



Bachelor of Science

Major: Physics – Flexible Emphasis

2024-2025 Sample 4-Year Plan

Total Degree Requirements: 120 credits

Student _____ Student ID# _____ Student Phone # _____
 Advisor _____ Minimum GPA 2.00 Minor/Career Interest(s) _____

Students are not limited to this plan; it is meant to be used as a guide for planning purposes in consultation with your advisor. The sample schedule is one possible path to completing your degree within four years. For official program requirements, please refer to the [Undergraduate Catalog](#).

***FIRST YEAR**

Fall

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
CHEM 112/112L	General Chemistry I and Lab	c. MATH 114 or higher	4	F	
MATH 123	Calculus I (SGR #5)	p. Placement	4		
PHYS 119	First Year Seminar in Physics		1	F	
PHYS 185/185L	Solar System Astronomy and Lab	Suggested Technical Elective (7 cr. technical electives required)	3	F	
SGR #1	Written Communication	ENGL 101 Recommended	3		
Total Credit Hours			15		

Spring

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
CHEM 114/114L	General Chemistry II and Lab	p. CHEM 112/112L and MATH 114	4	S	
MATH 125	Calculus II	p. MATH 123	4		
PHYS 187/187L	Stars, Galaxies, and Cosmology and Lab	Suggested Technical Elective (7 cr. technical electives required)	3	S	
SGR #2	Oral Communication	CMST 101 Recommended	3		
SGR #3	Social Sciences (from two different disciplines)	See list in catalog	3		
Total Credit Hours			17		

SECOND YEAR

Fall

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
CSC 150	Computer Science I	p. MATH 114	3		
MATH 225	Calculus III	p. MATH 125	4		
*PHYS 211/211L	University Physics I and Lab (SGR #6)	p. MATH 123	5	F	
SGR #3	Social Sciences (from two different disciplines)	See list in catalog	3		
Total Credit Hours			15		

Students are eligible to petition for a MATH 123 and PHYS 211/L concurrent enrollment if they qualify for MATH 123 placement and want to take PHYS 211/L in the first year rather than the second year

Spring

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
EE 216/216L	Linear Circuits I and Lab	c. MATH 125	4	S	
MATH 321	Differential Equations	p. MATH 125	3		
PHYS 213/213L	University Physics II and Lab (SGR #6)	p. PHYS 211/211L and MATH 123	5	S	
SGR #1	Written Communication	ENGL 201 OR ENGL 277 Recommended p. ENGL 101	3		
Total Credit Hours			15		



THIRD YEAR

Fall

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
PHYS 316/316L	Measurement Theory and Lab	p. PHYS 213/213L or PHYS 113/113L	2	F	
PHYS 331	Introduction to Modern Physics	p. PHYS 213/213L or PHYS 113/113L	3	F	
PHYS 341	Thermodynamics	p. MATH 225	2	F	
PHYS 343	Statistical Physics	p. MATH 321	2	F	
Physics Major Directed Elective	Select from list approved by advisor	(20 cr. directed electives required)	3		
General Elective		(9 cr. electives required)	3		
Total Credit Hours			15		

Spring

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
PHYS 318	Advanced Lab I	p. PHYS 316/316L	2	S	
PHYS 421	Electromagnetism	p. MATH 321 and MATH 225	4	S	
Physics Major Directed Electives	Select from list approved by advisor	(20 cr. directed electives required)	6		
SGR #4	Arts and Humanities (from two different disciplines or a sequence of a foreign language)	See list in catalog	3		
Total Credit Hours			15		

FOURTH YEAR

Fall

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
PHYS 451	Classical Mechanics	p. MATH 321 and MATH 225	4	F	
Physics Major Directed Electives	Select from list approved by advisor	(20 cr. directed electives required)	4		
SGR #4	Arts and Humanities (from two different disciplines or a sequence of a foreign language)	See list in catalog	3		
General Electives		(9 cr. electives required)	3		
Total Credit Hours			14		

Spring

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
PHYS 418	Advanced Laboratory II	Suggested Technical Elective (7 cr. required); p. PHYS 316/316L	1	S(odd)	
PHYS 490	Seminar	Capstone	2	S	
Physics Major Directed Electives	Select from list approved by advisor	(20 cr. directed electives required)	7		
General Electives		(9 cr. electives required)	4		
Total Credit Hours			14		

COMMENTS/NOTES

Students from all academic majors can pursue graduation with Fishback Honors College distinction. View the [Honors program requirements](#).

