

**BACHELOR OF SCIENCE IN PHYSICS DEGREE PROGRAM REQUIREMENTS**

To graduate with a major in Physics, a minimum of 120 semester credit hours (SCH) are required, divided into four (4) categories of required course sequences: (i) Core courses, (ii) Major courses, (iii) Support Areas, and (iv) Unrestricted (General) Electives. A minor may be chosen depending upon the student’s preference and career choice.

The department offers several specialization areas that may be customized to the student’s interest and potential career of choice. Examples are: Traditional Physics (with 18 SCH of advanced courses in Physics or Physical Science), Computational Physics (with 23 SCH of courses from Computer Science), Applied Physics (with 23 SCH of courses from Electrical Engineering), and Medical Physics. Each student will work with an advisor and the department head to develop an individual degree plan.

**Core Curriculum .....43 SCH**

All Physics majors must complete the core curriculum. Consult your advisor for a choice of courses within the core that would provide you with a better preparation for Physics and other professional programs.

**Requirements for Major ..... 43 SCH**

**Support Area Requirements ..... 16 SCH**

**Specialization Requirements ..... 18\* SCH**

*\*A minimum of 18 SCH is required for a specialization area. The specialization may be selected from a variety of choices. Some specializations such as Applied Physics and Computational Physics require 23 SCH. A specialization may also be chosen as a combination of courses from different disciplines, as configured based upon mutual agreement between the student and the advisor.*

|                       |  |
|-----------------------|--|
| <b>Core – 43 SCH</b>  | COMP 1013 Computer Science (3)<br>MATH 1124 Calculus I (4)<br>ENGL 1123 Freshman Composition I (3)<br>ENGL 1133 Freshman Composition II (3)<br>SPCH 1003 Speech Communication (3)<br>POSC 1113 American Government I (3)<br>POSC 1123 American Government II (3)<br>HIST 1313 U.S. to 1876 (3)<br>HIST 1323 The U.S.-1876 to Present (3)<br>CHEM 1013 Chemistry I (3)<br>CHEM 1023 Chemistry II (3)<br>Foreign Language OR<br>Visual & Performance Arts OR<br>Computing (3)<br>Visual & Performing Arts (3)<br>Other Behavioral or Social Science (3)  |
| <b>Major – 43 SCH</b> | PHYS 1001 Physics as a Profession (1)<br>PHYS 2513 University Physics I (3)<br>PHYS 2511 University Physics Lab I (1)<br>PHYS 2523 University Physics II (3)<br>PHYS 2521 University Physics Lab II (1)<br>PHYS 3183 Modern Physics I (3)<br>PHYS 3103 Mechanics I (3)<br>PHYS 3123 Electricity & Magnetism I (3)<br>PHYS 4473 Senior Research Project (3)<br>PHYS 4103 Advanced Physics Lab (3)<br>PHYS 3163 Mathematical Physics I (3)<br>PHYS 4023 Quantum Mechanics I (3)<br>PHYS 4011 Physics Seminar (1)<br>Technical Electives:<br>Physics Elective (3)<br>Physics Elective (3)<br>Technical Elective (3)<br>Technical Elective (3) |

|  |   |
|--|---|
| <b>Support Area(s) – 16 SCH</b>          | MATH 2024 Calculus II (4)<br>MATH 2034 Calculus III (4)<br>MATH 2043 Differential Equations I (3)<br>MATH 3023 Probability and Statistics (3)<br>CHEM 1011 Chemistry Lab I (1)<br>CHEM 1021 Chemistry Lab II (1)  |
| <b>Specialization – 18 SCH (minimum)</b> | <ol style="list-style-type: none"> <li>1. Physics for students who wish to pursue advanced degree(s) in physics;</li> <li>2. Other disciplines such as Mathematics or Business or Engineering so as to acquire a minor;</li> <li>3. College of Education for teacher certification;</li> <li>4. A more flexible combination of courses more suitable for the individual professional development of the student.</li> </ol> |

*Physics Electives may be chosen from:*

(selected with the advice and consent of the advisor):

|   |   |
|---|---|
| PHSC 3083 Science of Everyday Life            | PHYS 3173 Mathematical Physics II                     |
| PHSC 3183 Modern Physics for Science Teachers | PHYS 3193 Modern Physics II                           |
| PHSC 3223 Introduction to Atmospheric Science | PHYS 3323 Physics of Medical Imaging                  |
| PHSC 4011 Earth Science Lab                   | PHYS 3243 Nuclear & Radiation Physics                 |
| PHSC 4013 Earth Science                       | PHYS 4011 Physics Seminar I                           |
| PHSC 4024 Astronomy & Geology                 | PHYS 4021 Physics Seminar II                          |
| PHSC 4163 Special Topics in Physical Science  | PHYS 4033 Introductory Quantum Mechanics II           |
| PHSC 4993 Physical Science Independent Study  | PHYS 4043 Astronomy & Astrophysics                    |
| PHYS 3003 Physics Research Internship         | PHYS 4063 Thermodynamics and Statistical Mechanics I  |
| PHYS 3073 Optics                              | PHYS 4073 Thermodynamics and Statistical Mechanics II |
| PHYS 3113 Mechanics II                        | PHYS 4163 Special Topics in Physics                   |
| PHYS 3133 Electricity and Magnetism II        | PHYS 4993 Physics Independent Study                   |
| PHYS 4991 Physics Independent Study           |   |

**Total Degree Requirement – 120 SCH**

**Requirements for Physics as a Minor Field..... 18 SCH**

PHYS 2511-2521, PHYS 2513-2523, and 10 SCH of Physics Electives.

