PHYSICS (PHY)

PHY 101 How Things Work Credits: 4
Typically Offered: Fall.
Course Description: A conceptual study of the physical principles that govern everyday life. Designed to provide an introduction to the scientific method and its application to today's technology to a broad audience without overwhelming them with mathematics. Provides an introduction to the terminology and concepts of a broad range of topics including motion, fluids, thermodynamics, energy, sound, light, and electricity. Three hours lecture, two hours lab. Not open to the student with credit in PHY 107, PHY 110, or PHY 210.
CORE 42: MOTR PHYS 100L; Essentials in Physics with Lab (attributes MO38, MLAB)

PHY 104 Introduction to Astronomy Credits: 4
Typically Offered: Fall, Spring.
Course Description: Basic course in astronomy, mostly descriptive in nature; solar system, stellar astronomy, structure of galaxy and universe. Three hours lecture and two hours lab.
CORE 42: MOTR ASTR 100L; Astronomy with Lab (attributes MO31, MLAB)

PHY 107 Introduction to Physics Credits: 4
Typically Offered: Spring.
Course Description: A comprehensive, quantitative study of the concepts and laws of physics. Designed for students majoring in fields other than the physical sciences, mathematics, or engineering. Topics include motion, gravity, electromagnetism, atomic and nuclear physics, optics, and relativity. Three hours of lecture, two hours lab. Not open to the student with credit in PHY 110 or PHY 210. **Prerequisite(s):** ACT math subscore of at least 22 or a sufficient score on the math placement exam or a grade of C or higher in MAT 110 or MAT 110E or MAT 111 or MAT 111E or departmental approval.
CORE 42: MOTR PHYS 110L; Essentials in Physical Sciences with Lab (attributes MO37, MLAB)

PHY 110 College Physics I Credits: 4
Typically Offered: Fall, Spring.
Course Description: Classical treatment of mechanics, energy, waves, and heat. Three hours lecture, three hours lab. Not open to students with credit in PHY 210. **Prerequisite(s):** Grade of C or higher in MAT 116.
CORE 42: MOTR PHYS 150L; Physics I with Lab (attributes MO38, MLAB)

PHY 111 College Physics II Credits: 4
Typically Offered: Spring.
Course Description: Electricity, magnetism, optics, relativity, atomic physics and nuclear physics. Three hours lecture, three hours lab. Not open to students with credit in PHY 211. **Prerequisite(s):** PHY 110 or PHY 210.

PHY 210 University Physics I Credits: 5
Typically Offered: Fall.
Course Description: This course is a comprehensive study of mechanics, relativity, oscillations, waves, and thermodynamics involving simulations, applications, and experimentation. Course assignments require the student to have a thorough knowledge of college algebra, trigonometry, and calculus. Three hours lecture, two hours computer aided instruction lab, two hours experimentation lab. **Prerequisite(s):** MAT 167.
CORE 42: MOTR PHYS 200L; Advanced Physics I with Lab (attributes MO38, MLAB)

PHY 211 University Physics II Credits: 5
Typically Offered: Spring.
Course Description: This course is a comprehensive study of electricity, magnetism, optics, and introductory quantum physics involving simulations, applications, and experimentation. Course assignments require the student to have a thorough knowledge of college algebra, trigonometry, and calculus. Three hours lecture, two hours computer aided instruction laboratory, two hours experimentation laboratory. **Prerequisite(s):** PHY 210 and MAT 177. MAT 287 recommended.

PHY 283 Introduction to Research Methods in Physics Credits: 1-2
Typically Offered: Departmental Discretion.
Course Description: Introduction to basic research methods in Physics. Individual and team projects involving methods for solving physics-related research problems. **Prerequisite(s):** Departmental approval.

PHY 312 University Physics III Credits: 3
Typically Offered: Fall.
Course Description: Calculus-level modern physics. Three hours lecture. **Prerequisite(s):** PHY 211.

PHY 313 Modern Physics Laboratory Credits: 1
Typically Offered: Fall (odd-numbered years).
Course Description: Selected experiments in modern physics. Three hours laboratory. **Prerequisite(s):** Credit or concurrent enrollment in PHY 111 or PHY 312.

PHY 320 History of Physics Credits: 3
Typically Offered: Spring (even-numbered years).
Course Description: Comprehensive discussion of chronological development of concepts in classical and modern physics. **Prerequisite(s):** PHY 111 or PHY 312.

PHY 410 Selected Topics in Physics Credits: 3
Typically Offered: Spring (odd-numbered years).
Course Description: Presentation of one of the following topics: 01-mathematical physics; 02-classical mechanics; 03-thermodynamics; 04-electricity and magnetism; 05-optics; 06-quantum mechanics; 07-astrophysics; 08-solid state physics; 09-nuclear and particle physics; 10-computational physics. **Prerequisite(s):** Departmental approval.

PHY 450 Independent Research/Project Credits: 1-3
Typically Offered: Fall, Spring.
Course Description: Investigation of a research problem, project, or topic on an individual conference basis. May be repeated for credit. **Prerequisite(s):** Minimum 2.5 GPA in minor field, and departmental approval.

PHY 465 Physics Teaching: Methods and Materials Credits: 2
Typically Offered: Fall (even-numbered years).
Course Description: Techniques, materials, and equipment used in teaching physics in secondary schools. **Prerequisite(s):** PHY 111 or PHY 312.