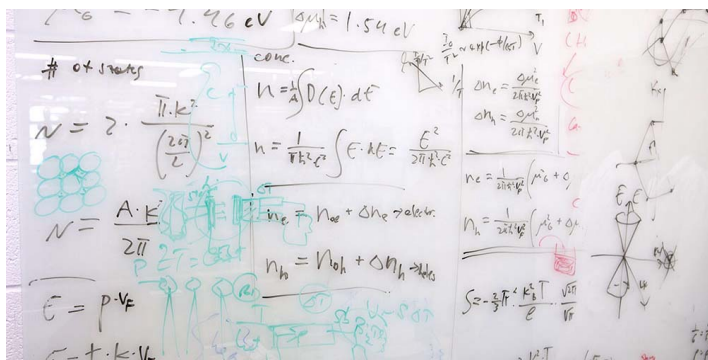


PHYSICS (BS)



This program was approved for students entering the university in the Summer 2023–Spring 2024 catalog year. For more information about catalog year, go to Catalog Year Information (<http://catalog.louisville.edu/undergraduate/university-wide-unit-specific-policies/catalog-year/>).

Bachelor of Science in Physics

Unit: College of Arts and Sciences (AS) (<http://www.louisville.edu/a-s/>)

Department: Physics and Astronomy (<http://www.physics.louisville.edu/>)

Academic Plan Code(s): See Track Requirements tab.

Program Information

The Bachelor of Science (BS) degree is intended as preparation for entry into graduate programs in Physics and other scientific or engineering fields. It also provides suitable training for entering the workforce in a technical position.

Completion of this degree requires work to be submitted for the department's Learning Outcomes Measurement. For details, contact the department.

Degree Summary

Code	Title	Hours
	General Education Requirements (http://catalog.louisville.edu/undergraduate/general-education-requirements/) ¹	31
	College/School Requirements	13-15
	Program/Major Requirements ¹	44-45
	Supporting Courses	30-33
	Track Requirements	9-10
	Minimum Total Hours	121

¹ Twelve credit hours from the General Education Requirements may be satisfied by courses defined by the program, in which case additional electives will be required to complete the minimum hours for the degree. See the Degree Requirements tab for specific coursework.

Specific coursework information can be found on the Degree Requirements tab.

Accelerated BS/MS (Master of Science) in Physics

Physics majors who are considering pursuing a master's degree (MS) in Physics can speed up the process by applying some of their undergraduate credit hours toward a master's degree. Students accepted into the Accelerated BS/MS take three graduate courses (9 credit hours) as an undergraduate that apply toward both the bachelor's degree and the eventual master's degree.

Interested students must apply for admission to the program in the first semester of the senior year (i.e., after completing 90 hours). Applicants must have completed at least 21 credit hours in Physics before applying to the program with at least a 3.0 GPA in Physics courses and a 3.35 university GPA. Students must also maintain a 3.0 GPA after they are admitted to the BS/MS program.

Departmental Admission Requirements

There are no specific admission requirements for this degree plan.

The Change Major Request form can be found under the Academic Progress tile on ULink.

Accelerated BS/MS (Master of Science) in Physics Program

Applicants apply for admission to the five-year accelerated program in the first semester of the senior year and must meet the following criteria:

- The applicant will have completed at least 21 credit hours in Physics before applying to the program.
- The applicant will have maintained at least a 3.0 GPA in Physics courses and a 3.35 GPA overall.

All applicants must submit an application along with GRE General test score consistent with MS in Physics program (<http://catalog.louisville.edu/graduate/programs-study/master-science-physics/>) guidelines.

General Education Requirements

Code	Title	Hours
	General Education Requirements (http://catalog.louisville.edu/undergraduate/general-education-requirements/) ¹	31
The following courses are required by the program and should be taken to fulfill the respective General Education Requirement:		
CHEM 201	General Chemistry I - S (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	
PHYS 298	Introductory Mechanics, Heat and Sound - S (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	
PHYS 295	Introductory Laboratories I - SL (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	
MATH 205	Calculus I - QR (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	

All degrees require the completion of the University-wide General Education Program (link provided above). Some General Education requirements may be met in the requirements for the major or supporting coursework, in which case additional electives may be required to complete the minimum hours for the degree.

