 4604  Quantum Mechanics I – **PHY 3101C prereq and PHZ 3113 a coreq.** (4 credits)
- PHY 3722C  Physical Electronics – **PHY 2049 is a prerequisite** (4 credits)
- PHY 4811L  Undergraduate Laboratory – **PHY 3101C is a prerequisite** (2 credits)
- PHY 3151C  Computational Physics – **MAC 2313 is a prerequisite** (4 credits)
- PHZ 4113  Math. Methods for Physics – **PHZ 2106 a prereq or instructor permission** (3 credits)

### BACHELOR OF ARTS (BA) DEGREE (30 credits total, 9 courses)

**Introductory Physics Courses** - (6 credits)
- PHY 1090  First-Year Physics Seminar (1 credit)
- PHY 2049 & L  General Physics II & Lab – **PHY 2048 with lab is a prerequisite** (5 credits)

**Additional Mathematics Introductory Course** (3 credits)
- MAP 3305  Engineering Mathematics I (3 credits)

**Bachelor of Arts Additional Intermediate Core Requirements** (18 credits)
- PHY 3101C  Survey of Modern Physics – **PHY 2049 & lab & MAC 2313 are prereqs** (5 credits)
- PHY 3221  Classical Mechanics – **PHY 2048 with lab & MAC 2313 are prerequisites** (4 credits)
- PHY 3323  Electromagnetism I – **PHY 2049 with labs & MAC 2313 are prerequisites** (4 credits)
- PHY 3932  Third-Year Physics Seminar – **PHY 3101C is a prerequisite** (1 credit)
- PHY 4604  Quantum Mechanics I – **PHY 3101C prereq and PHZ 3113 a coreq** (4 credits)

**Choose at least three (3) credits from the following list:**
- PHY 3503  Thermodynamics – **MAC 2313 and PHY 2048 with lab is a prerequisite** (4 credits)
- PHY 4523  Statistical Physics – **PHY 3101C is a prerequisite** (3 credits)
- PHY 3722C  Physical Electronics – **PHY 2049 is a prerequisite** (4 credits)

### Optional Pre-professional Track (23 credits) - Required Courses

- BSC 1011 & L  Biodiversity with lab (3 + 1 = 4 credits)
- BSC 1010 & L  Biological Principles with lab (3 + 1 = 4 credits)
- CHM 2210 & D  Organic Chemistry I with discussion (3 credits) – **CHM 2045 & CHM 2046 with labs are prerequisites**
- CHM 2211  Organic Chemistry II (3 credits)
- CHM 2211L  Organic Chemistry II Lab (2 credits)
- PCB 3063  Genetics (4 credits) – **BSC 1011 and BSC 1010 with labs are prerequisites**
- BCH 3033  Biochemistry I (3 credits) – **8 credits of organic chemistry are the prerequisite**