## PHYSICS, B.S. (SCIENCE)

Begin Campus: Any Penn State Campus

End Campus: University Park

## Suggested Academic Plan

The suggested academic plan(s) listed on this page are the plan(s) that are in effect during the 2023-24 academic year. To access previous years' suggested academic plans, please visit the archive (https:// bulletins.psu.edu/undergraduate/archive/) to view the appropriate Undergraduate Bulletin edition (Note: the archive only contains suggested academic plans beginning with the 2018-19 edition of the Undergraduate Bulletin).

## General Option: Physics, B.S. at University Park Campus

The course series listed below provides only one of the many possible ways to move through this curriculum. The University may make changes in policies, procedures, educational offerings, and requirements at any time. This plan should be used in conjunction with your degree audit (accessible in LionPATH as either an Academic Requirements or What If report). Please consult with a Penn State academic adviser on a regular basis to develop and refine an academic plan that is appropriate for you.

## First Year

| Fall | Credits Spring | Credits |
| :---: | :---: | :---: |
| PHYS 211*\# | 4 PHYS 212*\# | 4 |
| MATH 140*\#† | 4 MATH 141 ${ }^{*} \ddagger+\dagger$ | 4 |
| CHEM 110*\#† | 3 CHEM $112^{\dagger}$ | 3 |
| CHEM $111^{+}$ | 1 CHEM $113^{\dagger}$ | 1 |
| PSU 16 | 1 ENGL $15,30 \mathrm{H}$, or ESL $15^{\ddagger}$ | 3 |
| General Education Course | 3 |  |
|  | 16 | 15 |


| Second Year |  |  |
| :---: | :---: | :---: |
| Fall | Credits Spring | Credits |
| PHYS 213 | 4 PHYS $237{ }^{*}$ | 3 |
| \& PHYS 214* |  |  |
| MATH 230* | 4 MATH 251* | 4 |
| MATH 220 | 2 General Education Course | 3 |
| General Education Course | $\begin{aligned} & 3 \text { CMPSC 101, 121, 131, 200, } \\ & 201, \text { or } 202 \end{aligned}$ | 3 |
| General Education Course (GHW) | 1.5 CAS 100, CAS 100A, CAS 100B, or CAS 100C ${ }^{\ddagger}$ | 3 |
|  | 14.5 | 16 |


| Third Year |  |  |
| :---: | :---: | :---: |
| Fall | Credits Spring | Credits |
| PHYS 400* | 4 PHYS 410* | 4 |
| PHYS 419* | 3 PHYS 420* | 3 |
| MATH 400 level selection (consult with an academic adviser for options) ${ }^{1}$ | 3 MATH 400 level selection (consult with an academic adviser for options) ${ }^{1}$ | 3 |
| General Education Course | 3 General Education Course | 3 |
| PHYS 444* | 2 General Education Course | 3 |
|  | 15 | 16 |


| Fourth Year |  |  |
| :---: | :---: | :---: |
| Fall | Credits Spring | Credits |
| PHYS 400 level selection (consult with an academic adviser for options) | 3 PHYS 400 level selection (consult with an academic adviser for options) | 3 |
| PHYS 402 or 457W ${ }^{2}$ | 3-4 PHYS 457W or $458{ }^{2}$ | 3-4 |
| General Education Course | 3 Supporting Course (consult with an academic adviser for options) | 3 |
| ENGL 202C ${ }^{\ddagger}$ | 3 Supporting Course (consult with an academic adviser for options) | 3 |
| Elective ${ }^{2}$ | 3 General Education Course (GHW) | 1.5 |
|  | 15-16 13 | .5-14.5 |

## Total Credits 121-123

## University Requirements and General Education Notes:

US and IL are abbreviations used to designate courses that satisfy Cultural Diversity Requirements (United States and International Cultures).
$W, M, X$, and $Y$ are the suffixes at the end of a course number used to designate courses that satisfy University Writing Across the Curriculum requirement.