College/School Requirements

Code	Title	Hours
Arts & Sciences Requirements		
GEN 100 or GEN 101	Student Success Center First Year Experience Arts & Sciences First Year Experience	1
Foreign Language ²		6-8
Electives in Humanities or Social Sciences at 300 level or above ³		6
WR—two approved courses at the 300 level or above ⁴		
Minimum Total Hours		13-15

Program/Major Requirements

Code	Title	Hours
Department of Physics		
PHYS 295	Introductory Laboratories I - SL (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	1
PHYS 296	Introductory Laboratories II - SL (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	1
PHYS 301	Introductory Modern Physics Laboratory	1
PHYS 298	Introductory Mechanics, Heat and Sound - S (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	4
PHYS 299	Introductory Electricity, Magnetism and Light	4
PHYS 300	Introductory Modern Physics	3
PHYS 351	Atomic and Nuclear Physics Laboratory	2
PHYS 350	Differential Equations for the Physical Sciences	4
PHYS 460	Mechanics	3
PHYS 530	Thermal Physics	3
PHYS 541	Electromagnetic Fields	3
PHYS 555	Elementary Quantum Mechanics	3
Culminating Undergraduate Experience (CUE) Select one of the following:		3
PHYS 430	Practicum in Physics Education - CUE (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	
PHYS 496	Senior Seminar in Physics - CUE (http://catalog.louisville.edu/undergraduate/general-education-requirements/), WR (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	
PHYS 497	Senior Thesis in Physics - CUE (http://catalog.louisville.edu/undergraduate/general-education-requirements/), WR (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	
PHYS 499	Cooperative Internship in Physics - CUE (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	
Professional, Astronomy and Astrophysics, Applied, Atmospheric, or Computational Physics and Data Science Track (see track tab for requirements)		9-10
Minimum Total Hours		44-45

Code	Title	Hours
Supporting Courses		
CHEM 201	General Chemistry I - S (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	3
CHEM 202	General Chemistry II - S (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	3
MATH 205	Calculus I - QR (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	4
MATH 206	Calculus II	4
MATH 301	Calculus III	4
Minimum Electives ^{1,5}		12-15
Minimum Total Hours		30-33

Code	Title	Hours
Minimum Hours Required for Degree		121

At least 50 of the total minimum hours required must be at the 300 level or above.

Code	Title	Hours
Culminating Undergraduate Experience (Graduation requirement)		
Requirement fulfilled by completing one of the following:		
PHYS 430	Practicum in Physics Education - CUE (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	
PHYS 496	Senior Seminar in Physics - CUE (http://catalog.louisville.edu/undergraduate/general-education-requirements/), WR (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	
PHYS 497	Senior Thesis in Physics - CUE (http://catalog.louisville.edu/undergraduate/general-education-requirements/), WR (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	
PHYS 499	Cooperative Internship in Physics - CUE (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	

¹ Ten (10) credit hours from the General Education Requirements may be satisfied by courses defined by the program, in which case additional electives will be required to complete the minimum hours for the degree.

² Completion of the intermediate level of a single foreign language.

³ In addition to courses counted toward General Education, 6 hours must be at the 300 level or above.

⁴ May be incorporated into other degree requirements

⁵ Students who satisfy General Education Requirements by courses defined by the program will require additional electives to complete the minimum hours for the degree.

Track Requirements

Track in Applied Physics

Academic Plan Code(s): PHYSBS_APP

Code	Title	Hours
Select one of the following:		1-2
PHYS 308	Observational Astronomy	
PHYS 356	Optics Laboratory	
PHYS 546	Advanced Optics Lab	
Select one of the following:		3
PHYS 542	Electromagnetic Radiation	
PHYS 545	Advanced Optics	
PHYS 547	Fundamentals of Lasers	
PHYS 556	Quantum Theory of Matter	
PHYS 565	Advanced Computational and Numerical Methods in Physics	
PHYS 570	Atomic and Molecular Physics	
PHYS 575	Solid State Physics	
PHYS 580	Nuclear Physics	
PHYS 585	Elementary Particle Physics	
PHYS 589	General Relativity	
PHYS 590	Astrophysics	
PHYS electives: PHYS courses at 300 level or above to total nine hours beyond core		4-5
Minimum Total Hours		9-10

Alternate choices within or outside of the department are possible with approval.

