

WTCS Repository

10-806-143 College Physics 1

Course Outcome Summary

Course Information

Description Presents the applications and theory of basic physics principles. This course emphasizes problem solving, laboratory investigation and applications. Topics include laboratory safety, unit conversions and analysis, kinematics, dynamics, work, energy, power, temperature and heat.

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. Demonstrate safety procedures and protocols in the laboratory

Assessment Strategies

1.1. through completion of lab activities

Criteria

Your performance will be successful when:

- 1.1. you can explain the use of safety equipment in the laboratory
- 1.2. you can locate the safety equipment in the laboratory
- 1.3. you can locate the emergency exit route from the the laboratory and the classroom
- 1.4. you can explain the importance of safety in the laboratory

2. Solve problems involving unit conversions and unit analysis

Assessment Strategies

- 2.1. with the use of a scientific calculator
- 2.2. through completion of homework
- 2.3. through completion of quizzes/exams
- 2.4. through completion of lab activities

Criteria

Your performance will be successful when:

- 2.1. you use the conversion factor method to make correct conversions
- 2.2. you show the steps used to solve the problem
- 2.3. you include correct units of measure in your answer

3. Apply the concepts of kinematics

Assessment Strategies

- 3.1. with the use of a scientific calculator
- 3.2. through completion of homework
- 3.3. through completion of quizzes/exams
- 3.4. through completion of lab activities

Criteria

Your performance will be successful when:

- 3.1. you correctly solve problems involving displacement, velocity, acceleration, and time
- 3.2. you show the steps used to solve the problem
- 3.3. you include correct units of measure in your answer

4. Apply the laws of dynamics

Assessment Strategies

- 4.1. with the use of a scientific calculator
- 4.2. through completion of homework
- 4.3. through completion of quizzes/exams
- 4.4. through completion of lab activities

Criteria

Your performance will be successful when:

- 4.1. you draw an accurate freebody diagram or motion diagram representing the problem
- 4.2. you use the freebody diagram to solve for unknowns
- 4.3. you correctly solve uniform circular motion problems
- 4.4. you show the steps used to solve the problem
- 4.5. you include correct units of measure in your answer

5. Apply the concepts of work, energy, and power

Assessment Strategies

- 5.1. with the use of a scientific calculator
- 5.2. through completion of homework
- 5.3. through completion of quizzes/exams
- 5.4. through completion of lab activities

Criteria

Your performance will be successful when:

- 5.1. you accurately solve problems involving work
- 5.2. you accurately solve problems involving power
- 5.3. you accurately solve problems involving kinetic energy
- 5.4. you accurately solve problems involving potential energy
- 5.5. you correctly solve problems using the law of conservation of energy
- 5.6. you show the steps used to solve the problem
- 5.7. you include correct units of measure in your answer

6. Apply the principle of conservation of momentum

Assessment Strategies

- 6.1. with the use of a scientific calculator
- 6.2. through completion of homework
- 6.3. through completion of quizzes/exams
- 6.4. through completion of lab activities

Criteria

Your performance will be successful when:

- 6.1. you accurately solve problems involving momentum
- 6.2. you correctly solve problems using the law of conservation of momentum

- 6.3. you show steps used to solve the problem
- 6.4. you include correct units of measure in your answer

7. Assess the thermal properties of matter

Assessment Strategies

- 7.1. with the use of a scientific calculator
- 7.2. through completion of homework
- 7.3. through completion of quizzes/exams
- 7.4. through completion of lab activities

Criteria

Your performance will be successful when:

- 7.1. you accurately complete temperature conversion problems
- 7.2. you accurately solve thermal expansion problems
- 7.3. you accurately solve gas law problems
- 7.4. you show the steps used to solve the problem
- 7.5. you include the correct units of measure in your answer

8. Apply the principles of heat transfer

Assessment Strategies

- 8.1. with the use of a scientific calculator
- 8.2. through completion of homework
- 8.3. through completion of quizzes/exams
- 8.4. through completion of lab activities

Criteria

Your performance will be successful when:

- 8.1. your application explains thermal equilibrium and the zeroth law of thermodynamics
- 8.2. your application explains the theoretical aspects of conduction
- 8.3. your application explains the theoretical aspects of convection
- 8.4. your application explains the theoretical aspects of radiation
- 8.5. your application explains the theoretical aspects of heat transfer
- 8.6. you show the steps used to solve the problem
- 8.7. you include the correct units of measure in your answer

9. Analyze thermodynamics of a system

Assessment Strategies

- 9.1. with the use of a scientific calculator
- 9.2. through completion of homework
- 9.3. through completion of quizzes/exams
- 9.4. through completion of lab activities

Criteria

Your performance will be successful when:

- 9.1. you accurately solve problems related to temperature change
- 9.2. you accurately solve problems related to phase change
- 9.3. you accurately solve problems related to the conservation of thermal energy
- 9.4. you show the steps used to solve the problem
- 9.5. you include correct units in your answer