General Education includes Foundations (GWS and GQ), Knowledge Domains (GHW, GN, GA, GH, GS) and Integrative Studies (Inter-domain) requirements. N or Q (Honors) is the suffix at the end of a course number used to help identify an Inter-domain course, but the inter-domain attribute is used to fill audit requirements. Foundations courses (GWS and $G Q$ ) require a grade of ' $C$ ' or better.

All incoming Schreyer Honors College first-year students at University Park will take ENGL 137H/CAS 137H in the fall semester and ENGL 138T/CAS 138T in the spring semester. These courses carry the GWS designation and satisfy a portion of that General Education requirement. If the student's program prescribes GWS these courses will replace both ENGL 15/ENGL 30H and CAS 100A/CAS 100B/CAS 100C. Each course is 3 credits.

1 MATH 4xx can be taken from the following list: E SC 404 OR E SC 406 OR any Math 4XX course except PHYS/MATH 419 and PHYS/MATH 479.

2 PHYS 457W requires a grade of C or better.

## Medical Option: Physics, B.S. at University Park Campus

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## First Year

| Fall | Credits Spring | Credits |
| :---: | :---: | :---: |
| PHYS $21{ }^{\text {*\# }}$ | 4 PHYS $212{ }^{\text {*\# }}$ | 4 |
| MATH 140 ${ }^{\text {* }}$ \# ${ }^{\text {¢ }}$ | 4 MATH 141 ${ }^{\text {* } \ddagger \# \dagger}$ | 4 |
| CHEM 110 ${ }^{\text {*)\# }}$ ¢ | 3 CHEM $112^{\dagger}$ | 3 |
| CHEM $111{ }^{+}$ | 1 CHEM $113^{+}$ | 1 |
| PSU 16 | 1 ENGL 15, 30H, or ESL $15^{\ddagger}$ | 3 |
| General Education Course | 3 |  |
|  | 16 | 15 |


| Second Year |  |  |
| :---: | :---: | :---: |
| Fall | Credits Spring | Credits |
| PHYS 213 | 4 PHYS $237^{*}$ | 3 |
| \& PHYS $214^{*}$ |  |  |
| MATH $230{ }^{*}$ | 4 MATH 251 ${ }^{\text {* }}$ | 4 |
| BIOL 110 or $141^{\dagger}$ | 3-4 BIOL 240W or BME $201{ }^{\dagger}$ | 3-4 |
| General Education Course | 3 General Education Course | 3 |
|  | CAS 100, CAS 100A, CAS 100 B, or CAS $100 \mathrm{C}^{\ddagger}$ | 3 |


|  | 14-15 | 16-17 |
| :---: | :---: | :---: |
| Third Year |  |  |
| Fall | Credits Spring | Credits |
| PHYS 400* | 4 PHYS $419{ }^{\text {* }}$ | 3 |
| MATH 400 level selection (consult with an academic adviser for options)1 | $\begin{aligned} & 3 \text { CMPSC 101, 121, 131, 200, } \\ & 201 \text {, or } 202 \end{aligned}$ | 3 |
| MATH 220 | 2 CHEM 212 (or BME Elective) | 3 |
| CHEM 210 (or BME Elective) | 3 General Education Requirement | 3 |
| PHYS 444 | 2 General Education Course | 3 |
|  | 14 | 15 |

Fourth Year

| Fall | Credits Spring | Credits |
| :---: | :---: | :---: |
| PHYS 410* | 4 PHYS 420* | 3 |
| CHEM 213 (or BME Elective) | 2 PHYS 457W* | 3 |
| ENGL 202C ${ }^{\ddagger}$ | 3 Supporting Course (consult with an academic adviser for options) | 3 |
| General Education Course | 3 Supporting Course (consult with an academic adviser for options) | 3 |
| General Education Course (GHW) | 1.5 Supporting Course (consult with an academic adviser for options) | 3 |


|  | General Education Course <br> (GHW) |
| :--- | :--- |
| 13.5 | 1.5 |

Total Credits 120-122

* Course requires a grade of C or better for the major
$\ddagger$ Course requires a grade of C or better for General Education
\# Course is an Entrance to Major requirement
† Course satisfies General Education and degree requirement


## University Requirements and General Education Notes:

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General Education includes Foundations (GWS and GQ), Knowledge Domains (GHW, GN, GA, GH, GS) and Integrative Studies (Inter-domain) requirements. N or Q (Honors) is the suffix at the end of a course number used to help identify an Inter-domain course, but the inter-domain attribute is used to fill audit requirements. Foundations courses (GWS and GQ ) require a grade of ' C ' or better.