As part of this program, students must complete:

- a capstone course in the major (PHYS 490)

The following courses are recommended for the Minor in Nuclear Engineering among the approved Technical Electives.

- NE 437 (3 cr.)/ NE 435 (3 cr.)/ NE 498 (2 cr.)/ PHYS 418 (1 cr.)/ CHEM 332/L (4 cr.)/ PHYS 433 (3 cr.)

The following courses are options for the 7-credits of Technical Electives

CHEM 332/332L (4 cr.) - F	EE 218/218L (4 cr.) - F	EE 222/222L (4 cr.) - S	EE 320/320L (4 cr.) - F
EM 321 (3 cr.) - F, S	EM 331 (3 cr.) - F, S	GE 121 (1 cr.) GE 123 (1 cr.) - F, S	MATH 331 (3 cr.) - F, S
MATH 374 (3 cr.) - S	MATH 412 (3 cr.) - S	ME 415 (3 cr.) - F, S	PHIL 200 (3 cr.) - SGR#4
NE/PHYS 437 (3 cr.) - Even S	NE 494 (1-3 cr.) /PHYS 494 (1-4 cr.)	NE 498 (1-3 cr.) / PHYS 498 (1-12 cr.)	STAT 381 (3 cr.)
PHYS 185/185L (3 cr.) - F	PHYS 187/187L (3 cr.) - S	PHYS 361 (3 cr.) - F	PHYS 418 (1 cr.) - Odd S
PHYS 433 (3 cr.) - Odd S	PHYS 439 (4 cr.) - S	PHYS 471 (4 cr.) - S	PHYS 481 (4 cr.) - F

Information Subject to Change. This is not a contract.

p. = Course Prerequisite c. = Course Corequisite
Semester: F = Fall, S = Spring, SU = Summer
odd (even) = odd (even) year only



Bachelor of Science

Major: Physics – Health and Medical Physics Emphasis

2024-2025 Sample 4-Year Plan

Total Degree Requirements: 120 credits

Student _____ Student ID# _____ Student Phone # _____
 Advisor _____ Minimum GPA 2.00 Minor/Career Interest(s) _____

Students are not limited to this plan; it is meant to be used as a guide for planning purposes in consultation with your advisor. The sample schedule is one possible path to completing your degree within four years. For official program requirements, please refer to the [Undergraduate Catalog](#).

***FIRST YEAR**

Fall

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
BIOL 151/151L	General Biology I and Lab		4		
CHEM 112/112L	General Chemistry I and Lab	c. MATH 114 or higher	4	F	
MATH 123	Calculus I (SGR #5)	p. Placement	4		
PHYS 119	First Year Seminar in Physics		1	F	
SGR #1	Written Communication	ENGL 101 Recommended	3		
Total Credit Hours			16		

Spring

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
BIOL 153/153L	General Biology II and Lab	p. BIOL 151/151L	4		
CHEM 114/114L	General Chemistry II and Lab	p. CHEM 112/112L and MATH 114	4	S	
MATH 125	Calculus II	p. MATH 123	4		
SGR #1	Written Communication	ENGL 201 OR ENGL 277 Recommended p. ENGL 101	3		
Total Credit Hours			15		

SECOND YEAR

Fall

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
MATH 225	Calculus III	p. MATH 125	4		
*PHYS 211/211L	University Physics I and Lab (SGR #6)	p. MATH 123	5	F	
SGR #3	Social Sciences (from two different disciplines)	See list in catalog	3		
SGR #4	Arts and Humanities (from two different disciplines or a sequence of a foreign language)	See list in catalog	3		
Total Credit Hours			15		

Students are eligible to petition for a MATH 123 and PHYS 211/L concurrent enrollment if they qualify for MATH 123 placement and want to take PHYS 211/L in the first year rather than the second year

Spring

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
PHYS 213/213L	University Physics II and Lab (SGR #6)	p. PHYS 211/L and MATH 123	5	S	
EE 216/L	Linear Circuits I and Lab	c. MATH 125	4	S	
SGR #4	Arts and Humanities (from two different disciplines or a sequence of a foreign language)	See list in catalog	3		
MATH 321	Differential Equations	p. MATH 125	3		
Total Credit Hours			15		



