PHYSICS - BS, SEMICONDUCTORS AND MODERN MATERIALS TRACK

Materials form the basis of society and drive the modern technological revolution. The BS Physics, Semiconductors and Modern Materials Track is a highly interdisciplinary track designed to equip students with a solid foundation in physics, chemistry, computational skills, and technologies necessary for advanced studies of materials or immediately joining the workforce in any industry.

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]	1
CHEM 107 & CHEM 117	General Chemistry for Engineering Students and General Chemistry for Engineering Students Laboratory	4
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
	Semester Credit Hours	**13**
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		
MSEN 222/ MEEN 222	Materials Science	3
PHYS 225	Electronic Circuits and Applications	3
PHYS 309	Modern Physics [1]	3
PHYS 331	Theoretical Methods for Physicists I [1]	3
American history (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#american-history) [2]		3
	Semester Credit Hours	**15**
Third Year		
Fall		
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
Materials physics directed elective [3]		3
	Semester Credit Hours	**15**
Spring		
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
Social and behavioral science (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#social-behavioral-sciences) [2]		3
Materials physics directed elective [3]		3
	Semester Credit Hours	**15**
Fourth Year		
Fall		
PHYS 408	Thermodynamics and Statistical Mechanics	4
Creative arts (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#creative-arts) [2]		3
Language, philosophy and culture (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#language-philosophy-culture) [2]		3
Materials physics directed elective [3]		3
General elective [5]		3
	Semester Credit Hours	**16**
Spring		
POLS 207	State and Local Government	3
Communication (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/#communication) [6]		3
Materials physics directed elective [3]		3
Science or technical elective [7]		3
General elective [5]		6
	Semester Credit Hours	**18**
	Total Semester Credit Hours	**120**

[1] A physics major must complete the foundation courses (ASTR 102, PHYS 101, PHYS 150, 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 (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) list of courses.

[3] Select from BAEN 354, CHEM 466, CHEM 468, ECEN 370, ECEN 440, MEEN 360, MEEN 455, MEEN 458, MEEN 471, MSEN 210, MSEN 250, MSEN 260, MSEN 305, MSEN 320, MSEN 325, MSEN 415, MSEN 420, MSEN 430, MSEN 458, MSEN 470, MSEN 472, NUEN 465, PHYS 416, PHYS 419. A minimum of 6 hours must be selected from MSEN 210, MSEN 250, MSEN 260, MSEN 305, MSEN 320, MSEN 325, MSEN 415, MSEN 420, MSEN 430, MSEN 458, MSEN 470, MSEN 472.

[4] PHYS 327 is an approved writing intensive (W) course. PHYS 328 is an approved communication intensive (C) course.

[5] Electives should be chosen in consultation with the student's advisor. Three hours must be in the area of International and Cultural Diversity (http://catalog.tamu.edu/undergraduate/general-information/degree-information/international-cultural-diversity-requirements/), and 3 hours must be in the area of Cultural Discourse (http://catalog.tamu.edu/undergraduate/general-information/degree-information/cultural-discourse-requirements/). These may be in addition to other University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/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] Any approved Communication course, except PERF 407.

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