Track in Astronomy and Astrophysics

Academic Plan Code(s): PHYSBS_ASP

Code	Title	Hours
PHYS 307	Introductory Stellar Astrophysics	3
PHYS 308	Observational Astronomy	1
PHYS 355	Optics	3
PHYS 590	Astrophysics	3
Minimum Total Hours		10

Track in Professional Physics (non-track)

Academic Plan Code(s): PHYSBS

Code	Title	Hours
PHYS 542	Electromagnetic Radiation	3
PHYS 556	Quantum Theory of Matter	3
PHYS 498	Undergraduate Research - CUE (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	3
Minimum Total Hours		9

Track in Atmospheric Physics

Academic Plan Code(s): PHYSBS_ATP

Code	Title	Hours
PHYS 363	Atmospheric Physics	3
PHYS 464	Atmospheric Dynamics	3
PHYS 517	Physics of Climate	3
or PHYS 518	Space Weather	
Minimum Total Hours		9

Track in Computational Physics and Data Science

Academic Plan Code(s): PHYSBS_CDS

Code	Title	Hours
Pre-requisite Course		
PHYS 275	Introduction to Scientific Computing and Data Analysis	
Select 3 of these courses for this track:		9
PHYS 375	Intermediate Scientific Computing and Data Analysis (3)	
PHYS 390	Introductory Computational Physics (3)	
PHYS 475	Machine Learning in the Physical Sciences (3)	
PHYS 565	Advanced Computational and Numerical Methods in Physics (3)	
Minimum Total Hours		9

Flight Plan

Track in Applied Physics

Year 1		
Fall		Hours
GEN 100 or GEN 101	Student Success Center First Year Experience or Arts & Sciences First Year Experience	1
ENGL 101	Introduction to College Writing - WC (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	3
MATH 205	Calculus I - QR (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	4
PHYS 298	Introductory Mechanics, Heat and Sound - S (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	4
PHYS 295	Introductory Laboratories I - SL (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	1
General Education: Cardinal Core Social & Behavioral Sciences US Diversity - SBD1		3
Hours		16
Spring		
MATH 206	Calculus II	4
PHYS 299	Introductory Electricity, Magnetism and Light	4
PHYS 296	Introductory Laboratories II - SL (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	1
CHEM 201	General Chemistry I - S (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	3
ENGL 102	Intermediate College Writing - WC (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	3
Hours		15
Year 2		
Fall		
MATH 301	Calculus III	4

PHYS 300	Introductory Modern Physics	3
PHYS 301	Introductory Modern Physics Laboratory	1
PHYS 350	Differential Equations for the Physical Sciences	4
CHEM 202	General Chemistry II - S (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	3
Hours		15
Spring		
PHYS 351	Atomic and Nuclear Physics Laboratory	2
PHYS 530	Thermal Physics	3
PHYS 460	Mechanics	3
General Education: Cardinal Core Arts & Humanities - AH		3
General Education: Cardinal Core Oral Communication - OC		3
Hours		14
Year 3		
Fall		
PHYS 541	Electromagnetic Fields	3
Select one of the following:		1-2
PHYS 308	Observational Astronomy	
PHYS 356	Optics Laboratory	
PHYS 546	Advanced Optics Lab	
Foreign Language 1		3-4
General Elective		3
General Elective		3
General Elective		3
Hours		17-18
Spring		
Physics track course		3
Humanities or Social Science WR elective (300 level or above)		3
General Education: Cardinal Core Arts & Humanities Global Diversity - AHD2		3
General Education: Cardinal Core Social & Behavioral Sciences Historical Perspective - SBH		3
Foreign Language 2		3-4
Hours		15-16
Year 4		
Fall		
PHYS 555	Elementary Quantum Mechanics	3
Select one of the following:		3
PHYS 430	Practicum in Physics Education - CUE (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	
PHYS 496	Senior Seminar in Physics - CUE (http://catalog.louisville.edu/undergraduate/general-education-requirements/), WR (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	
PHYS 497	Senior Thesis in Physics - CUE (http://catalog.louisville.edu/undergraduate/general-education-requirements/), WR (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	
PHYS 499	Cooperative Internship in Physics - CUE (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	
Physics elective (300 level or above)		3
General elective		3
General elective		3
Hours		15
Spring		
General Elective		3
Humanities or Social Science WR elective (300 level or above)		3
General elective		3
General elective		3
General elective		3
Hours		15
Minimum Total Hours		122-124