## PHYSICS DEGREE PROGRAM SEQUENCE

## FRESHMAN YEAR

| <i>First Semester</i> |                                      | <i>Hours</i> |  | <i>Second Semester</i> |                                   | <i>Hours</i> |
|-----------------------|--------------------------------------|--------------|--|------------------------|-----------------------------------|--------------|
| COMP 1013             | Introduction To Computer Science     | 3            |  | PHYS 1001              | Physics as a Profession           | 1            |
| ENGL 1123             | Freshman Composition I               | 3            |  | PHYS 2513              | University Physics I              | 3            |
| MATH 1124             | Calculus & Analytical Geometry I     | 4            |  | PHYS 2511              | University Physics Lab I          | 1            |
| POSC 1113             | American Government I                | 3            |  | ENGL 1133              | Freshman Composition II           | 3            |
| SPCH 1003             | Fundamentals of Speech Communication | 3            |  | MATH 2024              | Calculus & Analytical Geometry II | 4            |
|                       |                                      |              |  | CHEM 1013              | General Inorganic Chemistry I     | 3            |
|                       |                                      |              |  | CHEM 1011              | Inorganic Chemistry Lab I         | 1            |
| <b>Total</b>          |                                      | <b>16</b>    |  | <b>Total</b>           |                                   | <b>16</b>    |

## SOPHOMORE YEAR

| <i>First Semester</i> |                                    | <i>Hours</i> |  | <i>Second Semester</i> |   | <i>Hours</i> |
|-----------------------|------------------------------------|--------------|--|------------------------|---|--------------|
| PHYS 2523             | University Physics II              | 3            |  | HIST 1323              | The U.S.-1876 to Present  | 3            |
| PHYS 2521             | University Physics Lab II          | 1            |  | MATH 2043              | Differential Equations I  | 3            |
| CHEM 1023             | General Inorganic Chemistry II     | 3            |  | CORE                   | Visual & Performing Arts Option                                 | 3            |
| CHEM 1021             | Inorganic Chemistry Lab II         | 1            |  | CORE                   | Foreign Language OR<br>Visual & Performing Arts OR<br>Computing | 3            |
| MATH 2034             | Calculus & Analytical Geometry III | 4            |  | POSC 1123              | American Government II  | 3            |
| HIST 1313             | U.S. to 1876                       | 3            |  |                        |   |              |
| <b>Total</b>          |                                    | <b>15</b>    |  | <b>Total</b>           |   | <b>15</b>    |

## JUNIOR YEAR

| <i>First Semester</i> |                           | <i>Hours</i> |  | <i>Second Semester</i> |                            | <i>Hours</i> |
|-----------------------|---------------------------|--------------|--|------------------------|----------------------------|--------------|
| PHYS 3103             | Mechanics I               | 3            |  |                        | Technical Elective         | 3            |
| PHYS 3123             | Electricity & Magnetism I | 3            |  | PHYS 3163              | Mathematical Physics I     | 3            |
| PHYS 3183             | Modern Physics I          | 3            |  |                        | Specialization Area        | 3            |
|                       | Technical Elective        | 3            |  | PHYS 4011              | Physics Seminar            | 1            |
|                       | Specialization Area       | 3            |  | MATH 3023              | Probability and Statistics | 3            |
| <b>Total</b>          |                           | <b>15</b>    |  | <b>Total</b>           |                            | <b>13</b>    |

## SENIOR YEAR

| <i>First Semester</i> |                                     | <i>Hours</i> |  | <i>Second Semester</i> |                                     | <i>Hours</i> |
|-----------------------|-------------------------------------|--------------|--|------------------------|-------------------------------------|--------------|
|                       | Specialization Area                 | 3            |  | CORE                   | Social or Behavioral Science Option | 3            |
|                       | Specialization Area                 | 3            |  |                        | Specialization Area                 | 3            |
| PHYS 4103             | Advanced Physics Lab                | 3            |  |                        | Technical Elective                  | 3            |
| PHYS 4023             | Introduction to Quantum Mechanics I | 3            |  |                        | Specialization Area                 | 3            |
|                       | Technical Elective                  | 3            |  | PHYS 4473              | Senior Research Project             | 3            |
| <b>Total</b>          |                                     | <b>15</b>    |  | <b>Total</b>           |                                     | <b>15</b>    |