



Bachelor of Science in Natural Sciences

Major: Physics – Flexible Emphasis

2018-2019 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
PHYS 119	First Year Seminar in Physics		1	F	
PHYS 185-185L	Astronomy I and Lab	Suggested Physics Major Technical Elective	3	F	
ENGL 101	Composition I (SGR #1)	p. Placement	3		
PHYS 211-211L	University Physics I and Lab (SGR #6)	c. MATH 123	4		
MATH 123	Calculus I (SGR #5)	p. Placement	4		
Total Credit Hours			15		

Spring

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
PHYS 187-187L	Astronomy II and Lab	Suggested Physics Major Technical Elective	3		
SPCM 101	Fundamentals of Speech (SGR #2)		3		
PHYS 213-213L	University Physics II and Lab (SGR #6)	c. MATH 125	4		
MATH 125	Calculus II	p. MATH 123	4		
Total Credit Hours			14		

Second Year

Fall

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
CHEM 112-112L	General Chemistry I and Lab	p. MATH 102 or higher	4		
PHYS 331	Introduction to Modern Physics	p. PHYS 213-213L or PHYS 113-113L	3	F	
PHYS 316-316L	Measurement Theory and Lab	p. PHYS 213-213L or PHYS 113-113L	2	F	
MATH 225	Calculus III	p. MATH 125	4		
CSC 150	Computer Science I	p. MATH 102	3		
Total Credit Hours			16		

Spring

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
CHEM 114-114L	General Chemistry II and Lab	p. CHEM 112-112L and MATH 102	4		
PHYS 318	Advanced Lab I	p. PHYS 316-316L	2	S	
EE 216-216L	Linear Circuits I and Lab	c. MATH 125	4	S	
MATH 321	Differential Equations	p. MATH 125	3		
ENGL 201 or ENGL 277	Composition II (SGR #1) or Technical Writing in Engineering (SGR #1)	p. ENGL 101 p. ENGL 101 and PHYS 119	3		
Total Credit Hours			16		

Third Year

Fall

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
PHYS 451	Classical Mechanics	p. MATH 321 and 225	4	F	

Information Subject to Change. This is not a contract.

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Semester: F = Fall, S = Spring, SU = Summer
odd (even) = odd (even) year only



Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
SGR #3	Social Sciences/Diversity	SGR #3 satisfies by coursework from 2 different disciplines	3		
AHSS 111	Introduction to Global Citizenship and Diversity		3		
SGR #4	Arts and Humanities/Diversity	SGR #4 satisfies by coursework from 2 different disciplines or 1 modern language sequence	3-4		
Total Credit Hours			14-15		

Spring

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
PHYS 421	Electromagnetism	p. MATH 321 and 225	4	S	
Physical Major Directed Electives		Select from approved by advisor	3		
Physical Major Technical Electives		Select from approved courses	1		
SGR #3	Social Sciences/Diversity	SGR #3 satisfies by coursework from 2 different disciplines	3		
SGR #4	Arts and Humanities/Diversity	SGR #4 satisfies by coursework from 2 different disciplines or 1 modern language sequence	3-4		
Total Credit Hours			14-15		

Fourth Year

Fall

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
PHYS 341	Thermodynamics	p. MATH 225	2	F	
PHYS 343	Statistical Physics	p. MATH 321	2	F	
Physical Major Directed Electives		Select from approved by advisor	7		
Free Electives		Taken as needed to reach 120 credits	4-5		
Total Credit Hours			15-16		

Spring

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
PHYS 490	Seminar	Capstone	2	S	
Physical Major Directed Electives		Select from approved by advisor	10		
Free Electives		Taken as needed to reach 120 credits	4-5		
Total Credit Hours			15-16		

Comments/Notes

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

If math placement is to take MATH 115, take MATH 115 and CHEM 112-112L. In the following semester, take MATH 123 and PHYS 211-211L.
 If math placement is to take MATH 102, take MATH 102 and CHEM 112-112L. In the following semester, take MATH 115 and CHEM 114-114L.

As part of this program, students must complete:

- a minimum of 33 upper division credits (300-400 level courses)
- a capstone course in the major
- a designated diversity, equity, and inclusion course – AHSS 111 (or AIS 211 for teaching specialization students only)
- a minor, second major, or teaching specialization
- Natural Sciences Coursework: 10+ credits in any two lab sciences; must include two prefixes.

