**PHY 1214 : General Physics II**

**Spring 2018**

**INSTRUCTOR:**     Mohamed Bingabr, Ph.D.

**CONTACTS:**         *Office*: Howell 221B; *Phone*: 974 5718; *Email*: mbingabr@uco.edu

**OFFICE HOURS:** MWR 10:00 – 11:00, R 3:00 – 4:00, and by appointment

**CLASS HOURS:** MWF 12:00 – 12:50 in Howell  205

**TEXTS**: “College Physics” OpenStax College.

**PREREQUISITE:** PHY 1114

**GRADES:**

            Homework 10%

Attendance 5%

Quizzes 15%

            2 Tests                                                 30%

            Final Exam                                       20%

            Laboratory Reports                            20%

            A  90%          80 % B  90%           70% C 0%          60% D %        F < 60%

Note: Dates of the 2 tests and the final exam will be announced during the semester.

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**Course aims:**

This is the second course of a two-semester sequence covering introductory physics for students of all majors. The sequence is an introduction to the basic principles of physics. The approach taken in the course is to gradually develop the necessary problem solving skills so that the students can apply the fundamental principles of physics to situations of their interest in their fields.

**COURSE EXPECTATION & CONDUCT:**

It is expected that each student will actually spend a total of 6 to 8 hours per week on the course (not including lecture times). I don’t expect you to memorize formulas but I expect you to understand them. So, you will be allowed to bring to the exam one sheet of paper that contains relevant formulas you need, but make sure you know how to use them conceptually and not just mechanically. Should you miss a quiz or test due to illness or an emergency, you will be required to provide a doctor's note in order to be allowed to make-up on the tests and quizzes. No sheeting, no use of cellular phone during lectures, quizzes, tests, and final exam.

**HOMEWORK:**

You will not truly understand the physics concepts by just paying attention to lectures and reading the materials and examples in the book. To truly understand physics and technical concepts you have to solve the homework problems yourself even if you are struggling solving them. For this reason, regular homework will be made. Your solutions to the homework assignments will be collected at the start of the period on the date they are due. Late homework will not be accepted for any reason, but your two lowest homework scores will be dropped.

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| **Date** | **Subject** | **Reading** |
| Lectures  1 to 4 | Electric Charges, Force, and Fields  Coulomb’s Law  Electric Field  Electric Flux and Gauss’s Law | Ch18 |
| Lectures 5 to 11 | Electric Potential and Electric Field  Energy Conservation  Electric Potential of Point Charge  Equipotential Surfaces and Electric Field  Capacitor and Dielectrics  Electrical Energy Storage | Ch19 |
| Lectures 12 to 20 | Electric Current, Ohm’s Law, and Circuit  Electric Current  Ohm’s Law  Energy and Power in Electric Circuit  **Test 1**  Resistor in series and Parallel  Kirchhoff’s Rules | Ch20, 21 |
| Lectures 21 to 25 | Magnetism Magnetic FieldMagnetic Force on Moving ChargesMotion of Charged Particles in Magnetic Field Magnetic Force Exerted on a Current-Carrying Wire  Loops of Current and Magnetic Torque  Electric Current, Magnetic Fields, and Ampere’s Law | Ch22 |
| Lectures 26 to 31 | Electromagnetic Induction and AC Circuit  Induced Electromotive Force  Magnetic Flux  Faraday’s Law of induction (Transformer)  Lenz’s Law  Mechanical Work and Electrical Energy  Inductance  Energy Stored in a Magnetic Field Test 2 | Ch23 |
| Lectures 31 to 35 | Geometric Optics  Reflection of Light  Forming an Images with a Plane Mirror  Spherical Mirrors  Ray Tracing and the Mirror Equation  Reflection of Light  Ray Tracing of Lenses  Thin Lens Equation | Ch25 |
| Lectures 36 to 40 | Wave Optics: Interference and Diffraction Superposition and Interference Young’s Two-Slit Experiment  Interference in Reflected Waves  Diffraction | Ch 27 |

**Student Information Sheet:**

http://www.busn.uco.edu/academicaffairs/FORMS/StudentINFOSheetSyllabusSPRING04.pdf

## **ADA STATEMENT**

"The University of Central Oklahoma complies with Section 504 of the Rehabilitation Act of 1973 and the American with Disabilities Act of 1990.  Students with disabilities who need special accommodations should make their requests by contacting the coordinator of Disability Support Services, Kimberly Fields at 974-2549.  The office is located in the Nigh University Center, Room 415.  Students should also notify the instructor of special accommodation needs by the end of the first week of class."