Physics Major, B.S.

Department of Physics

The Bachelor of Science (B.S.) degree in Physics is primarily for students planning to work toward an advanced degree in physics or a related area. The physics courses emphasize conceptual foundations, problem-solving skills, and experimental techniques.

Typical Program of Study:

Fall Semester		*Spring Semester*	
First Year			
Math 1296 Calculus I[a]	5 cr	Math 1297 Calculus II	5 cr
Comp 1120 College Writing	3 cr	CS 1131 Intro to Programming in FORTRAN	3 cr
Phys 1021 Exploring Current Topics in Physics	1 cr	Phys 2011 General Physics I	4 cr
Liberal education courses	6 cr	Phys 2111 Solving Phys Probs I (recommended)	1 cr
	15 cr	Liberal education course	3 cr
			16 cr
Second Year			
Math 3298 Calculus III	4 cr	Math 3280 Diff Equations/Linear Algebra	4 cr
Phys 2012 General Physics II	4 cr	Phys 2021 Relativity & Quantum Physics	4 cr
Phys 2112 Solving Phys Probs II (recommended)	1 cr	Phys 2022 Classical Physics	4 cr
Liberal education courses	6 cr	Phys 2033 Classical & Quantum Physics Lab	2 cr
	15 cr		14 cr
Third Year*			
Phys 4001 Classical Mechanics	4 cr	Chem 2172 General Chemistry	4 cr
Phys 4021 Quantum Physics II	4 cr	Phys 4011 Electromagnetic Theory	4 cr
Liberal education or minor field courses	7 cr	Liberal education or minor field courses	7 cr
	15 cr		15 cr
Fourth Year*			
Phys 3061 Instrumentation	3 cr	Phys 5061 Experimental Methods	3 cr
Phys 4031 Thermal & Statistical Physics	4 cr	Phys 5090 Physics Seminar	1 cr
Liberal education or minor field courses	8 cr	Comp 3130 or 3150 Advanced Writing	3 cr
	15 cr	Liberal education or minor field courses	8 cr
			15 cr

[a]First math course is determined by math placement exam. This schedule presupposes placement into Math 1296.

*Courses numbered above 3000 will be offered in alternate years only. Some courses suggested in the junior and senior years may need to be switched to match the course offerings.

For further information:

Department of Physics
371 Marshall W Alworth Hall
1023 University Drive
Duluth, MN 55812-2496
218-726-7124
phys@d.umn.edu
http://www.d.umn.edu/physics

PHYSICS MAJOR, B. S.

2003-2005 Catalog

Major Course Requirements	Credits	Prerequisites	Semester To Be Completed	Grade When Completed
Year 1				
Math 1296 Calculus I	5	Math placement test		
Math 1297 Calculus II	5	Math 1296		
Phys 1021 Exploring Current Topics in Phys	1			
Phys 2011 General Physics I	4	Math 1296		
Phys 2111 Solving Phys Prob I (recommended)	1	Math 1296; concurrent registr in 2011		
CS 1131 Intro to Programming in FORTRAN*	3	3.5 yrs hs algebra or Math 1250		
Comp 1120 College Writing	3			
Year 2				
Phys 2012 General Physics II	4	Phys 2011; Math 1297		
Phys 2112 Solving Phys Prob II (recommended)	1	Concurrent registr in Phys 2012		
Phys 2021 Relativity & Quantum Physics	4	Phys 2012		
Phys 2022 Classical Physics	4	Phys 2012		
Phys 2033 Classical & Quantum Physics Lab	2	Phys 2021, 2022 (concurrent registr ok)		
Math 3280 Diff Equations w/ Linear Algebra	4	Math 1297		
Math 3298 Calculus III	4	Math 1297		
Year 3 **				
Phys 4001 Classical Mechanics	4	Phys 2001; Math 3280		
Phys 4011 Electromagnetic Theory	4	Phys 2012; Math 3280		
Phys 4021 Quantum Physics II	4	Phys 2021; Math 3280		
Chem 2172 General Chemistry***	4	Math 1296		
Year 4 **				
Phys 3061 Instrumentation	3	Phys 1203 or 1204; 1 sem programming		
Phys 4031 Thermal & Statistical Physics	4	Phys 2021		
Phys 5061 Experimental Methods	3	Phys 2033; Phys 3061		
Phys 5090 Seminar	1	90 credits		
Comp 3150 or 3130 Advanced Writing	3	Comp 1120; 60 credits		

*With department approval, any one-semester course in a programming language may be substituted for CS 1131.

**Courses numbered above 3000 will be offered in alternate years only. Some courses listed for Years 3 and 4 may need to be interchanged to match the course offerings.

***With department approval, one year of college-level chemistry may be substituted for Chem 2172.

NOTE: In addition to the above, students must complete the liberal education program and a minor to earn the BS degree.