PHYSICS COMPREHENSIVE - ENGINEERING EMPHASIS, BACHELOR OF SCIENCE

Offered by Department of Physics and Astronomy (http://catalog.unk.edu/undergraduate/departments-programs/physics-astronomy/)

Code	Title	Credit Hours
General Studies		
Foundational Requirements (LOPERs 1-4)		*14*
Including:		
LOPER 4: Mathematics, Statistics, and Quantitative Reasoning		
MATH 115	Calculus I with Analytic Geometry [1]	
Broad Knowledge Requirements (LOPERs 5-8)		*11*
Including		
Take any one course in LOPER 5, LOPER 6, or LOPER 7 that satisfies a Dispositional Requirement (LOPER 9 or LOPER 10) and a Broad Knowledge Requirement. The courses that meet these criteria are listed at https://catalog.unk.edu/undergraduate/general-studies/courses-satisfy-broad-knowledge-dispositional (https://catalog.unk.edu/undergraduate/general-studies/courses-satisfy-broad-knowledge-dispositional/)/. See advisor for assistance.		
LOPER 8: Natural Science		
PHYS 275	General Physics I (Calculus)	
PHYS 275L	General Physics I (Calculus) Laboratory	
Dispositional Requirements (LOPERS 9-10) [2]		*6*
Wellness (LOPER 11) Optional		*0*
BS Science-related course requirements		**8**
MATH 202	Calculus II with Analytic Geometry	
MATH 305	Differential Equations	
Program Specific Requirements		**5**
PHYS 276	General Physics II (Calculus)	
PHYS 276L	General Physics II (Calculus) Laboratory	
Major Option		
Complete all required courses		61
Unrestricted electives		
Needed to reach 120 credit hour minimum		15
Total Credit Hours		120

Major Option

Code	Title	Credit Hours
Physics Comprehensive (Engineering Emphasis) Requirements		
PHYS 346	Modern Physics I	4
PHYS 410	Mathematical Techniques in Physics I	3
Physics Comprehensive (Engineering Emphasis) Electives		
Select 9 credit hours of the following:		9
PHYS 402	Analytic Mechanics	
PHYS 350	Astrophysics I	
PHYS 351	Astrophysics II	
PHYS 360	Computational Methods in Physics and Astronomy	
PHYS 361	Astronomy Methods II	
PHYS 407	Electricity & Magnetism	
PHYS 419	Quantum Mechanics	
PHYS 420	Advanced Physics Laboratory	
PHYS 430	Optics	
PHYS 435	Solid State Physics	
PHYS 440	Thermodynamics and Statistical Mechanics	
PHYS 495	Research in Physics	
Physics Comprehensive (Engineering Emphasis) Math Requirements		
MATH 260	Calculus III	5
Physics Chemistry Requirements		
CHEM 160	General Chemistry	3
CHEM 160L	General Chemistry Laboratory	1
CHEM 161	General Chemistry	3
CHEM 161L	General Chemistry Laboratory	1
Physics Comprehensive (Engineering Emphasis) Engineering Requirements		
ENGR 101	Introduction to Engineering	3
Select 11 credit hours of the following:		11
ENGR 130	Computer Aided Drafting for Mechanical Engineering	
ENGR 215	Engineering Circuits I	
ENGR 216	Engineering Circuits II	
ENGR 223	Engineering Statics	
ENGR 325	Mechanics of Materials	
ENGR 373	Engineering Dynamics	
Students must take 18 credit hours of engineering classes at 300 level or above from an ABET (Accreditation Board of Engineering and Technology) accredited university. Three of these hours must demonstrate experiential learning, e.g. Senior Engineering Design.		18
Total Credit Hours		61

1

Students without sufficient preparation will also need to take the following courses, increasing the total credit hours needed:

- MATH 102
- MATH 103

2

Designated courses with the appropriate content may be approved to satisfy one of the Broad Knowledge requirements plus LOPER 9 or Broad Knowledge plus LOPER 10. Courses may be approved to satisfy LOPER 9 or LOPER 10 alone. (Courses satisfying LOPER 9 or LOPER 10 alone must be 3 credit hours.) Students applying this option will need to take additional hours in other categories to meet the required GS hours.