MONROE COUNTY COMMUNITY COLLEGE

Course Outcome Summary

Standard Course

Physics 152 – General Physics II

Course Information

Division	**Science/Mathematics**
Contact Hours	**6**
Theory	**3**
Lab Hours	**3**
Total Credits	**4**

Prerequisites

PHY 151

Course Description

This course is a continuation of General Physics I; units on electricity and magnetism, light and optical phenomena, relativity and atomic, quantum and nuclear physics are included. This course requires laboratory work.

Course Outcomes

In order to evidence success in this course, students will be able to:

1. Understand and describe the differences between induction and conduction.
2. Diagram and calculate electric forces and electric fields.
3. Describe electric flux and how it varies with respect to angle, area, and surface vectors.
4. Define electric potential and compare and contrast it to electric energy.
5. Given a practical problem with capacitors, determine their equivalency in both parallel and series circuits.
6. Define electric current and be able to calculate its value using Ohm's Law.
7. Determine electrical power in a circuit.
8. Find equivalent resistive series and parallel circuits.
9. Use Kirchhoff's Rules in complex DC circuits.
10. Diagram and calculate the RC time constant, charge, and current in an RC circuit.
11. Understand and describe the earth's magnetic field and why it is essential to life on earth.
12. Calculate magnetic moments and apply them to torque problems in electrical circuits.
13. Use Ampere's law.
14. Describe the factors necessary to create and modify emf and magnetic flux.
15. Use Faraday's Law of induction to determine the induced emf in a coil.
16. Calculate the "back emf" in a electrical circuit.
17. Work with alternating circuits to determine inductive reactance, capacitive reactance, impedance, and the power function.
18. Summarize Maxwell's Predictions and summarize Hertz's confirmation of electromagnetic waves.
19. Use the Doppler effect for electromagnetic waves.
20. Define reflection, refraction, diffraction, and dispersion.
21. Create images using ray tracing for mirrors and lenses.
22. Use the len's formula to determine the magnification and position of reflected and refracted light waves.
23. Use Young's Double-slit experiment to calculate the wavelength of light.
24. Calculate the thickness of thin films due to interference.
25. Identify the different methods of polarizing light.

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27. Explain the different types of eye conditions and the appropriate corrections.
28. Diagram reflecting and refracting telescopes.
29. Use Rayleigh's criterion.
30. Use Einstein's Special Theory of Relativity to determine length contraction, time, dilation, and mass increase, and relative velocity due to speeds near that of light.
31. Explain blackbody radiation and Planck's hypothesis.
32. Understand the photoelectric effect and how it helped in understanding quantum physics.
33. Describe De Broglie's hypothesis and how it helped in understanding the motion of electrons around the nucleus.
34. Use the Uncertainty Principle to determine the minimum uncertainty in position and momentum.
35. Determine wavelengths of light when emitted from an atom using the Bohr Model.
36. Know the names and the criteria for the emission of light from a hydrogen atom.
37. Use the exclusion principle to configure electron shells.
38. Calculate the approximate size of atoms and their binding energy.
39. Determine the half-life of radioactive nuclei.
40. Model the decay process of radioactive nuclei.
41. Compare and contract nuclear fission and fusion.
42. Diagram a brief history of the Universe from the Big Bang to the present.

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