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

- PHYS 331 (3 cr.)/ NE 337 (3 cr.)/ NE 435 (3 cr.)/ NE 498 (2 cr.)/ PHYS 418 (1 cr.)/ CHEM 332-332L (4 cr.)/ PHYS 433 (3 cr.)



Bachelor of Science in Natural Sciences
Major: Physics – Health and Medical Physics Emphasis
2018-2019 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
PHYS 119	First Year Seminar in Physics		1	F	
AHSS 111	Introduction to Global Citizenship and Diversity		3		
ENGL 101	Composition I (SGR #1)	p. Placement	3		
PHYS 211-211L	University Physics I and Lab (SGR#6)	c. MATH 123	4		
MATH 123	Calculus I (SGR #5)	p. Placement	4		
Total Credit Hours			15		

Spring

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
SGR #4	Arts and Humanities/Diversity	SGR #4 satisfies by coursework from 2 different disciplines or 1 modern language sequence	3-4		
SPCM 101	Fundamentals of Speech (SGR #2)		3		
PHYS 213-213L	University Physics II and Lab (SGR #6)	c. MATH 125	4		
MATH 125	Calculus II	p. MATH 123	4		
Total Credit Hours			14-15		

Second Year

Fall

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
CHEM 112-112L	General Chemistry I and Lab	p. MATH 102 or higher	4		
PHYS 331	Introduction to Modern Physics	p. PHYS 213-213L or PHYS 113-113L	3	F	
SGR #4	Arts and Humanities/Diversity	SGR #4 satisfies by coursework from 2 different disciplines or 1 modern language sequence	3-4		
MATH 225	Calculus III	p. MATH 125	4		
Total Credit Hours			14-15		

Spring

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
CHEM 114-114L	General Chemistry II and Lab	p. CHEM 112-112L	4		
EE 216-216L	Linear Circuits I and L	c. MATH 125	4	S	
MATH 321	Differential Equations	p. MATH 125	3		
ENGL 201 or ENGL 277	Composition II (SGR #1) or Technical Writing in Engineering (SGR #1)	p. ENGL 101 or p. ENGL 101 and PHYS 119	3		
Total Credit Hours			14		

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Third Year

Fall

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
BIOL 151-151L	General Biology I and Lab		4		
PHYS 316-316L	Measurement Theory and Lab	p. PHYS 213-213L or PHYS 113-113L	2	F	
PHYS 451	Classical Mechanics	p. MATH 321 and 225	4	F	
SGR #3	Social Sciences/Diversity	SGR #3 satisfies by coursework from 2 different disciplines	6		
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		
CSC 150	Computer Science I	p. MATH 102	3		
PHYS 318	Advanced Lab I	p. PHYS 316-316L	2	S	
PHYS 421	Electromagnetism	p. MATH 321 and 225	4	S	
PHYS 433 or NE 435	Nuclear and Elementary Particle or Introduction to Nuclear Engineering	p. PHYS 331 p. PHYS 331	3	S-odd	
Total Credit Hours			16		

Fourth Year

Fall

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
BIO 221-221L	Human Anatomy and Lab	Sophomore Standing	4		
CHEM 326-326L	Organic Chemistry I and Lab	p. CHEM 114-114L	4		
PHYS 341	Thermodynamics	p. MATH 225	2	F	
PHYS 343	Statistical Physics	p. MATH 321	2	F	
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
BIOL 325-325L	Physiology and Lab	p. BIO 221-221L	4		
CHEM 328-328L or CHEM 332-332L or PHYS 471	Organic Chemistry II and Lab or Analytical Chemistry and Lab or Quantum Mechanics	p. CHEM 326 p. CHEM 114 p. MATH 321 and 225	4	S	
NE 337	Foundations of Health Physics	p. MATH 123 and PHYS 213-213L	3	S-even	
PHYS 418	Advanced Lab II	p. PHYS 316-316L	1	S-odd	
PHYS 490	Seminar	Capstone	2	S	
Free Electives		Taken as needed to reach 120 credits	0-2		
Total Credit Hours			12-14		

Comments/Notes

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If math placement is to take MATH 102, take MATH 102 and CHEM 112/L. In the following semester, take MATH 115 and CHEM 114/L.