THIRD YEAR

Fall

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
PHYS 316/316L	Measurement Theory and Lab	p. PHYS 213/213L or PHYS 113/113L	2	F	
PHYS 331	Introduction to Modern Physics	p. PHYS 213/213L or PHYS 113/113L	3	F	
PHYS 341	Thermodynamics	p. MATH 225	2	F	
PHYS 343	Statistical Physics	p. MATH 321	2	F	
SGR #2	Oral Communication	CMST 101 Recommended	3		
STAT 381	Introduction to Probability and Statistics	p. MATH 125	3		
Total Credit Hours			15		

Spring

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
CSC 150	Computer Science I	p. MATH 114	3		
NE 437	Foundations of Health Physics	p. MATH 123 and PHYS 213/213L	3	S(even)	
PHYS 318	Advanced Lab I	p. PHYS 316/316L	2	S	
PHYS 421	Electromagnetism	p. MATH 321 and MATH 225	4	S	
PHYS 433 or NE 435	Nuclear and Elementary Particle or Introduction to Nuclear Engineering	p. PHYS 331	3	S(odd) S(odd)	
Total Credit Hours			15		

FOURTH YEAR

Fall

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
BIOL 221/221L	Human Anatomy and Lab		4	F/S/Su	
CHEM 326/326L	Organic Chemistry I and Lab	p. CHEM 114/L	4	F/S/Su	
NE/PHYS 494 or 498 or BIOL 202/202L or BIOL 371 or MICR 233/233L	Internship or Research or Genetics and Molecular Biology and Lab (4 cr) or Genetics (3 cr) or Introductory Microbiology and Lab (4 cr)	Recommended Elective (2 cr. req.) p. BIOL 153 and CHEM 114 p. BIOL 151 p. BIOL 151 and CHEM 112	2 4 3 4	F F/S F	
PHYS 451	Classical Mechanics	p. MATH 321 and 225	4	F	
Total Credit Hours			14-16		

Spring

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
BIOL 325/325L	Physiology and Lab	p. BIO 221/221L	4	F/S/Su	
CHEM 328/L or CHEM 332/332L or PHYS 471	Organic Chemistry II and Lab or Analytical Chemistry and Lab or Quantum Mechanics	p. CHEM 326/326L p. CHEM 114/114L p. PHYS 331	4	S F S	
PHYS 418	Advanced Lab II	p. PHYS 316/316L	1	S(odd)	
PHYS 490	Seminar	Capstone	2	S	
SGR #3	Social Sciences (from two different disciplines)	See list in catalog	3		
Total Credit Hours			14		

COMMENTS/NOTES

Students from all academic majors can pursue graduation with Fishback Honors College distinction. View the [Honors program requirements](#).

As part of this program, students must complete:

- a capstone course in the major (PHYS 490)

The following courses are recommended for the Minor in Nuclear Engineering among the approved Technical Electives.

- NE 437 (3 cr.)/ NE 435 (3 cr.)/ NE 498 (2 cr.)/ PHYS 418 (1 cr.)/ CHEM 332/L (4 cr.)/ PHYS 433 (3 cr.)



Bachelor of Science

Major: Physics – Professional and Applied Physics Emphasis

2024-2025 Sample 4-Year Plan

Total Degree Requirements: 120 credits

Student _____ Student ID# _____ Student Phone # _____
 Advisor _____ Minimum GPA 2.00 Minor/Career Interest(s) _____

Students are not limited to this plan; it is meant to be used as a guide for planning purposes in consultation with your advisor. The sample schedule is one possible path to completing your degree within four years. For official program requirements, please refer to the [Undergraduate Catalog](#).

***FIRST YEAR**

Fall

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
CHEM 112/112L	General Chemistry I and Lab	c. MATH 114 or higher	4	F	
MATH 123	Calculus I (SGR #5)	p. Placement	4		
PHYS 119	First Year Seminar in Physics		1	F	
PHYS 185/185L	Solar System Astronomy and Lab	Suggested Technical Elective (19cr. req)	3	F	
SGR #1	Written Communication	ENGL 101 Recommended	3		
Total Credit Hours			15		

Spring

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
CHEM 114/114L	General Chemistry II and Lab	p. CHEM 112/112L and MATH 114	4	S	
CSC 150	Computer Science I	p. MATH 114	3		
MATH 125	Calculus II	p. MATH 123	4		
PHYS 187/187L	Stars, Galaxies, and Cosmology and Lab	Suggested Technical Elective (19cr. req)	3	S	
SGR #2	Oral Communication	CMST 101 Recommended	3		
Total Credit Hours			17		

