ENGINEERING PHYSICS, BACHELOR OF SCIENCE

Students graduating with an engineering physics degree will be well qualified for jobs requiring highly technical skills and theoretical knowledge. Also, the degree program will prepare students for graduate studies in the fields of physics and engineering. However, those interested in employment immediately after graduation will have numerous alternatives for career choices. Job opportunities for an engineering physics graduate could include employment in industries such as: McDonnell Douglas/Boeing, Texas Instruments, Honeywell, Microsoft, Polaroid, Union Carbide, National Institute of Standards; Technology, Entergy, Tennessee Valley Authority, and Dow Chemical. Also, government agencies such as NASA, National Bureau of Standards, Office of Naval Research, Department of Energy, etc., provide additional employment opportunities for engineering physics graduates.

To qualify for a baccalaureate degree in engineering physics, the student must complete four (4) hours in chemistry, ten (10) hours in computer and information science, fifteen to eighteen (15-18) hours in mathematics, twenty-nine (29) hours in physics (including the core physics courses), thirty-two (32) hours in engineering, and one (1) hour of engineering design course (in the final semester).

Curriculum

The matrix below is a sample plan for all coursework required for this program.

Course	Title	Hours
Freshman		
Fall		
ENGL 1013	Composition I [1]	3
PHSC 1001	Orientation to Physical Science	1
MATH 2914	Calculus I	4
COMS 1011 & COMS 1013	Programming Foundations I Lab and Programming Foundations I	4
CHEM 2124 & CHEM 2120	General Chemistry I and General Chemistry I Lab	4
	Hours	**16**
Spring		
ENGL 1023	Composition II [1]	3
PHSC 1011	Orientation to Physical Science II	1
MATH 2924	Calculus II	4
MCEG 2023	Engineering Materials	3
PHYS 2114 & PHYS 2000	Calculus-Based Physics I and Physics Laboratory I	4
	Hours	**15**
Sophomore		
Fall		
SS 1XXX	Social Science Courses [1]	3
COMS 2203	Programming Foundations II	3
MCEG 2013	Statics	3
PHYS 2124 & PHYS 2010	Calculus-Based Physics II and Physics Laboratory II	4
MATH 2934	Calculus III	4
	Hours	**17**
Spring		
FAH 1XXX	Fine Arts and Humanities Courses [1]	3
ELEG 2103	Electric Circuits I	3
MCEG 2033	Dynamics	3
PHYS 3213	Modern Physics	3
MATH 3243	Differential Equations I	3
	Hours	**15**
Junior		
Fall		
FAH 1XXX	Fine Arts and Humanities Courses [1]	3
PHYS 3023 or PHYS 4013	Mechanics or Quantum Mechanics	3
ELEG 2113	Electric Circuits II	3
ELEG 2111	Electric Circuits Laboratory	1
PHYS 3133 or PHYS 4023	Theory of Electricity and Magnetism or Computational Physics	3
COMS 2323	Programming in Python	3
	Hours	**16**
Spring		
USHG 1XXX	U.S. History and Government [1]	3
PHYS 3003 or PHYS 4113	Optics or Advanced Physics Laboratory	3
PHYS 4213 or PHYS 4003	Advanced Topics in Physics and Astronomy (or an upper division Mathematics course) or Thermodynamics and Statistical Mechanics	3
MCEG 3013	Mechanics of Materials	3
MCEG 3313	Thermodynamics I	3
	Hours	**15**
Senior		
Fall		
MCEG 4202	Engineering Design	2
MCEG 4403	Mechanics of Fluids and Hydraulics	3
PHYS 3023 or PHYS 4013	Mechanics or Quantum Mechanics	3
PHYS 3133 or PHYS 4023	Theory of Electricity and Magnetism or Computational Physics	3
COMS/ELEG/MCEG Elective (3000-4000 level)		3
	Hours	**14**
Spring		
PHYS 3003 or PHYS 4113	Optics or Advanced Physics Laboratory	3
PHYS 4213 or PHYS 4003	Advanced Topics in Physics and Astronomy (or an upper division Mathematics course) or Thermodynamics and Statistical Mechanics	3
MCEG 4443	Heat Transfer	3
PHYS 4061	Engineering Physics Design	1
COMS/ELEG/MCEG Elective (3000-4000 level)		2
	Hours	**12**
	Total Hours	**120**

[1] See appropriate alternatives or substitutions in "General Education Requirements (https://catalog.atu.edu/undergraduate/general-education-requirements/)". A specific general education core course does not have to be taken in the semester listed, any other part of the general education core at any time is acceptable as well.

Excluding MATH 3003 Foundations of Advanced Mathematics, MATH 3033 Methods of Teaching Elementary Mathematics, and MATH 4113 History of Mathematics.

PHYS 3023 Mechanics and PHYS 4003 Thermodynamics and Statistical Mechanics will satisfy the prerequisites for MCEG 3013 Mechanics of Materials and MCEG 4403 Mechanics of Fluids and Hydraulics for engineering physics majors.

Must complete both the PHYS class and one MATH upper division elective (PHYS course offered in alternating years).