

College Physics 1

Course Outcome Summary

Course Information

Organization	WTCS - Wisconsin Technical College System
Developers	General Studies Review Team
Development Date	12/9/2005
Course Number	10-806-143
Instructional Level	Associate Degree
Instructional Area	General Studies
Potential Hours of Instruction	72
Total Credits	3

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.

Types of Instruction

Instruction Type	Contact Hours	Credits
Lecture	36	2
Lab	36	1

Textbooks

John D. Cutnell and Keith W. Johnson. *Physics*. Wiley.

Raymond A. Serway and Jerry S. Faughn. *College Physics*. Saunders.

Paul E. Tippens. *Physics*. McGraw-Hill.

Jerry Wilson and Anthony Buffa. *College Physics*. Prentice-Hall.

Learner Supplies

Scientific Calculator.

12" English-Metric Ruler.

Protractor.

Prerequisites

Technical Math 1 or Concurrent enrollment in Technical Math 1

Competencies

- Demonstrate safety procedures and protocols in the laboratory**

You will demonstrate your competence:

 - o through completion of lab activities

Your performance will be successful when:

 - o you can explain the use of safety equipment in the laboratory
 - o you can locate the safety equipment in the laboratory

- o you can locate the emergency exit route from the the laboratory and the classroom
- o you can explain the importance of safety in the laboratory

2. Solve problems involving unit conversions and unit analysis

You will demonstrate your competence:

- o with the use of a scientific calculator
- o through completion of homework
- o through completion of quizzes/exams
- o through completion of lab activities

Your performance will be successful when:

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

3. Apply the concepts of kinematics

You will demonstrate your competence:

- o with the use of a scientific calculator
- o through completion of homework
- o through completion of quizzes/exams
- o through completion of lab activities

Your performance will be successful when:

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

4. Apply the laws of dynamics

You will demonstrate your competence:

- o with the use of a scientific calculator
- o through completion of homework
- o through completion of quizzes/exams
- o through completion of lab activities

Your performance will be successful when:

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

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

You will demonstrate your competence:

- o with the use of a scientific calculator
- o through completion of homework
- o through completion of quizzes/exams
- o through completion of lab activities

Your performance will be successful when:

- o you accurately solve problems involving work
- o you accurately solve problems involving power
- o you accurately solve problems involving kinetic energy
- o you accurately solve problems involving potential energy
- o you correctly solve problems using the law of conservation of energy
- o you show the steps used to solve the problem
- o you include correct units of measure in your answer

6. Apply the principle of conservation of momentum**You will demonstrate your competence:**

- o with the use of a scientific calculator
- o through completion of homework
- o through completion of quizzes/exams
- o through completion of lab activities

Your performance will be successful when:

- o you accurately solve problems involving momentum
- o you correctly solve problems using the law of conservation of momentum
- o you show steps used to solve the problem
- o you include correct units of measure in your answer

7. Assess the thermal properties of matter**You will demonstrate your competence:**

- o with the use of a scientific calculator
- o through completion of homework
- o through completion of quizzes/exams
- o through completion of lab activities

Your performance will be successful when:

- o you accurately complete temperature conversion problems
- o you accurately solve thermal expansion problems
- o you accurately solve gas law problems
- o you show the steps used to solve the problem
- o you include the correct units of measure in your answer

8. Apply the principles of heat transfer**You will demonstrate your competence:**

- o with the use of a scientific calculator
- o through completion of homework
- o through completion of quizzes/exams
- o through completion of lab activities

Your performance will be successful when:

- o your application explains thermal equilibrium and the zeroth law of thermodynamics
- o your application explains the theoretical aspects of conduction
- o your application explains the theoretical aspects of convection
- o your application explains the theoretical aspects of radiation
- o your application explains the theoretical aspects of heat transfer
- o you show the steps used to solve the problem
- o you include the correct units of measure in your answer

9. Analyze thermodynamics of a system**You will demonstrate your competence:**

- o with the use of a scientific calculator
- o through completion of homework
- o through completion of quizzes/exams
- o through completion of lab activities

Your performance will be successful when:

- o you accurately solve problems related to temperature change
- o you accurately solve problems related to phase change
- o you accurately solve problems related to the conservation of thermal energy
- o you show the steps used to solve the problem

o you include correct units in your answer