ELECTROMAGNETISM, OPTICS, AND NUCLEAR PHYSICS

GENERAL PHYSICS TECHNICAL COURSE II

Electromagnetism, Optics, and Nuclear Physics serves as an introduction to electricity, magnetism, optics, waves, and quantum and nuclear physics. Students will explore these topics as they obtain practical experience with electrical circuits and optical devices. Students will also investigate modern physical phenomena, including the quantum nature of light (photons) and properties of the atomic nucleus. Students will learn both how scientific inquiry reveals the fundamental properties of the universe and how these properties are applied in technologies that shape the modern world.

This is the second course in a sequence of algebra-based (non-calculus) courses, designed by the faculty at The University of Texas at Austin (UT Austin), which fulfills a general physics requirement. Proficiency in algebra and geometry is assumed. Students will develop critical thinking, empirical, and quantitative skills through analysis of physical situations and problem solving. Students can earn three hours of UT credit, with feedback and assessment provided by UT course staff.

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OnRamps

PHYSICS II

BIG IDEAS

ELECTRICITY

Electric charge and force, Gauss's Law, electric potential, capacitance, current, resistance, and direct-current circuits

ELECTROMAGNETISM & OPTICS

Electromagnetic waves, wave optics, reflection and refraction, and mirrors, lenses, and optical instruments

MAGNETISM

Magnetic force and fields, Ampere's Law, magnetic materials, Faraday's Law, magnetic induction, and alternating-current circuits

MODERN PHYSICS

Photons, quantum physics, atomic models, and nuclear physics

TRANSFERABILITY

3 College Credits

UT Course Code: PHY 302L

TCCN: PHYS 1302

PRE-REQUISITES

TEKS-based Physics Course

Algebra II

Geometry

Recommended:

OnRamps PHY 302K, AP Physics I, Honors Physics, or PHYS 1301

Precalculus

TECHNOLOGY

Computer, Laptop, Chromebook, or Tablet Access

PEDAGOGY

Peer Instruction

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