

**Bossier Parish Community College**  
**Master Syllabus**

**Course Prefix and Number:** PHSC 105

**Credit Hours:** 3

**Course Title:** Elemental Physics

**Course Prerequisites:** MATH 098 or ACT math score of 18 or higher

**Textbook:** Tillery, Physical Science-Physics, 11<sup>th</sup> edition

**Course Description:**

A survey of concepts of physics, which includes basic concepts in motion, gravitation, energy transformation, heat, waves, sound and electricity. Graphic and algebraic solutions in problem solving are emphasized.

**Learning Outcomes:**

At the end of this course, the student will

- A. utilize mathematical skills to perform measurements, analyze relationships, and express quantitative values in physics;
- B. apply Newton's three laws to explain the behavior of objects in motion;
- C. utilize concepts of work and energy to appreciate the relationship between the different forms of energy and power;
- D. apply the concepts of heat energy to explain the effects of temperature change;
- E. apply the concept of sound energy to explain the differences in sound waves; and
- F. utilize the concepts of electrical energy to understand and predict the behavior of electricity.

To achieve the learning outcomes, the student will

- 1. determine the number of significant figures in a measurement. (A)
- 2. make conversions between various units of measurement. (A)
- 3. determine direct, inverse, direct square and indirect squared relationships between variables. (A)
- 4. exhibit a problem solving method. (A)
- 5. explain motion and the forces that cause motion. (A,B)
- 6. calculate speed, acceleration, and velocity. (A,B)
- 7. make calculations related to falling objects. (A,B)
- 8. explain projectile motion and how forces are related to this motion. (B)
- 9. recognize examples of each of Newton's Three Laws of Motion. (B)
- 10. recall the units of force, acceleration, speed, and momentum. (B)
- 11. explain the difference between linear acceleration, centripetal force, and gravitational force. (B)

12. recognize the relationships between weight, force, and mass. (B)
13. calculate the amount of work done on an object. (A,C)
14. calculate the amount of power exerted on an object. (A,B)
15. distinguish the difference between work and power. (C)
16. identify the different types of energy. (C)
17. calculate kinetic and potential energy of an object. (A,C)
18. describe the relationship between work and energy. (C)
19. describe the kinetic molecular theory. (D)
20. describe the different unit types of temperature and be able to convert from one unit to another. (A,D)
21. distinguish the difference between temperature and heat. (D)
22. perform calculations related to heat. (A,D)
23. describe the different methods of heat transfer. (D)
24. perform calculations related to phase changes of matter. (A,D)
25. recognize the Law's of Thermodynamics. (D)
26. recognize the kinds of waves and their parts. (E)
27. distinguish the relationship between sound waves and their parts. (E)
28. calculate the speed of sound in air. (A, E)
29. recognize the terms related to wave interaction. (E)
30. make calculations of frequency, wavelength, or speed of a wave. (A,E)
31. relate music to sound waves. (E)
32. explain the Doppler effect as it is related to sound waves. (E)
33. distinguish electrical charges and how they are measured. (A, F)
34. recognize the different types of electrical current. (F)
35. make calculations related to Ohm's law. (A,F)
36. make calculations related to electrical work. (A,F)
37. recognize the terms related to electricity. (F)

**Course Requirements:** To earn a grade of "C" or higher the student must earn 70% of the total points for the course and meet all of the following course requirements.

- minimum average of 70% on chapter tests
- minimum 50% on comprehensive final test
- satisfactory completion of homework (70%) assignments.
- If you are taking this course online, take special note that the final test will be given/taken on the BPCC campus. Check under announcements in your Canvas course for dates and times. If you live outside a 100 mile radius of the campus, you MAY request to take your final at a pre-approved, proctored site but it must be a community college, college or university that you have contacted and has agreed to perform this service. You must contact your instructor within the first month of classes with the appropriate information: (1) name of community college, college or university; (2) name and contact information of the individual with whom you made the arrangements – email and phone number required. If this procedure incurs an expense, you must cover the cost. There are no exceptions.

## Course Grading Scale

- A- 90% or more of total possible points and meet all the course requirements.
- B- 80% or more of total possible points and meet all the course requirements.
- C- 70% or more of total possible points and meet all the course requirements.
- D- 60% or more of total possible points or failure to meet one or more of the course requirements
- F- less than 60% of total possible points or failure to meet one or more of the course requirements

**Attendance Policy:** The college attendance policy is available at <http://catalog.bpcc.edu/content.php?catoid=5&navoid=369#class-attendance>

## Nondiscrimination Statement

Bossier Parish Community College does not discriminate on the basis of race, color, national origin, gender, age, religion, qualified disability, marital status, veteran's status, or sexual orientation in admission to its programs, services, or activities, in access to them, in treatment of individuals, or in any aspect of its operations. Bossier Parish Community College does not discriminate in its hiring or employment practices.

### COORDINATOR FOR SECTION 504 AND ADA

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Equity/Compliance Coordinator  
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Reviewed by: D. Hoston      04/2021