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${ }^{1}$ MATH $4 x x$ can be taken from the following list: E SC 404 OR E SC 406 OR any Math 4XX course except PHYS/MATH 419 and PHYS/MATH 479.

## Electronics Option: Physics, B.S. at University Park Campus

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## First Year

| Fall | Credits Spring | Credits |
| :---: | :---: | :---: |
| PHYS 211** | 4 PHYS $212{ }^{\text {*\# }}$ | 4 |
| MATH 140 ${ }^{\text {*\#\# }}$ | 4 MATH 141 ${ }^{\text {*\#\# }}$ ¢ | 4 |
| CHEM 110*\#\# | 3 CHEM $112{ }^{+}$ | 3 |
| CHEM $111{ }^{+}$ | 1 CHEM $113^{+}$ | 1 |
| PSU 16 | 1 ENGL $15,30 \mathrm{H}$, or ESL $15^{\ddagger}$ | 3 |
| General Education Course | 3 |  |
|  | 16 | 15 |


| Second Year |  |  |
| :---: | :---: | :---: |
| Fall | Credits Spring | Credits |
| PHYS 213 | 4 PHYS $237^{*}$ | 3 |
| \& PHYS $214^{*}$ |  |  |
| MATH $230{ }^{*}$ | 4 MATH 251 ${ }^{*}$ | 4 |
| MATH 220 | 2 CMPEN 270 (or Electrical Engineering 300 level selection) | 4 |
| EE 210 | $\begin{aligned} & 4 \text { CMPSC 101, 121, 131, 200, } \\ & 201, \text { or } 202 \end{aligned}$ | 3 |
|  | General Education Course | 3 |
|  | 14 | 17 |


| Third Year |  |  |
| :---: | :---: | :---: |
| Fall | Credits Spring | Credits |
| PHYS 400* | 4 PHYS 419* | 3 |
| CMPEN 270 (or Electrical Engineering 300 level selection) | 4 Electral Engineering 300 or 400 level selection (consult with an academic adviser for options) | 3 |
| MATH 400 level selection (consult with an academic adviser for options) $1^{1}$ | 3 General Education Course | 3 |
| CAS 100, CAS 100A, CAS 100 B , or CAS $100 \mathrm{C}^{\ddagger}$ | 3 General Education Course | 3 |
| PHYS $444{ }^{*}$ | 2 General Education Course | 3 |
|  | 16 | 15 |

## Fourth Year

| Fall | Credits Spring | Credits |
| :---: | :---: | :---: |
| PHYS 410* | 4 PHYS 420* | 3 |
| Electral Engineering 300 or 400 level selection (consult with an academic adviser for options) | 3 PHYS 457w* | 3 |
| ENGL 202C ${ }^{\ddagger}$ | 3 General Education Course | 3 |
| General Education Course | 3 Supporting Course (consult with an academic adviser for options) | 3 |


| General Education Selection <br> (GHW) | 1.5 Supporting Course (consult <br> with an academic adviser for <br> options) | 3 |
| :--- | :--- | ---: |
|  | GHA Elective | 1.5 |
|  | $\mathbf{1 4 . 5}$ | $\mathbf{1 6 . 5}$ |

## Total Credits 124

* Course requires a grade of C or better for the major
$\ddagger$ Course requires a grade of $C$ or better for General Education
\# Course is an Entrance to Major requirement
† Course satisfies General Education and degree requirement


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All incoming Schreyer Honors College first-year students at University Park will take ENGL 137H/CAS 137H in the fall semester and ENGL 138T/CAS 138T in the spring semester. These courses carry the GWS designation and satisfy a portion of that General Education requirement. If the student's program prescribes GWS these courses will replace both ENGL 15/ENGL 30H and CAS 100A/CAS 100B/CAS 100 C . Each course is 3 credits.
${ }^{1}$ MATH 4xx can be taken from the following list: E SC 404 OR E SC 406 OR any Math 4XX course except PHYS/MATH 419 and PHYS/MATH 479.