SECOND YEAR

Fall

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
MATH 225	Calculus III	p. MATH 125	4		
*PHYS 211/211L	University Physics I and Lab (SGR #6)	p. MATH 123	5	F	
SGR #3	Social Sciences (from two different disciplines)	See list in catalog	3		
SGR #4	Arts and Humanities (from two different disciplines or a sequence of a foreign language)	See list in catalog	3		
Total Credit Hours			15		

Students are eligible to petition for a MATH 123 and PHYS 211/L concurrent enrollment if they qualify for MATH 123 placement and want to take PHYS 211/L in the first year rather than the second year

Spring

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
EE 216/216L	Linear Circuits I and Lab	c. MATH 125	4	S	
MATH 321	Differential Equations	p. MATH 125	3		
PHYS 213/213L	University Physics II and Lab (SGR #6)	p. PHYS 211/211L and MATH 123	5	S	
SGR #4	Arts and Humanities (from two different disciplines or a sequence of a foreign language)	See list in catalog	3		
Total Credit Hours			15		



THIRD YEAR

Fall

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
MATH 331 or PHYS 481 or STAT 381	Advanced Engineering Math or Mathematical Physics or Introduction to Probability and Statistics	p. MATH 321 p. MATH 321 and 225 p. MATH 125	3 4 3	F(odd)	
PHYS 316/316L	Measurement Theory and Lab	p. PHYS 213/213L or PHYS 113/113L	2	F	
PHYS 331	Introduction to Modern Physics	p. PHYS 213/213L or PHYS 113/113L	3	F	
PHYS 341	Thermodynamics	p. MATH 225	2	F	
PHYS 343	Statistical Physics	p. MATH 321	2	F	
SGR #1	Written Communication	ENGL 201 OR ENGL 277 Recommended p. ENGL 101 and PHYS 119	3		
Total Credit Hours			15-16		

Spring

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
PHYS 318	Advanced Lab I	p. PHYS 316/316L and PHYS 331	2	S	
PHYS 421	Electromagnetism	p. MATH 321 and 225	4	S	
Physics Major Technical Electives	Select from approved courses	(19 credits technical electives required)	5		
SGR #3	Social Sciences (from two different disciplines)	See list in catalog	3		
Total Credit Hours			14		

FOURTH YEAR

Fall

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
PHYS 451	Classical Mechanics	p. MATH 321 and 225	4	F	
Physics Major Technical Electives	Select from approved courses	(19 credits technical electives required)	8		
General Electives	Taken as needed to reach 120 credits	(8-9 credits required)	3		
Total Credit Hours			15		

Spring

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
PHYS 418	Advanced Lab II	p. PHYS 316/316L	1	S(odd)	
PHYS 471	Quantum Mechanics	p. PHYS 331	4	S	
PHYS 490	Seminar	Capstone	2	S	
General Electives	Taken as needed to reach 120 credits	(8-9 credits required)	6		
Total Credit Hours			13		

COMMENTS/NOTES

Students from all academic majors can pursue graduation with Fishback Honors College distinction. View the [Honors program requirements](#).

As part of this program, students must complete:

- a capstone course in the major (PHYS 490)

The following courses are recommended for the Minor in Nuclear Engineering among the approved Technical Electives.

- NE 437 (3 cr.)/ NE 435 (3 cr.)/ NE 498 (2 cr.)/ PHYS 418 (1 cr.)/ CHEM 332/L (4 cr.)/ PHYS 433 (3 cr.)

The following courses are options for the 19-credits of Physics Major Technical Electives

CHEM 332/332L (4 cr.) - F	EE 218/218L (4 cr.) - F	EE 222/222L (4 cr.) - S	EE 320/320L (4 cr.) - F
EM 321 (3 cr.) - F, S	EM 331 (3 cr.) - F, S	GE 121 (1 cr.) GE 123 (1 cr.) - F, S	MATH 331 (3 cr.) - F, S
MATH 374 (3 cr.) - S	MATH 412 (3 cr.) - S	ME 415 (3 cr.) - F, S	PHIL 200 (3 cr.) - SGR#4
NE/PHYS 437 (3 cr.) - Even S	NE 494 (1-3 cr.) /PHYS 494 (1-4 cr.)	NE 498 (1-3 cr.) / PHYS 498 (1-12 cr.)	STAT 381 (3 cr.)
PHYS 185/185L (3 cr.) - F	PHYS 187/187L (3 cr.) - S	PHYS 361 (3 cr.) - F	PHYS 418 (1 cr.) - Odd S
PHYS 433 (3 cr.) - Odd S	PHYS 439 (4 cr.) - S	PHYS 481 (4 cr.) - F	