Track in Astronomy and Astrophysics

Year 1		
Fall		
GEN 100 or GEN 101	Student Success Center First Year Experience or Arts & Sciences First Year Experience	1
ENGL 101	Introduction to College Writing - WC (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	3
MATH 205	Calculus I - QR (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	4
PHYS 298	Introductory Mechanics, Heat and Sound - S (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	4
PHYS 295	Introductory Laboratories I - SL (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	1
General Education: Cardinal Core Social & Behavioral Sciences US Diversity - SBD1		3
Hours		16
Spring		
MATH 206	Calculus II	4
PHYS 299	Introductory Electricity, Magnetism and Light	4
PHYS 296	Introductory Laboratories II - SL (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	1
ENGL 102	Intermediate College Writing - WC (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	3
General Education: Cardinal Core Oral Communication - OC		3
Hours		15
Year 2		
Fall		
MATH 301	Calculus III	4
PHYS 300	Introductory Modern Physics	3
PHYS 301	Introductory Modern Physics Laboratory	1
PHYS 350	Differential Equations for the Physical Sciences	4
CHEM 201	General Chemistry I - S (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	3
Hours		15
Spring		
PHYS 351	Atomic and Nuclear Physics Laboratory	2
PHYS 460	Mechanics	3
CHEM 202	General Chemistry II - S (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	3
General Education: Cardinal Core Arts & Humanities - AH		3
General Education: Cardinal Core Social & Behavioral Sciences Historical Perspective - SBH		3
General Elective		3
Hours		17
Year 3		
Fall		
PHYS 307	Introductory Stellar Astrophysics	3
PHYS 308	Observational Astronomy	1
PHYS 355	Optics	3
General Education: Cardinal Core Arts & Humanities Global Diversity - AHD2		3
Humanities or Social Science WR Elective (300 level or above)		3
Foreign Language 1		3-4
Hours		16-17
Spring		
PHYS 590	Astrophysics	3
PHYS 530	Thermal Physics	3
General Elective		3

General Elective	3
Foreign Language 2	3-4
Hours	15-16
Year 4	
Fall	
PHYS 541 Electromagnetic Fields	3
PHYS 555 Elementary Quantum Mechanics	3
Select one of the following:	3
PHYS 430 Practicum in Physics Education - CUE (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	
PHYS 496 Senior Seminar in Physics - CUE (http://catalog.louisville.edu/undergraduate/general-education-requirements/), WR (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	
PHYS 497 Senior Thesis in Physics - CUE (http://catalog.louisville.edu/undergraduate/general-education-requirements/), WR (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	
PHYS 499 Cooperative Internship in Physics - CUE (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	
General Elective	3
General Elective	2-3
Hours	14-15
Spring	
Humanities or Social Science WR elective (300 level or above)	3
General Elective (300 level or above)	3
General Elective (300 level or above)	3
General Elective (300 level or above)	3
General Elective	1-2
Hours	13-14
Minimum Total Hours	121-125

Track in Atmospheric Physics

Year 1		
Fall	Hours	
GEN 100 Student Success Center First Year Experience or GEN 101 or Arts & Sciences First Year Experience	1	
ENGL 101 Introduction to College Writing - WC (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	3	
MATH 205 Calculus I - QR (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	4	
PHYS 220 Introduction to Weather and Climate - S (http://catalog.louisville.edu/undergraduate/general-education-requirements/) or ENVS 220 or Introduction to Weather and Climate - S (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	3	
PHYS 298 Introductory Mechanics, Heat and Sound - S (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	4	
PHYS 295 Introductory Laboratories I - SL (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	1	
Hours	16	
Spring		
ENGL 102 Intermediate College Writing - WC (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	3	
MATH 206 Calculus II	4	
PHYS 299 Introductory Electricity, Magnetism and Light	4	
PHYS 296 Introductory Laboratories II - SL (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	1	

