Learning Goals for Physics Curriculum

1) To provide science and non-science students with an introduction to both the methodology of the physical sciences and the major models of reality developed in the physical sciences.
   a) To provide all students with opportunities to understand and practice the methodology of the physical sciences.
   b) To provide students with a grasp of the historical development of models of the physical world, the experimental basis of these models, and how these models have impacted how humanity views reality.
2) To provide Biology, Chemistry, Physical Chemistry, Biochemistry/Molecular Biology and Mathematics students with the background in theoretical and applied physics necessary for their chosen field of academic specialization.
   a) Biologists and Chemists need to understand the physical laws of mechanics, electrodynamics, thermodynamics, and atomic physics that are crucial to their disciplines.
   b) Mathematicians need to see how mathematics is applied to the description of natural phenomena.
3) To provide physics majors with an in-depth study in the field of physics.
   a) A clear understanding of the experimental basis of all fundamental physical theories. They should understand the major theories and be able to explain how they follow from experimental results.
   b) A panoramic view of the field of physics with enough detail to enable them to easily make connections with new information in physics, and thereby more readily assimilate new information.
   c) Undergraduate research. We feel that students don't really understand the nature of the field of physics until they have practiced it, reported their results at a meeting involving students from other institutions, and compared the quality of their work with that of students at other institutions. Since we consider ourselves a national liberal arts college, this comparison should be at the national level.

Learning Goal Matrix

	1a	1b	2a	2b	3a	3b	3c
PHYS 135 Robotics	✓	✓		✓	✓		
PHYS 160 Astronomy	✓	✓	✓		✓	✓	
PHYS 170 Earth Sciences	✓	✓					
PHYS 210 General Physics I	✓	✓	✓	✓	✓	✓	
PHYS 220 General Physics II	✓	✓	✓	✓	✓	✓	
PHYS 230 General Physics I (calc-based)	✓	✓	✓	✓	✓	✓	
PHYS 235 General Physics I (Workshop)	✓	✓	✓	✓	✓	✓	
PHYS 240 General Physics II (calc-based)	✓	✓	✓	✓	✓	✓	
PHYS 245 General Physics II (Workshop)	✓	✓	✓	✓	✓	✓	
PHYS 305 Waves & Vibrations	✓	✓	✓	✓	✓	✓	
PHYS 315 Modern Physics	✓	✓	✓	✓	✓	✓	✓
PHYS 320 Electrodynamics	✓	✓	✓	✓	✓	✓	
PHYS 330 Quantum Mechanics	✓	✓	✓	✓	✓	✓	
PHYS 340 Electronics	✓	✓			✓	✓	
PHYS 370 Thermal Physics	✓	✓	✓	✓	✓	✓	
PHYS 380 Classical Mechanics	✓	✓		✓	✓	✓	
PHYS 450 Directed Research	✓			✓	✓		✓
MATH 130 Calculus I	✓	✓		✓			
MATH 140 Calculus II	✓	✓		✓			
MATH 260 Differential Equations	✓	✓		✓	✓		
CHEM 110/150 General Chemistry I	✓	✓	✓		✓		
CHEM 120 General Chemistry II	✓	✓	✓				
CSCI 150 Foundations of Computer Science	✓	✓					
CSCI 385 Scientific Computing	✓	✓					
MATH 230 Multivariable Calculus	✓	✓		✓			
MATH 270 Linear Algebra	✓	✓		✓			
PHYS 490 Topics in Physics	✓	✓		✓	✓	✓	