## Computational Option: Physics, B.S. at University Park Campus

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## First Year

| Fall | Credits Spring | Credits |
| :---: | :---: | :---: |
| PHYS 211** | 4 PHYS $212{ }^{\text {* }}$ | 4 |
| MATH 140 ${ }^{\text {* }}$ \# $\dagger$ | 4 MATH 141 ${ }^{\text {*\#\# } \dagger}$ | 4 |
| CHEM 110*\#\#t | 3 CHEM $112^{+}$ | 3 |
| CHEM $111{ }^{+}$ | 1 CHEM $113^{\dagger}$ | 1 |
| PSU 16 | 1 ENGL $15,30 \mathrm{H}$, or ESL $15{ }^{\ddagger}$ | 3 |
| General Education Course |  |  |
|  | 13 | 15 |


| Second Year |  |  |
| :---: | :---: | :---: |
| Fall | Credits Spring | Credits |
| PHYS 213 | 4 PHYS $237^{*}$ | 3 |
| \& PHYS $214^{*}$ |  |  |
| MATH $230{ }^{*}$ | 4 MATH 251 ${ }^{*}$ | 4 |
| CMPSC 121 | 3 CMPSC 122 | 3 |
| General Education Course | 3 MATH 220 | 2 |
| General Education Course (GHW) | 1.5 General Education Course | 3 |


|  | 15.5 | 15 |
| :---: | :---: | :---: |
| Third Year |  |  |
| Fall | Credits Spring | Credits |
| PHYS 400* | 4 PHYS 410* | 4 |
| PHYS 419 (or MATH 4xx) ${ }^{* 1}$ | 3 PHYS 419 (or MATH 400 level selection) ${ }^{\star 1}$ | 3 |
| MATH 455 | 3 MATH 456 | 3 |
| CAS 100, CAS 100A, CAS 100B, or CAS 100C ${ }^{\ddagger}$ | 3 General Education Course (GHW) | 1.5 |
| PHYS 444* | 2 General Education Course | 3 |
|  | Supporting Course (consult with an academic adviser for options) | 3 |

15
17.5

## Fourth Year

| Fall | Credits Spring | Credits |
| :---: | :---: | :---: |
| PHYS 420* | 3 PHYS 457W | 3 |
| MATH 400 level or STAT 400 level or CMPSC 300/400 level selection (consult with an academic adviser for options) | 3 MATH 400 level or STAT 400 level or CMPSC 300/400 level selection (consult with an academic adviser for options) | 3 |
| General Education Course | 3 General Education Course | 3 |
| General Education Course | 3 Supporting Course (consult with an academic adviser for options) | 3 |

ENGL 202C ${ }^{\ddagger}$
3 Supporting Course (consult with an academic adviser for options)

## Total Credits 121

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## University Requirements and General Education Notes:

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${ }^{1}$ MATH $4 x x$ can be taken from the following list: E SC 404 OR E SC 406 OR any Math 4XX course except PHYS/MATH 419 and PHYS/MATH 479.

## Materials-Nanotechnology Option - Nanotechnology Track: Physics, B.S. at University Park Campus

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## First Year

| Fall | Credits Spring | Credits |
| :---: | :---: | :---: |
| PHYS 211** | 4 PHYS $212{ }^{\text {*\# }}$ | 4 |
| MATH 140 ${ }^{\text {%\# }}$ | 4 MATH 141 ${ }^{\text {* } \ddagger \# \dagger}$ | 4 |
| CHEM 110*\#\# ${ }^{\text {® }}$ | 3 CHEM $112^{+}$ | 3 |
| CHEM 111 ${ }^{+}$ | 1 CHEM $113^{\dagger}$ | 1 |
| PSU 16 | 1 ENGL $15,30 \mathrm{H}$, or ESL $15^{\ddagger}$ | 3 |
| General Education Course | 3 |  |
|  | 16 | 15 |


