SOUTH DAKOTA STATE UNIVERSITY

Bachelor of Science
Major: Physics – Flexible Emphasis
2022-2023 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
ENGL 101	Composition I (SGR #1)	p. Placement	3		
MATH 123	Calculus I (SGR #5)	p. Placement	4		
PHYS 119	First Year Seminar in Physics		1	F	
PHYS 185-185L	Astronomy I and Lab	Suggested Physics Major Technical Elective	3	F	
PHYS 211-211L	University Physics I and Lab (SGR #6)	c. MATH 123	4		
		Total Credit Hours	15		

Spring

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
CMST 101	Fundamentals of Speech (SGR #2)		3		
MATH 125	Calculus II	p. MATH 123	4		
PHYS 187-187L	Astronomy II and Lab	Suggested Physics Major Technical Elective	3		
PHYS 213-213L	University Physics II and Lab (SGR #6)	c. MATH 125	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 114 or higher	4		
CSC 150	Computer Science I	p. MATH 114	3		
MATH 225	Calculus III	p. MATH 125	4		
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	
		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 114	4		
EE 216-216L	Linear Circuits I and Lab	c. MATH 125	4	S	
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		
MATH 321	Differential Equations	p. MATH 125	3		
PHYS 318	Advanced Lab I	p. PHYS 316-316L	2	S	
		Total Credit Hours	16		

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

Third Year

Fall

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
AHSS 111	Introduction to Global Citizenship and Diversity		3		
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		
PHYS 451	Classical Mechanics	p. MATH 321 and 225	4	F	
		Total Credit Hours	13-14		

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 114, take MATH 114 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.

- 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
Major: Physics – Health and Medical Physics Emphasis
2022-2023 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
AHSS 111	Introduction to Global Citizenship and Diversity		3		
ENGL 101	Composition I (SGR #1)	p. Placement	3		
MATH 123	Calculus I (SGR #5)	p. Placement	4		
PHYS 119	First Year Seminar in Physics		1	F	
PHYS 211-211L	University Physics I and Lab (SGR#6)	c. MATH 123	4		
		Total Credit Hours	15		

Spring

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
CMST 101	Fundamentals of Speech (SGR #2)		3		
MATH 125	Calculus II	p. MATH 123	4		
PHYS 213-213L	University Physics II and Lab (SGR #6)	c. MATH 125	4		
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		

Second Year

Fall

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
CHEM 112-112L	General Chemistry I and Lab	p. MATH 114 or higher	4		
MATH 225	Calculus III	p. MATH 125	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		
		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	
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		
MATH 321	Differential Equations	p. MATH 125	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 114	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 or PHYS 471 p. PHYS 331	3	S-odd	
		Total Credit Hours	16		

Fourth Year

Fall

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
BIOL 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. PHYS 331	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 114, take MATH 114 and CHEM 112/L. In the following semester, take MATH 115 and CHEM 114/L.

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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.

- 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
Major: Physics – Professional and Applied Physics Emphasis
2022-2023 Sample 4-Year Plan

Total Degree Requirements: 120 credits

Student _____ **Student ID#** _____ **Student Phone #** _____

Advisor _____ **Minimum GPA** 2.00 **Minor/Career Interest(s)** _____

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First Year

Fall

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

Spring

Prefix + Number	Course Title	Prerequisites/Comments	Credits	Semester	Grade
CMST 101	Fundamentals of Speech (SGR #2)		3		
MATH 125	Calculus II	p. MATH 123	4		
PHYS 187-187L	Astronomy II and Lab	Suggested Physics Major Technical Elective	3		
PHYS 213-213L	University Physics II and Lab (SGR #6)	c. MATH 125	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 114 or higher	4		
CSC 150	Computer Science I	p. MATH 114	3		
MATH 225	Calculus III	p. MATH 125	4		
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	
		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 114	4		
EE 216-216L	Linear Circuits I and L	c. MATH 125	4	S	
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		
MATH 321	Differential Equations	p. MATH 125	3		
PHYS 318	Advanced Lab I	p. PHYS 316-316L	2	S	
		Total Credit Hours	16		

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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 451	Classical Mechanics	p. MATH 321 and 225	4	F	
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. PHYS 331	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		

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