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- a minimum of 33 upper division credits (300-400 level courses)
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- a minor, second major, or teaching specialization
- Natural Sciences Coursework: 10+ credits in any two lab sciences; must include two prefixes.

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

- PHYS 331 (3 cr.)/ NE 337 (3 cr.)/ NE 435 (3 cr.)/ NE 498 (2 cr.)/ PHYS 418 (1 cr.)/ CHEM 332-332L (4 cr.)/ PHYS 433 (3 cr.)

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Bachelor of Science in Natural Sciences

Major: Physics – Professional and Applied Physics Emphasis

2018-2019 Sample 4-Year Plan

Total Degree Requirements: 120 credits

Student _____ Student ID# _____ Student Phone # _____
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First Year

Fall

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
PHYS 119	First Year Seminar in Physics		1	F	
PHYS 185-185L	Astronomy I and Lab	Suggested Physics Major Technical Elective	3	F	
ENGL 101	Composition I (SGR #1)	p. Placement	3		
PHYS 211-211L	University Physics I and Lab (SGR #6)	c. MATH 123	4		
MATH 123	Calculus I (SGR #5)	p. Placement	4		
Total Credit Hours			15		

Spring

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
PHYS 187-187L	Astronomy II and Lab	Suggested Physics Major Technical Elective	3		
SPCM 101	Fundamentals of Speech (SGR #2)		3		
PHYS 213-213L	University Physics II and Lab (SGR #6)	c. MATH 125	4		
MATH 125	Calculus II	p. MATH 123	4		
Total Credit Hours			14		

Second Year

Fall

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
CHEM 112-112L	General Chemistry I and Lab	p. MATH 102 or higher	4		
PHYS 331	Introduction to Modern Physics	p. PHYS 213-213L or PHYS 113-113L	3	F	
PHYS 316-316L	Measurement Theory and Lab	p. PHYS 213-213L or PHYS 113-113L	2	F	
MATH 225	Calculus III	p. MATH 125	4		
CSC 150	Computer Science I	p. MATH 102	3		
Total Credit Hours			16		

Spring

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
CHEM 114-114L	General Chemistry II and Lab	p. CHEM 112-112L and MATH 102	4		
PHYS 318	Advanced Lab I	p. PHYS 316-316L	2	S	
EE 216-216L	Linear Circuits I and L	c. MATH 125	4	S	
MATH 321	Differential Equations	p. MATH 125	3		
ENGL 201 or ENGL 277	Composition II (SGR #1) or Technical Writing in Engineering (SGR #1)	p. ENGL 101 or p. ENGL 101 and PHYS 119	3		
Total Credit Hours			16		

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Third Year

Fall

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
PHYS 451	Classical Mechanics	p. MATH 321 and 225	4	F	
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	
SGR #3	Social Sciences/Diversity	SGR #3 satisfies by coursework from 2 different disciplines	3		
SGR #4	Arts and Humanities/Diversity	SGR #4 satisfies by coursework from 2 different disciplines or 1 modern language sequence	3-4		
Total Credit Hours			13-15		

Spring

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
AHSS 111	Introduction to Global Citizenship and Diversity		3		
PHYS 471	Quantum Mechanics	p. MATH 321 and 225	4	S	
SGR #3	Social Sciences/Diversity	SGR #3 satisfies by coursework from 2 different disciplines	3		
SGR #4	Arts and Humanities/Diversity	SGR #4 satisfies by coursework from 2 different disciplines or 1 modern language sequence	3-4		
Free Electives		Taken as needed to reach 120 credits	1-4		
Total Credit Hours			14-18		

Fourth Year

Fall

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
PHYS 341	Thermodynamics	p. MATH 225	2	F	
PHYS 343	Statistical Physics	p. MATH 321	2	F	
Physics Major Technical Electives		Select from approved courses	8		
Free Electives		Taken as needed to reach 120 credits	3		
Total Credit Hours			15		

Spring

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
PHYS 421	Electromagnetism	p. MATH 321 and 225	4	S	
PHYS 418	Advanced Lab II	p. PHYS 316	1	S-odd	
PHYS 490	Seminar	Capstone	2	S	
Physics Major Technical Electives		Select from approved courses	5		
Free Electives		Taken as needed to reach 120 credits	3		
Total Credit Hours			15		

Comments/Notes

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