

WTCS Repository

10-806-188 Calculus Based Physics 2

Course Outcome Summary

Course Information

Description This course is a continuation of Calculus Based Physics 1. It is designed to provide a calculus-based approach to the study of physics. Topics include: electric fields, magnetic fields, Maxwell's equations, electromagnetic waves, and optics. Lab activities are related to and support classroom presentations.

Total Credits 3.00

Pre/Corequisites

Prerequisite Each Wisconsin Technical College determines the General Education course prerequisites used by their academic institution. If prerequisites for a course are determined to be appropriate, the final Course Outcome Summary must identify the prerequisites approved for use by the individual Technical College.

Course Competencies

1. Explain the concepts of charge, electric force, and electric fields.

Assessment Strategies

- 1.1. through completion of homework.
- 1.2. through completion of quizzes/exams.
- 1.3. through completion of lab activities.

Criteria

Your performance will be successful when:

- 1.1. you can define the concepts of electric charge and electric fields.
- 1.2. you can draw electric field lines for simple charge distributions.

2. Solve problems involving electric charge, force, fields and Gauss' law.

Assessment Strategies

- 2.1. through completion of homework.
- 2.2. through completion of quizzes/exams.
- 2.3. through completion of lab activities.

Criteria

Your performance will be successful when:

- 2.1. you can select the correct equation(s) to solve the problem.
- 2.2. you can manipulate the equation(s) to solve the unknown.
- 2.3. you can substitute the correct values and complete the calculation.
- 2.4. you include the correct units of measure in your answer.

3. Solve problems involving the concepts of electric potential, current, capacitance, and resistance.

Assessment Strategies

- 3.1. through completion of homework.
- 3.2. through completion of quizzes/exams.
- 3.3. through completion of lab activities.

Criteria

Your performance will be successful when:

- 3.1. you describe the concepts of electric potential, current, and simple circuits.
- 3.2. you can select the correct equation (s) to solve the problem.
- 3.3. you can manipulate the equation (s) to solve the unknown.
- 3.4. you can substitute the correct values and complete the calculation.
- 3.5. you include the correct units of measure in your answer.

4. Solve problems involving electric potential, current, and simple circuits.

Assessment Strategies

- 4.1. through completion of homework.
- 4.2. through completion of quizzes/exams.
- 4.3. through completion of lab activities.

Criteria

Your performance will be successful when:

- 4.1. you can select the correct equation(s) to solve the problem.
- 4.2. you can manipulate the equation(s) to solve the unknown.
- 4.3. you can substitute the correct values and complete the calculation.
- 4.4. you include the correct units of measure in your answer.

5. Solve problems involving the magnetic field.

Assessment Strategies

- 5.1. through completion of homework.
- 5.2. through completion of quizzes/exams.
- 5.3. through completion of lab activities.

Criteria

Your performance will be successful when:

- 5.1. you can describe the concepts of magnetic fields.
- 5.2. you can select the correct equation(s) to solve the problem.
- 5.3. you can manipulate the equation(s) to solve the unknown.
- 5.4. you can substitute the correct values and complete the calculation.
- 5.5. you include the correct units of measure in your answer.

6. Solve problems involving electromagnetic radiation.

Assessment Strategies

- 6.1. through completion of homework.
- 6.2. through completion of quizzes/exams.
- 6.3. through completion of lab activities.

Criteria

Your performance will be successful when:

- 6.1. you can describe the concepts of electromagnetic radiation.
- 6.2. you can select the correct equation(s) to solve the problem.
- 6.3. you can manipulate the equation(s) to solve the unknown.
- 6.4. you can substitute the correct values and complete the calculation.
- 6.5. you include the correct units of measure in your answer.

7. Solve problems involving geometric and wave optics.

Assessment Strategies

- 7.1. through completion of homework.
- 7.2. through completion of quizzes/exams.
- 7.3. through completion of lab activities.

Criteria

Your performance will be successful when:

- 7.1. you can describe the concepts of geometric and wave optics.
- 7.2. you can select the correct equation(s) to solve the problem.
- 7.3. you can manipulate the equation(s) to solve the unknown.
- 7.4. you can substitute the correct values and complete the calculation.
- 7.5. you include the correct units of measure in your answer.