General Education: Cardinal Core Oral Communication - OC	3
Hours	15
Year 2	
Fall	
CHEM 201 General Chemistry I - S (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	3
MATH 301 Calculus III	4
PHYS 300 Introductory Modern Physics	3
PHYS 301 Introductory Modern Physics Laboratory	1
PHYS 350 Differential Equations for the Physical Sciences	4
Hours	15
Spring	
CHEM 202 General Chemistry II - S (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	3
PHYS 351 Atomic and Nuclear Physics Laboratory	2
PHYS 460 Mechanics	3
General Education: Cardinal Core Arts & Humanities - AH	3
General Education: Cardinal Core Social & Behavioral Sciences Historical Perspective - SBH	3
General Education: Cardinal Core Social & Behavioral Sciences US Diversity - SBD1	3
Hours	17
Year 3	
Fall	
PHYS 363 Atmospheric Physics	3
General Education: Cardinal Core Arts & Humanities Global Diversity - AHD2	3
Humanities or Social Science WR Elective (300 level or above)	3
Foreign Language 1	3-4
General Elective	3
Hours	15-16
Spring	
PHYS 464 Atmospheric Dynamics	3
PHYS 530 Thermal Physics	3
Foreign Language 2	3-4
General Elective	3
General Elective	3
Hours	15-16
Year 4	
Fall	
PHYS 541 Electromagnetic Fields	3
PHYS 555 Elementary Quantum Mechanics	3
Select one of the following:	3
PHYS 517 Physics of Climate or General Elective	
Select one of the following:	1-3
PHYS 430 Practicum in Physics Education - CUE (http://catalog.louisville.edu/undergraduate/general-education-requirements/) or PHYS 496 Senior Seminar in Physics - CUE (http://catalog.louisville.edu/undergraduate/general-education-requirements/), WR (http://catalog.louisville.edu/undergraduate/general-education-requirements/) or PHYS 497 Senior Thesis in Physics - CUE (http://catalog.louisville.edu/undergraduate/general-education-requirements/), WR (http://catalog.louisville.edu/undergraduate/general-education-requirements/) or PHYS 499 Cooperative Internship in Physics - CUE (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	
General Elective	3
Hours	13-15
Spring	
Select one of the following:	3

PHYS 518	Space Weather	
or General Elective		
Humanities or Social Science WR elective (300 level or above)		3
General Elective (300 level or above)		3
General Elective (300 level or above)		3
General Elective (300 level or above)		3
Hours		15
Minimum Total Hours		121-125

Track in Professional Physics

Year 1			
Fall			Hours
GEN 100	Student Success Center First Year Experience	1	
or GEN 101	or Arts & Sciences First Year Experience		
ENGL 101	Introduction to College Writing - WC (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	3	
MATH 205	Calculus I - QR (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	4	
PHYS 298	Introductory Mechanics, Heat and Sound - S (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	4	
PHYS 295	Introductory Laboratories I - SL (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	1	
General Elective		3	
Hours		16	
Spring			
MATH 206	Calculus II	4	
PHYS 299	Introductory Electricity, Magnetism and Light	4	
PHYS 296	Introductory Laboratories II - SL (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	1	
CHEM 201	General Chemistry I - S (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	3	
ENGL 102	Intermediate College Writing - WC (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	3	
Hours		15	
Year 2			
Fall			
MATH 301	Calculus III	4	
PHYS 300	Introductory Modern Physics	3	
PHYS 301	Introductory Modern Physics Laboratory	1	
PHYS 350	Differential Equations for the Physical Sciences	4	
CHEM 202	General Chemistry II - S (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	3	
Hours		15	
Spring			
PHYS 351	Atomic and Nuclear Physics Laboratory	2	
PHYS 460	Mechanics	3	
Humanities or Social Science WR elective (300 level or above)		3	
General Education: Cardinal Core Social & Behavioral Sciences US Diversity - SBD1		3	
General Education: Cardinal Core Oral Communication - OC		3	
Hours		14	
Year 3			
Fall			
PHYS 541	Electromagnetic Fields	3	
General Education: Cardinal Core Arts & Humanities Global Diversity - AHD2		3	
General Education: Cardinal Core Social & Behavioral Sciences Historical Perspective - SBH		3	

General Education: Cardinal Core Arts & Humanities - AH		3
Foreign Language 1		3-4
Hours		16
Spring		
PHYS 530	Thermal Physics	3
PHYS 542	Electromagnetic Radiation	3
Foreign Language 2		3-4
General Elective		3
General Elective		3
Hours		15-16
Year 4		
Fall		
PHYS 498	Undergraduate Research - CUE (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	1-3
PHYS 555	Elementary Quantum Mechanics	3
Select one of the following:		3
PHYS 430	Practicum in Physics Education - CUE (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	
PHYS 496	Senior Seminar in Physics - CUE (http://catalog.louisville.edu/undergraduate/general-education-requirements/), WR (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	
PHYS 497	Senior Thesis in Physics - CUE (http://catalog.louisville.edu/undergraduate/general-education-requirements/), WR (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	
PHYS 499	Cooperative Internship in Physics - CUE (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	
Humanities or Social Science WR Elective (300 level or above)		3
General Elective (300 level or above)		3
Hours		15
Spring		
PHYS 556	Quantum Theory of Matter	3
General Elective (300 level or above)		3
General Elective (300 level or above)		3
General Elective		3
General Elective		3
Hours		15
Minimum Total Hours		121-122

