# BARTON COMMUNITY COLLEGE COURSE SYLLABUS

1. **GENERAL COURSE INFORMATION**

Course Number: PHYS 1606 Course Title: Engineering Physics II Credit Hours: 5

Prerequisites: PHYS 1604 Engineering Physics I with a C or better Division/Discipline: Academics/Physics

Course Description: Engineering Physics II (and associated laboratory experience) is the continuation of Engineering Physics I using the tools of algebra, trigonometry, and calculus. Topics covered in this course will include electricity and magnetism, electromagnetic waves, and optics. Students enrolled in Engineering Physics II are required to enroll in Engineering Physics II Lab.

# INSTRUCTOR INFORMATION

1. **COLLEGE POLICIES**

Students and faculty of Barton Community College constitute a special community engaged in the process of education. The College assumes that its students and faculty will demonstrate a code of personal honor that is based upon courtesy, integrity, common sense, and respect for others both within and outside the classroom.

Plagiarism on any academic endeavors at Barton Community College will not be tolerated. The student is responsible for learning the rules of, and avoiding instances of, intentional or unintentional plagiarism. Information about academic integrity is located in the Student Handbook.

The College reserves the right to suspend a student for conduct that is determined to be detrimental to the College educational endeavors as outlined in the College Catalog, Student Handbook, and College Policy & Procedure Manual. (Most up-to-date documents are available on the College webpage.)

Any student seeking an accommodation under the provisions of the Americans with Disability Act (ADA) is to notify Student Support Services via email at disabilityservices@bartonccc.edu.

# COURSE AS VIEWED IN THE TOTAL CURRICULUM

Engineering Physics II is a general education course designed to fill the requirements of physics, chemistry, and engineering majors. It will also serve as the general education 5- hour laboratory class requirement in non-science curricula. This course will transfer to all Regent school in Kansas. However, requirements vary among institutions, and even within departments, and often without much notification. Thus, it is the student’s

responsibility to be in contact with the transfer institution throughout his/her tenure at Barton Community College to insure that the student is enrolling in the most appropriate set of courses for the transfer program.

# ASSESSMENT OF STUDENT LEARNING

Barton Community College is committed to the assessment of student learning and to quality education. Assessment activities provide a means to develop an understanding of how students learn, what they know, and what they can do with their knowledge. Results from these various activities guide Barton, as a learning college, in finding ways to improve student learning.

Course Outcomes, Competencies, and Supplemental Competencies:

* 1. Evaluate situations involving Engineering Physics II topics by choosing the appropriate conceptual frameworks.
		1. Use clues within the statement of a problem to choose appropriate equations and/or principles.
		2. Answer conceptual questions (either orally or in writing) based on an understanding of basic physics principles.
	2. Recall relevant physical models and to successfully apply these models using techniques of symbolic and numerical analysis in order to generate solutions to problems in Engineering Physics II topics.
		1. State overarching principles and models – along with key associated equations – related to Engineering Physics II, including:
			1. Electrical forces and fields.
			2. Magnetic forces and fields.
			3. Wave behavior of sound and light.
			4. Reflection, refraction and thin lenses.
		2. Symbolically manipulate linear equations, quadratic equations and trigonometric functions to solve to specific variables.
	3. Think critically by utilizing problem solving techniques to evaluate and analyze context rich, multi-step problems in Engineering Physics II topics, selecting relevant information, selecting an approach to solving the problem and carrying out the analysis needed to generate and communicate solution(s).
		1. Read “story problems” and convert them into appropriate mathematical form.
		2. Use skills from algebra, trigonometry, and calculus skills to solve problems.
		3. Use proportional reasoning to relate and/or rank values in two or more related situations.
		4. Write out clear, organized solutions to problems.
	4. Perform measurements using physical apparatus, analyze the collected data including appropriate treatment of errors and uncertainties, generate and communicate

conclusions based on the data and analysis for experimental investigations in Engineering Physics II topics.

* + 1. Use typical equipment found in an Engineering Physics II laboratory, such as digital multimeters, wires, resistors, electronic power supplies, capacitors, lenses, and optic benches.
		2. Accurately collect and record data, including appropriate units and appropriate expressions of uncertainty.
		3. Propagate uncertainties to obtain uncertainties in calculated results from initial measurements to final calculated results.
		4. Complete laboratory reports that summarize the knowledge gained by doing the experiments.

# INSTRUCTOR'S EXPECTATIONS OF STUDENTS IN CLASS

1. **TEXTBOOKS AND OTHER REQUIRED MATERIALS**
2. **REFERENCES**
3. **METHODS OF INSTRUCTION AND EVALUATION**
4. **ATTENDANCE REQUIREMENTS**
5. **COURSE OUTLINE**