

Washtenaw Community College Comprehensive Report

PHY 105 Conceptual Physics

Effective Term: Fall 2012

Course Cover

Division: Math, Science and Health

Department: Physical Sciences

Discipline: Physics

Course Number: 105

Org Number: 12340

Full Course Title: Conceptual Physics

Transcript Title: Conceptual Physics

Is Consultation with other department(s) required: No

Publish in the Following: College Catalog , Time Schedule , Web Page

Reason for Submission: Three Year Review / Assessment Report

Change Information:

Outcomes/Assessment

Other:

Rationale: Three-year review

Proposed Start Semester: Fall 2012

Course Description: Designed for both transfer and vocational students with no previous physics experience, but desiring a working knowledge of physics, Physics 105 surveys the major topics of Newtonian mechanics, heat, vibration and waves, electromagnetism and light using a conceptual approach with a minimum of mathematics.

Course Credit Hours

Variable hours: No

Credits: 4

Lecture Hours: Instructor: 45 Student: 45

Lab: Instructor: 45 Student: 45

Clinical: Instructor: 0 Student: 0

Total Contact Hours: Instructor: 90 Student: 90

Repeatable for Credit: NO

Grading Methods: Letter Grades

Audit

Are lectures, labs, or clinicals offered as separate sections?: NO (same sections)

College-Level Reading and Writing

College-level Reading & Writing

College-Level Math

Level 3

Requisites

General Education

MACRAO

MACRAO Science & Math

MACRAO Lab Science Course

General Education Area 4 - Natural Science

Assoc in Applied Sci - Area 4

Request Course Transfer

Proposed For:

Eastern Michigan University

Student Learning Outcomes

1. Identify and recognize physical principles related to Newtonian mechanics, heat, vibration and waves, electromagnetism and light.

Assessment 1

Assessment Tool: Departmental final exam

Assessment Date: Winter 2012

Assessment Cycle: Every Three Years

Course section(s)/other population: all

Number students to be assessed: all

How the assessment will be scored: Departmentally-developed rubric

Standard of success to be used for this assessment: 70% of the students completing the assessment will receive a score of 70% or greater.

Who will score and analyze the data: Department

Course Objectives

1. Define displacement, velocity, and acceleration.

Matched Outcomes

1. Identify and recognize physical principles related to Newtonian mechanics, heat, vibration and waves, electromagnetism and light.

2. Perform graphical vector addition and subtraction.

Matched Outcomes

1. Identify and recognize physical principles related to Newtonian mechanics, heat, vibration and waves, electromagnetism and light.

3. Define Newton's three force laws as well as the concepts of mass and weight.

Matched Outcomes

1. Identify and recognize physical principles related to Newtonian mechanics, heat, vibration and waves, electromagnetism and light.

4. Define the attributes of gravitational, elastic, and frictional forces and identify the existence of these forces in problem situations.

Matched Outcomes

1. Identify and recognize physical principles related to Newtonian mechanics, heat, vibration and waves, electromagnetism and light.

5. Define the concept of work and the law of conservation of energy and how they apply to physical situations similar to those discussed in class and those selected from the problems in the text.

Matched Outcomes

1. Identify and recognize physical principles related to Newtonian mechanics, heat, vibration and waves, electromagnetism and light.

6. Define the concept of impulse, and the law of conservation of momentum and how they apply to physical situations similar to those discussed in class and those selected from the problems in the text.

Matched Outcomes

1. Identify and recognize physical principles related to Newtonian mechanics, heat, vibration and waves, electromagnetism and light.

7. Define circular motion.

Matched Outcomes

1. Identify and recognize physical principles related to Newtonian mechanics, heat, vibration and waves, electromagnetism and light.

8. Define the concept of moment of inertia.

Matched Outcomes

1. Identify and recognize physical principles related to Newtonian mechanics, heat, vibration and waves, electromagnetism and light.
9. Demonstrate the application of the definition of Torque.