Track in Computational Physics and Data Science

Year 1			
Fall			Hours
GEN 100	Student Success Center First Year Experience	1	
or GEN 101	or Arts & Sciences First Year Experience		
ENGL 101	Introduction to College Writing - WC (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	3	
MATH 205	Calculus I - QR (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	4	
PHYS 298	Introductory Mechanics, Heat and Sound - S (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	4	
PHYS 295	Introductory Laboratories I - SL (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	1	
General Education: Cardinal Core Social & Behavioral US Diversity - SBD1		3	
Hours		16	
Spring			
MATH 206	Calculus II	4	
PHYS 299	Introductory Electricity, Magnetism and Light	4	

PHYS 296	Introductory Laboratories II - SL (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	1
CHEM 201	General Chemistry I - S (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	3
ENGL 102	Intermediate College Writing - WC (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	3

Hours 15

Year 2**Fall**

MATH 301	Calculus III	4
PHYS 275	Introduction to Scientific Computing and Data Analysis	3
PHYS 300	Introductory Modern Physics	3
PHYS 301	Introductory Modern Physics Laboratory	1
PHYS 350	Differential Equations for the Physical Sciences	4

Hours 15

Spring

PHYS 351	Atomic and Nuclear Physics Laboratory	2
PHYS 460	Mechanics	3
CHEM 202	General Chemistry II - S (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	3
General Education: Cardinal Core Social & Behavioral Sciences Historical Perspective - SBH		3
General Education: Cardinal Core Arts and Humanities -AH		3
General Elective		3

Hours 17

Year 3**Fall**

Select one of the following 3

PHYS 375 or PHYS 390	Intermediate Scientific Computing and Data Analysis or Introductory Computational Physics	
General Education: Cardinal Core Arts & Humanities Global Diversity - AHD2		3
Humanities or Social Science WR Elective (300 level or above)		3
Foreign Language 1		4
General Elective		2

Hours 15

Spring

PHYS 475	Machine Learning in the Physical Sciences	3
PHYS 530	Thermal Physics	3
PHYS 565	Advanced Computational and Numerical Methods in Physics	3
Foreign Language 2		4
General Education: Oral Communication - OC		3

Hours 16

Year 4**Fall**

PHYS 541	Electromagnetic Fields	3
PHYS 555	Elementary Quantum Mechanics	3
Select one of the following:		3

PHYS 430 or PHYS 496 or PHYS 497 or PHYS 499	Practicum in Physics Education - CUE (http://catalog.louisville.edu/undergraduate/general-education-requirements/) or Senior Seminar in Physics - CUE (http://catalog.louisville.edu/undergraduate/general-education-requirements/), WR (http://catalog.louisville.edu/undergraduate/general-education-requirements/) or Senior Thesis in Physics - CUE (http://catalog.louisville.edu/undergraduate/general-education-requirements/), WR (http://catalog.louisville.edu/undergraduate/general-education-requirements/) or Cooperative Internship in Physics - CUE (http://catalog.louisville.edu/undergraduate/general-education-requirements/)	
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General Elective 3

General Elective 3

Hours 15

Spring

Humanities or Social Science WR Elective (300 level or above)	3
General Elective (300 level or above)	3
General Elective (300 level or above)	3
General Elective (300 level or above)	3

Hours 12

Minimum Total Hours 121

Degree Audit Report

Degree Audit reports illustrate how your completed courses fulfill the requirements of your academic plan. What-if reports allow you to compare the courses you have completed in your current academic plan to the courses required in another academic plan. Should you have questions about either report, please consult with your academic advisor.

Flight Planner

The Flight Planner tool is available for you to create a personalized Flight Plan to graduation. Advisors have access to review your Flight Planner and can help you adjust it to ensure you remain on track to graduate in a timely manner.

To create these reports:

- Log into your ULink account.
- Click on the Academic Progress tile.
- Select the appropriate report.
 - To run a Degree Audit report, click on "View my Degree Audit."
 - To create a What-if report, click on "Create a What-if Advisement Report."
 - To run a Flight Planner report, click on "Use My Flight Planner."

Click here to run a Degree Audit report, create a What-if report, or run a Flight Planner report. (<https://ulink.louisville.edu>)