| Second Year |  |  |
| :--- | :---: | ---: |
| Fall | Credits Spring | Credits |
| PHYS 213 | 4 PHYS 237* | 3 |
| \& PHYS 214* |  |  |
| MATH 230* | 4 MATH 251 |  |


| Third Year |  |  |
| :---: | :---: | :---: |
| Fall | Credits Spring | Credits |
| PHYS 400* | 4 PHYS 410* | 4 |
| PHYS 419 (or MATH 400 level selection (consult with an academic adviser for options)) ${ }^{* 1}$ | 3 PHYS 419 (or MATH 400 level selection (consult with an academic advier for options)) ${ }^{*}$ | 3 |
| PHYS 444* | 2 ESC 313 | 3 |
| ESC 312 | 3 General Education Course | 3 |
| General Education Course | 3 General Education Course | 3 |
|  | 15 | 16 |

## Fourth Year

| Fall | Credits Spring | Credits |
| :--- | :--- | ---: |
| PHYS 420 | 3 PHYS 457w |  |


| General Education Course | 3 General Education Course <br> $(\mathrm{GHW})$ | 1.5 |
| :--- | :--- | :--- |

15

## Total Credits 121

* Course requires a grade of C or better for the major
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${ }^{1}$ MATH 4xx can be taken from the following list: E SC 404 OR E SC 406 OR any Math 4XX course except PHYS/MATH 419 and PHYS/MATH 479.

## Materials-Nanotechnology Option - Materials Track: Physics, B.S. at University Park Campus

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## First Year

| Fall | Credits Spring | Credits |
| :--- | :--- | ---: |
| PHYS $211^{\star \#}$ | 4 PHYS $212^{\star \#}$ | 4 |
| MATH $140^{\star \ddagger \# \dagger}$ | 4 MATH $141^{\star \ddagger \# \dagger}$ | 4 |
| CHEM $110^{\star \ddagger \# \dagger}$ | 3 CHEM $112^{\dagger}$ | 3 |
| CHEM $111^{\dagger}$ | 1 CHEM $113^{\dagger}$ | 1 |
| PSU 16 | 1 ENGL $15,30 \mathrm{H}$, or ESL $15^{\ddagger}$ | 3 |
| General Education Course | 3 |  |
|  | $\mathbf{1 6}$ | $\mathbf{1 5}$ |


| Second Year |  |  |
| :--- | :---: | ---: |
| Fall | Credits Spring | Credits |
| PHYS 213 | 4 PHYS 237* | 3 |
| \& PHYS 214* |  |  |
| MATH 230 |  |  |

## Third Year

| Fall | Credits Spring | Credits |
| :---: | :---: | :---: |
| PHYS 400* | 4 PHYS $410{ }^{*}$ | 4 |
| PHYS 419 (or MATH 400 level selection (consult with an academic adviser for options) ${ }^{\star 1}$ | 3 PHYS 419 (or MATH 400 level selection (consult with an academic adviser for options) $)^{\star 1}$ | 3 |
| PHYS 444* | 2 MATSE 436 or 402 | 3 |
| MATSE 430 | 3 General Education Course | 3 |
| MATSE 460 | 1 General Education Course | 3 |
| General Education Course (GHW) | 1.5 |  |
|  | 14.5 | 16 |

## Fourth Year

| Fall | Credits Spring | Credits |
| :---: | :---: | :---: |
| PHYS 412* | 3 PHYS 457W* | 3 |
| PHYS 420 (or MATSE 400 level selection (consult with an academic adviser for optoins) ) ${ }^{*}$ | 3 PHYS 420 (or MATSE 400 level selection (consult with an academic adviser for optoins) ) ${ }^{*}$ | 3 |
| ENGL 202C ${ }^{\ddagger}$ | 3 General Education Course | 3 |
| General Education Course | 3 Supporting Course (consult with an academic adviser for options) | 3 |

General Education Course
3 Supporting Course (consult with an academic adviser for options)

## Total Credits 122

* Course requires a grade of C or better for the major
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${ }^{1}$ MATH $4 x x$ can be taken from the following list: E SC 404 OR E SC 406 OR any Math 4XX course except PHYS/MATH 419 and PHYS/MATH 479.

