COURSE SYLLABUS (2 Page)

Course Number: PHYS 2102  
Course Name: Physics for Science and Engineering II  
Credits and Contact Hours: 3  
Instructor: Staff  

Catalog Description: Second semester of the calculus-based introductory sequence in general physics. Topics include: electric charge, electric fields, and magnetic fields.  
Most Recently Offered (Day): Spring 2016, Fall 2015, Summer 2015  
Most Recently Offered (Evening): Course has not been offered in 3 years  

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