Matched Outcomes

1. Identify and recognize physical principles related to Newtonian mechanics, heat, vibration and waves, electromagnetism and light.
10. Define the law of conservation of angular momentum.

Matched Outcomes

1. Identify and recognize physical principles related to Newtonian mechanics, heat, vibration and waves, electromagnetism and light.
11. Apply force and torque concepts to equilibrium situations.

Matched Outcomes

1. Identify and recognize physical principles related to Newtonian mechanics, heat, vibration and waves, electromagnetism and light.
12. Define the concept of centripetal acceleration and force.

Matched Outcomes

1. Identify and recognize physical principles related to Newtonian mechanics, heat, vibration and waves, electromagnetism and light.
13. Define density and pressure.

Matched Outcomes

1. Identify and recognize physical principles related to Newtonian mechanics, heat, vibration and waves, electromagnetism and light.
14. Define Pascal's and Bernoulli's principle.

Matched Outcomes

1. Identify and recognize physical principles related to Newtonian mechanics, heat, vibration and waves, electromagnetism and light.
15. Define buoyancy and Archimedes's principle.

Matched Outcomes

1. Identify and recognize physical principles related to Newtonian mechanics, heat, vibration and waves, electromagnetism and light.
16. Define common terms used in the description of vibration and wave motion.

Matched Outcomes

1. Identify and recognize physical principles related to Newtonian mechanics, heat, vibration and waves, electromagnetism and light.
17. Define the concept of a standing wave.

Matched Outcomes

1. Identify and recognize physical principles related to Newtonian mechanics, heat, vibration and waves, electromagnetism and light.
18. Define the common terms of heat and temperature.

Matched Outcomes

1. Identify and recognize physical principles related to Newtonian mechanics, heat, vibration and waves, electromagnetism and light.
19. Define the heat required to change a material's temperature.

Matched Outcomes

1. Identify and recognize physical principles related to Newtonian mechanics, heat, vibration and waves, electromagnetism and light.
20. Define the concept of electric charge and how charges interact.

Matched Outcomes

1. Identify and recognize physical principles related to Newtonian mechanics, heat, vibration and waves, electromagnetism and light.
21. Define the concept of resistance, current and voltage, and how they are related by Ohm's law.

Matched Outcomes

1. Identify and recognize physical principles related to Newtonian mechanics, heat, vibration and waves, electromagnetism and light.
22. Define the concept of magnetic poles and how they interact.

Matched Outcomes

1. Identify and recognize physical principles related to Newtonian mechanics, heat, vibration and waves, electromagnetism and light.
23. Explain the workings of a motor and generator.

Matched Outcomes

1. Identify and recognize physical principles related to Newtonian mechanics, heat, vibration and waves, electromagnetism and light.
24. Define polarization, reflection and refraction of light.

Matched Outcomes

1. Identify and recognize physical principles related to Newtonian mechanics, heat, vibration and waves, electromagnetism and light.
25. Explain the workings of a lens and a curved mirror.

Matched Outcomes

1. Identify and recognize physical principles related to Newtonian mechanics, heat, vibration and waves, electromagnetism and light.
26. Define the spectrum of visible light.

Matched Outcomes

1. Identify and recognize physical principles related to Newtonian mechanics, heat, vibration and waves, electromagnetism and light.

New Resources for Course**Course Textbooks/Resources**

Textbooks

Hewitt, Paul G. *Conceptual Physics*, 10th ed. Addison Wesley, 2010, ISBN: 9780321548337.

Manuals

Periodicals

Software

Equipment/Facilities

Level I classroom

Level III classroom

Data projector/computer

Reviewer**Action****Date****Faculty Preparer:**

Frank Gerlitz

Faculty Preparer

Feb 10, 2012

Department Chair/Area Director:

Kathleen Butcher

Recommend Approval

Mar 19, 2012

Dean:

Martha Showalter

Recommend Approval

Mar 19, 2012

Vice President for Instruction:

Stuart Blacklaw

Approve

Apr 11, 2012