



**Waves and Electromagnetism in Physics Syllabus**  
**CHS Science Department**

**Contact Information:** Parents may contact me by phone, email, or visiting the school.

**Teacher:** Mr. Josh Queen

**Email Address:** Joshua.queen@ccsd.us

**Phone Number:** (740) 702-2287 ext. 16274

**Online:** <http://www.ccsd.us/1/Home>

**Teacher Contact Websites:**

- Google Classroom

**CCSD Vision Statement:** The Chillicothe City School District will provide tomorrow's leaders with a high quality education by developing high expectations and positive personal relationships among students, staff, and community members.

**CCSD Mission Statement:** The Chillicothe City School District empowers students to learn, to lead, and to serve.

**Course Description and Prerequisite(s) from Course Handbook:**

**Waves & Electromagnetism in Physics – 332**

**State Course #:** 130302

Prerequisite: Algebra II completed or in progress; Chemistry recommended or can be taken concurrently. Mechanical Physics is not a pre-requisite for this course.

Elective

Grade: 10-12

Graded Conventionally

Credit: ½

Course Description:

This Physics course will elaborate on the study of the key concepts of waves, light, and electromagnetism as they relate to increasingly complex systems and applications that will provide a foundation for further study in science and scientific literacy. Students engage in investigations to understand and explain waves, light, and electromagnetism in a variety of inquiry and design scenarios that incorporate scientific reasoning, analysis, communication skills and real-world applications. **There is a \$15 lab fee.**

**Learning Targets:** Defined below for clarity are the Unit Titles, Big Ideas of every Unit taught during this course, and the Essential Questions to be answered to better understand the Big Ideas. A student's ability to grasp and answer the Essential Questions will define whether or not he or she adequately learns and can apply the skills found in Big Ideas. This will ultimately define whether or not a student scores well on assessments administered for this course.

- **1st or 3<sup>rd</sup> Quarter**
  - **Unit I Title: Wave Properties**
    - **Big Idea #1:** I can show how waves are altered by the way they are formed and other waves they encountered.
      - *Essential Question #1: How do I illustrate how the Doppler Effect influences what humans perceive?*
      - *Essential Question #2: How do I draw or calculate what happens when 2 waves are in the same place at the same time?*
    - **Big Idea #2:** I can use the well-established behaviors of waves to summarize what will happen to a wave in a given circumstance.
      - *Essential Question #1: How can I explain what reflection, refraction, diffraction, and absorption?*
      - *Essential Question #2: How do I predict wave behavior in a given scenario?*
  - **Unit II Title: Light Phenomena**
    - **Big Idea #1:** I can use the scientific laws associated with light to show what it will do in a given circumstance.
      - *Essential Question #1: How can I use ray diagrams to describe the path of rays of light?*
      - *Essential Question #2: How can I use the laws associated with light to describe its behavior?*
      - *Essential Question #3: How do I describe the 2 models of light and how they can be used to explain the behavior of light?*
    - **Big Idea #2:** I can use Snell's Law to predict what light will do when it refracts.
      - *Essential Question #1: How can I use a refractive index of a substance to predict what will happen when the light leaves the substance?*
      - *Essential Question #2: How can I use Snell's Law to predict the behavior of light?*
- **2nd or 4<sup>th</sup> Quarter**
  - **Unit III Title: Electricity**
    - **Big Idea #1:** I can describe the electric field surrounding a charged particle.
      - *Essential Question #1: How does an object develop charge?*
      - *Essential Question #2: How do I calculate the force of an electric charge between two objects?*
      - *Essential Question #3:*
    - **Big Idea #2:** I can cite evidence on how electricity moves through a circuit with both words and calculations.
      - *Essential Question #1: How do I use Ohm's Law to calculate the current, voltage, and resistance in a circuit?*
      - *Essential Question #2: How do I trace the path of the electric current through various circuits?*
    - **Big Idea #3:** I can investigate how magnetic fields affect the behavior of objects around them.

- *Essential Question #1: How do I predict the behavior of an object that enters a magnetic field?*
- **Unit IV Title: Electromagnetic Wave Properties**
  - **Big Idea #1:** I can construct and explain a diagram of the full electromagnetic spectrum.
    - *Essential Question #1: How do I draw the full electromagnetic spectrum including frequency and wavelength?*
  - **Big Idea #2:** I can construct and explain a diagram of the visible light spectrum.
    - *Essential Question #1: How do I draw the visible light spectrum including frequency and wavelength?*
- **END OF COURSE EXAM**

#### **Course Materials:**

- Google Chromebook
- Scientific Calculator
- Notebook

#### **Textbook:**

- Holt Physics (Classroom Set)

#### **Electronic Resources:**

- Google Classroom
- Email

#### **Course Expectations:**

Welcome to the exploration of our physical world through scientific inquiry (question asking and answering). Our study of the physical world will revolve around hands-on learning experiences that will put you in the role of discovering truths about the world in which we live. Such activities require an open and focused mind. Your performance in this class will be measured by how well you can solve problems and demonstrate your understanding of concepts, not by how well you can memorize facts. For this reason, your active participation and productivity in class are the most significant commitments you can make to yourself and me during this course. I look forward to our joint exploration of the physical world around us!

#### **Grading:**

Unit Exams	50%
Assessments (Including: Quizzes, Essays, Labs, and Projects)	30%
Class work/Homework	20%

- Each nine week's grade comprises 40% of a student's final grade.
- The End of Course Exam comprises 20% of a student's final grade.

#### **Grading Scale:**

The grading scale for Chillicothe High School can be found in the student handbook or online at <http://www.chillicothe.k12.oh.us/1/Content2/studenthandbook>.

**Late Work:** Late work will be subject to the Board-adopted policy on assignments that are submitted late (to be reviewed in class).

- Regardless of the absence type (excused, unexcused, OSS, etc.), students are expected to make up work and be held accountable for learning all material they missed.
- Any student who is absent from school will receive one (1) additional day for every day he/she missed to make up his/her work for full credit (100%).
- Any student who exceeds the allotted time to turn in an assignment for full credit may still submit work late for partial credit.
  - Any student who turns in work up to 1 week late must at least be given the opportunity to earn 75% on that assignment.
  - Any student who turns in work between 1 and 2 weeks late must at least be given the opportunity to earn 60% on that assignment.
- The end of the 9 weeks is the cut off point for teachers to accept late work from students for full or partial credit unless the teacher decides to give the student an incomplete for the 9 weeks due to extenuating circumstances.

**Performance Based Section: Writing Assignments/Exams/Presentations/Technology**

One or more of the End of Unit Exams may be Performance Based. According to the Ohio Department of Education, “Performance Based Assessments (PBA) provides authentic ways for students to demonstrate and apply their understanding of the content and skills within the standards. The performance based assessments will provide formative and summative information to inform instructional decision-making and help students move forward on their trajectory of learning.” Some examples of Performance Based Assessments include but are not limited to portfolios, experiments, group projects, demonstrations, essays, and presentations.

**CHS Waves and Electromagnetism in Physics Course Syllabus**

After you have reviewed the preceding packet of information with your parent(s) or guardian(s), please sign this sheet and return it to me so that I can verify you understand what I expect out of each and every one of my students.

Student Name (please print): \_\_\_\_\_

Student Signature: \_\_\_\_\_

Parent/Guardian Name (please print): \_\_\_\_\_

Parent/Guardian Signature: \_\_\_\_\_

Date: \_\_\_\_\_