Board of Regents of the University System of Georgia
"Creating A More Educated Georgia"

PHYSICS

Area F Learning Outcomes

Calculus Sequence

1. Students will apply methods of integration and differentiation in one variable to solve problems. (Calc I)
2. Students will apply advanced integration techniques, Taylor's theorem, the general binomial theorem to solve problems. (Calc II)
3. Students will use double and triple integration, particle derivatives and vector-valued functions to solve problems. (Calc III)

Calculus-based Physics I

1. Analyze and solve kinematical problems for systems moving in one and two dimensions using pictorial, graphical, physical, or mathematical representations (including calculus and vectors) of the system, and other representations as appropriate.
2. Analyze and solve statics and dynamics problems using Newton's laws in one and two dimensions using multiple representations including free-body diagrams and mathematical descriptions (including calculus and vectors) of the system.
3. Analyze and apply the conservation laws (energy and momentum) for linear and rotational systems, and develop solutions using multiple representations, including pictorial, graphical, or mathematical (including calculus and vectors) descriptions as appropriate.

Calculus-based Physics II

1. Analyze and solve electrostatic problems for discrete and continuous charge distributions using pictorial, graphical, physical, or mathematical representations (including calculus and vectors), and other representations as appropriate.
2. Analyze and solve magnetostatics and induction problems using pictorial, graphical, physical, or mathematical representations (including calculus and vectors) of the system, and other representations as appropriate.
3. Analyze and solve DC and AC circuit problems using pictorial, graphical, physical, or mathematical representations (including calculus and phasors) of the system, and other representations as appropriate.

Laboratory

1. Students will collect appropriate data using available technologies (including lab equipment and computer interfaces, as well as simulations) to draw logical and physically reasonable conclusions.

Reviewed by the Council on General Education, October 24, 2014

Approved by the Regents Administrative Committee on Academic Affairs, February 18, 2015

Minor changes (PHYS 2211 replaced with Calculus-based Physics I and PHYS 2212 replaced with Calculus-based Physics II) made on August 9, 2022 based on recommendations from the Physics and Astronomy Regents Advisory Committee.

Area F Course Guidelines

Area F for Physics majors consists of 18 hours of lower-division (1000- and 2000-level) courses related to the Physics major and/or prerequisite to courses required in the major:

Calculus-based Physics I, II	8 hours
Calculus I (excess from Area A or D)*	0-1 hour
Calculus II (excess from Area D)	1-4 hours
Calculus III	3-4 hours
Additional hour(s) in physics, astronomy, mathematics, computer science or chemistry (for science majors)**	1-4 hours
Total	18 hours

* If Calculus I is not taken in Area A or D, it must be taken in Area F, in which case up to two hours of Calculus III must be included in the 60 hours in the major program and no additional hours would be required in Area F.

** Excess hours from courses must be included in the 60 hours in the major program.