BARTON COMMUNITY COLLEGE
COURSE SYLLABUS

I. GENERAL COURSE INFORMATION

Course Number:	PHYS 1606
Course Title:	Engineering Physics II
Credit Hours:	5 Credit hours
Prerequisites:	C grade or better in PHYS 1604 Engineering Physics I
Division/Discipline:	Academics Division-Liberal Arts and Sciences/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.

II. INSTRUCTOR INFORMATION

III. 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.

IV. COURSE AS VIEWED IN THE TOTAL CURRICULUM

Engineering Physics II is a general education course that would be considered a "depth" 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.

The learning outcomes and competencies detailed in this course syllabus meet or exceed those specified for this course by the Kansas Core Outcomes Groups project, and as approved by the Kansas Board of Regents – http://kansasregents.org/transfer_articulation.

V. ASSESSMENT OF STUDENT LEARNING

Barton Community College assesses student learning at several levels: institutional, program, degree and classroom. The goal of these assessment activities is to improve student learning. As a student in this course, you will participate in various assessment activities. Results of these activities will be used to improve the content and delivery of Barton's instructional program.

Course Outcomes, Competencies, and Supplemental Competencies: Upon completion of the above listed course, students will be able to do the following:

A. 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.

B. 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
      i. Electrical forces and fields
      ii. Magnetic forces and fields
      iii. Wave behavior of sound and light
      iv. Reflection, refraction and thin lenses.
   2. Symbolically manipulate linear equations, quadratic equations and trigonometric functions to solve to specific variables.

C. 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.

D. 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 a 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.

VI. INSTRUCTOR'S EXPECTATIONS OF STUDENTS IN CLASS

VII. TEXTBOOKS AND OTHER REQUIRED MATERIALS

VIII. REFERENCES

IX. METHODS OF INSTRUCTION AND EVALUATION

Since laboratory activities are integral to the learning outcomes of this lab science course, students must pass the laboratory portion of the class in order to successfully complete (“pass”) the course.

X. ATTENDANCE REQUIREMENTS

XI. COURSE OUTLINE