

COURSE SYLLABUS (2 Page)

Course Number:	PHYS 2102
Course Name:	Physics for Science and Engineering II
Credits and Contact Hours:	3
Instructor:	Staff
Textbook:	Physics for Scientists and Engineers, by D.M. Katz, Cengage Learning. ISBN: 9781305775282
Catalog Description:	Second semester of the calculus-based introductory sequence in general physics. Topics include: electric charge, electric fields, and magnetic fields. <i>Most Recently Offered (Day): Spring 2016, Fall 2015, Summer 2015</i> <i>Most Recently Offered (Evening): Course has not been offered in 3 years</i>
Pre-Requisites/Co-Requisites:	PHYS 2101 and MATH 1242 with grades of C or above.

Course is: Required (R)

Goals: To develop students' problem solving skills in a systematic manner, while providing a balance of quantitative reasoning and conceptual understanding. Upon the completion of this course, students should be able to: 1) evaluate electrostatic forces in a system of multiple point charges or continuous charge distributions; 2) evaluate electric field due to a system of multiple point charges or continuous charge distributions; 3) calculate electric flux and apply Gauss' Law; 4) calculate conductivity, charge, and current densities in conductors; 5) apply Kirchoff's and Ohm's laws in circuit analysis; 6) apply Ampere's and Biot-Savart laws to evaluate magnetic forces and magnetic field due to a system of moving charges and current paths; 7) calculate magnetic flux and apply Faraday's and Lenz's laws to current loops; 8) conduct steady-state and transient circuit analysis involving combinations of inductors, capacitors and resistors; and 9) solve problems involving motion of charged particles in electric and magnetic fields.

Student Outcomes Addressed:

- A. an ability to apply knowledge of mathematics, science, and engineering

Course Topics:

- Electric Charge and Electric Field
- E-Field Calculations

- Gauss' Law
- Electric Potential and PE
- Capacitance and Dielectrics
- Current and Conductivity
- DC Circuits
- Magnetic Field
- Ampere's Law
- Magnetic Force
- Magnetic Force on Current Carrying Wires
- Motional EMF
- Magnetic Flux
- Faraday's Law
- Inductors and L-R Circuits
- Maxwell's Equations