PHYSICS - BS, COMPUTATIONAL SCIENCE TRACK

Physics and other sciences increasingly rely on advanced computer simulations and data analysis to develop realistic mathematical models of complex phenomena or process huge amount of data coming from particle accelerators and astronomical surveys. The BS PHYS, Computational Science track will provide you with the skills to pursue advanced studies in this area or directly enter the workforce in virtually any industry, as the demand for experts with advanced computer skills will only grow with time.

Program Requirements

First Year		
Fall		**Semester Credit Hours**
ENGL 104 or ENGL 103	Composition and Rhetoric or Introduction to Rhetoric and Composition	3
MATH 171	Calculus I [1]	4
PHYS 101	Freshman Physics Orientation [1]	1
PHYS 150	Introduction for Programming for Physics [1]	3
American history (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#american-history) [2]		3
	Semester Credit Hours	**14**
Spring		
ASTR 102	Observational Astronomy	1
MATH 172	Calculus II [1]	4
PHYS 206 & PHYS 226	Newtonian Mechanics for Engineering and Science and Physics of Motion Laboratory for the Sciences [1]	4
American history (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#american-history) [2]		3
Language, philosophy and culture (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#language-philosophy-culture) [2]		3
	Semester Credit Hours	**15**
Second Year		
Fall		
MATH 221	Several Variable Calculus [1]	4
MATH 308	Differential Equations [1]	3
PHYS 207 & PHYS 227	Electricity and Magnetism for Engineering and Science and Electricity and Magnetism Laboratory for the Sciences [1]	4
PHYS 221	Optics and Thermal Physics [1]	3
	Semester Credit Hours	**14**
Spring		
CSCE 120	Program Design and Concepts	3
PHYS 225	Electronic Circuits and Applications	3
PHYS 309	Modern Physics [1]	3
PHYS 331	Theoretical Methods for Physicists I [1]	3
Communication (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#communication) [3]		3
	Semester Credit Hours	**15**
Third Year		
Fall		
CSCE 222/ ECEN 222	Discrete Structures for Computing	3
PHYS 302	Advanced Mechanics I	3
PHYS 304	Advanced Electricity and Magnetism I	3
PHYS 332	Theoretical Methods for Physicists II	3
POLS 206	American National Government	3
	Semester Credit Hours	**15**
Spring		
CSCE 221	Data Structures and Algorithms	4
PHYS 303 or PHYS 305	Advanced Mechanics II or Advanced Electricity and Magnetism II	3
PHYS 327	Experimental Physics I [4]	2
PHYS 328	Experimental Physics II [4]	1
PHYS 412	Quantum Mechanics I	3
POLS 207	State and Local Government	3
	Semester Credit Hours	**16**
Fourth Year		
Fall		
CSCE 312	Computer Organization	4
PHYS 408	Thermodynamics and Statistical Mechanics	4
Social and behavioral science (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#social-behavioral-sciences) [2]		3
General elective [5]		4
	Semester Credit Hours	**15**
Spring		
PHYS 401	Computational Physics [6]	3
Creative arts (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#creative-arts) [2]		3
Science or Technical elective [7]		3
General elective [5]		7
	Semester Credit Hours	**16**
	Total Semester Credit Hours	**120**

1. A physics major must complete the foundation courses (PHYS 101, PHYS 150, ASTR 102, PHYS 206/PHYS 226, PHYS 207/PHYS 227, PHYS 221, PHYS 309, PHYS 331, MATH 171, MATH 172, MATH 221, MATH 308) with a grade of C or better and have a 2.0 cumulative GPA before taking non-foundation upper-level physics courses.
2. Any course in this category from the approved University Core Curriculum list of courses.
3. Any approved Communication course, except PERF 407.

[4] PHYS 327 is an approved W course. PHYS 328 is an approved C course.

[5] Electives should be chose in consultation with the student's advisor. Three hours must be in the area of International and Cultural Diversity, and three hours must be in the area of Cultural Discourse. These may be in addition to other University Core Curriculum courses, or, if a course in this category satisfies another area of the Core, it can be used to meet both requirements. Electives may be selected from any 100-499 course not used elsewhere, except ENGL 103; MATH 100-148, 165-166, 365-366 (http://catalog.tamu.edu/undergraduate/course-descriptions/math/); PHYS 201, PHYS 202.

[6] To register for PHYS 401 a student must be able to program in a high level language.

[7] Any upper-division course in geo/life/physical sciences, mathematics/statistics, or engineering (except 485/491).