Curriculum Map BS Physics

Core Courses	**1.1, 1.6, 2** Mechanics	**1.2, 2.4-2.5** Thermodynamics	**1.4, 1.6, 2.3-2.5** Electricity & magnetism	**1.1, 1.3, 1.4, 2** Electrodynamics, **1.5** special relativity	**1.1, 1.3-1.5, 2.3-2.5** Quantum physics & applications	**1.1, 1.3-1.5, 1.6, 2** Experimental physics	**3, 4** Oral & written presentation	**1-4** Physics & technology research
225 Intro Mechanics	I					I	I	
226 Intro EM	D		I	I		I	I	
227 Intro Waves & Optics			I	I	I	I	I	
300 Survey Math Physics	D	I	D	D	D		D	
310 Thermodynamics		D					D	I
320 Classical Mechanics	M						D	I
330 A Electromagnetic Theory			D	D			D	I
330 B Electromagnetic Theory			M	M			D	I
340 Modern physics	M				D		D	I
380 Electronics lab			D	D		D	D	D
481 Experimental Physics	M	M	M	M	M	M	M	D
499 Independent Study	M	M	M	M	M	M	M	M

I = Introduced **D = Developed** **M = Mastered**

University Learning Goals

Core Courses	Demonstrate intellectual literacy through the acquisition of knowledge and development of competence in disciplinary perspectives and interdisciplinary points of view	Think critically, using analytical and quantitative reasoning, to apply previously learned concepts to new situations, complex challenges and everyday problems.	Communicate in oral, written and group contexts clearly, effectively and persuasively.	Work effectively with peers, leaders and followers to achieve a broad variety of goals.	Evaluate the significance of how differing perspectives and trends (e.g. cultural, social, economic, and political) affect an ever-changing society.	Recognize their roles in an increasingly interdependent global community.
225	I	I	I	I	I	I
226	I	I	I	I	I	I
227	I	I	I	I	I	I
300	D	D	D			
310	D	D	D			
320	M	M				
330	D	D				
330	M	M				
340	D	D				
380	D	D	D	D	D	D
481	M	M	M	M	D	M
499	M	M	M	M	M	M

Physics Learning Goals and Student Learning Outcomes

The following goals and learning outcomes have been established for students pursuing a degree in Physics:

Content Knowledge

1. Students will demonstrate understanding of:
1.1. Force, energy and momentum and apply this understanding to predict and describe motion.
1.2. Thermodynamics and the thermodynamic properties of materials.
1.3. Waves and wave propagation.
1.4. Electricity, magnetism, the relationship between electric and magnetic phenomena, and electromagnetic forces and waves.
1.5. Modern physics, including quantum theory, relativity and elementary particles.
1.6. Investigation and Experimentation

2. Students will learn to:
2.1. Ask scientific questions, formulate hypotheses, design and conduct experiments, and analyze data.
2.2. Collect, analyze and interpret data and information
2.3. Use modern laboratory equipment including advanced computer hardware and software.
2.4. Use analytical, computational, graphical and advanced mathematical methods in problem-solving.
2.5. Apply mathematics to scientific investigations and experimentation(s) for the purpose of quantifying results and drawing conclusions.

For the most up-to-date information, please contact the program.

Communication

3. Students will learn to:

3.1. Communicate data, concepts, skills and processes to experts and non-experts in the field in logical and meaningful formats.

3.2. Communicate scientific observations, results and conclusions in clear, logical, and unbiased terms both verbally and in writing.

3.3. Use appropriate technology to communicate scientific results.

Nature of Science

4. Students will learn to:

4.1. Recognize that science is an active endeavor in which the acquisition of knowledge is based upon the collection and examination of data.

4.2 Work effectively as a team member while collecting and interpreting data and communicating conclusions.

4.3. Experience and practice analyzing complex situations to make informed decisions and to participate in scientific problem solving.

4.4. Recognize their responsibility to increase scientific literacy so that the general population can understand current issues and appreciate their personal societal roles and responsibilities.