

Physics Syllabus 2026–2027

Schedule: 10:00 AM – 11:00 AM

Meeting Days: Monday and Thursday

Instructor: Mary Carroll

Email: carrollmary87@gmail.com For immediate attention please text 513-833-5268

Cost: \$600 for the year (optional Lab \$100)

Textbook

Title: *Discovering Design with Physics*, 1st Edition

Author: Dr. Jay L. Wiles, **Publisher:** Berean Builders, 2019

Course Description

This course is an introduction to the principles of physics from a Biblical worldview. We will explore the laws God has set in motion that govern the physical universe, from motion and forces to energy, waves, electricity, and magnetism. Students will gain problem-solving skills, develop critical thinking, and learn to conduct experiments that reinforce concepts taught in lectures.

We will use **lectures** for introducing concepts, **labs** for hands-on application (optional), and **technology tools** to enhance problem-solving.

Class Structure

- **Monday & Thursdays:** Lecture, discussion, example problems, and group practice.
 - **Optional Lab:** Lab forms given to students (choice of two), One lab due every other week. A teacher recorded demonstration of the lab is given for each experiment. Students turn in their formal lab to be graded. Parents are responsible to ensure their child is completing the lab.
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Technology Tools

- **TI-84 Plus graphing calculator** (or equivalent) – required for graphing and scientific computations.
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Required Materials

- *Discovering Design with Physics* textbook
- *Test booklet from Discovering Design with Physics*
- <https://bereanbuilders.com/ecommerce/product/discovering-design-with-physics-set/>
- Lab notebook (bound or spiral or composition style)
- Pencils, pens, and erasers
- Ruler, protractor, and TI-84
- Binder or folder for notes and handouts
- Lab items if you decide to do the optional lab.

Course Outline

- **Chapter 1 (Weeks 1–2):** Introduction to Physics, Measurement, Sig Figs, Newton’s First Law of Motion
- **Chapter 2 (Weeks 3–4):** Force and Acceleration, Newton’s Second Law in Action
- **Chapter 3 (Weeks 5–6):** Newton’s Third Law Relative to Friction, Inclined Planes, Tension
- **Chapter 4 (Weeks 7–8):** 2-D Vectors, Adding and Subtracting Vectors
- **Chapter 5 (Weeks 9–10):** 2-D Motion, Gravity’s Effect, Air Resistance
- **Chapter 6 (Weeks 11–12):** Newton’s Second Law, Translational and Rotational Equilibrium
- **Chapter 7 (Weeks 13–14):** Circular Motion, Centripetal Force, Gravitation
- **Chapter 8 (Weeks 15–16):** Work, Energy and Power
- **Chapter 9 (Weeks 17–18):** Energy Conservation and Angular Momentum
- **Chapter 10 (Weeks 19–20):** Periodic Motion, Hooke’s Law
- **Chapter 11 (Weeks 21–22):** Sound and Light Waves, The Doppler Effect
- **Chapter 12 (Weeks 23–24):** Optics, The Law of Reflection
- **Chapter 13 (Weeks 25–26):** The Electrostatic Force, Electric Field, Faraday’s Cage
- **Chapter 14 (Weeks 27–28):** Electric Potential, Potential Difference, Voltage, Leyden Jar
- **Chapter 15 (Weeks 29–30):** Electric Circuits, Current, Ohm’s Law, Capacitors and Resistance
- **Chapter 16 (Weeks 31 - 32):** Magnetism, Magnetic Fields, Speed of Light

Assessments

- **Homework Assignments** – Reinforce daily lessons, due before the start of the class next class.
- **Labs** – Graded on completion of procedures, accuracy of data, and quality of lab reports.
- **Quizzes** – At home, turned into the class, graded by teacher.
- **Tests** – End of each Unit.

Grading Policy

Category	Percentage
Tests	35%
Quizzes	25%
Labs & Lab Reports	25% (optional)
Homework	15%

Expectations

1. **Respect** – Show respect for God, classmates, and property.
 2. **Preparedness** – Turn in completed assignments on time.
 3. **Participation** – Engage actively in lectures and labs.
 4. **Safety** – Follow all lab safety rules without exception.
 5. **Integrity** – Complete your own work; plagiarism or cheating will result in a zero and possible disciplinary action.
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"The heavens declare the glory of God; the skies proclaim the work of His hands." – Psalm 19:1