

**Course Name:** Honors 9 Physics

**Duration:**  1 Semester  Full Year

**Grade Level:**  9th  10th  11th  12th (check all that apply)

### Are there any prerequisites for the course?

Prerequisite: Algebra 1 (strongly encouraged)

### WHAT this course is about:

Physics is the study of everything in the universe capable of description by energy and/or mass. Honors 9 Physics at LC is a high school physics class that goes much deeper than our general physics course. More specifically, students learn the exact methods of research for the physical sciences and apply them to sophisticated research topics. The purpose of this class is to build good physics foundations, problem solving, technical writing, and laboratory skills in a collaborative environment. Being open to exploring ideas, asking questions, and trying new things is a must.

### WHY take this course:

Physics is the second oldest science, after astronomy. All physical sciences use the concepts that are developed in this class, and all other quantitative sciences can be reduced to problems in physical quantities. In any physics course the student learns how to see the world in a new way, a way that allows the student to understand, explain and predict anything that has mass or energy. Honors 9 Physics provides strong foundations in science concepts and processes that will help students in successive science courses, and it is a wonderful gateway into the honors and AP science pathways at LC.

### WHAT you'll learn:

- Conceptual understanding of various topics in physics
- 21<sup>st</sup> century digital skills essential for college and career
- Technical reading, writing and other communication techniques
- Critical thinking and problems solving skills
- Hands-on approaches to learning, including science and engineering practices
- Applications of cross-cutting concepts, including modeling, cause and effect, proportions/quantities, energy and mass, structure and function
- Wide variety of physical science laboratory skills
- Data collection and analysis skills

### WHAT you'll do:

- One extensive research project each quarter, with emphasis on data analysis and technical writing.
- Multiple hands-on science and engineering activities.

- Work collaboratively with others in a variety of thinking, processing, and hands-on activities.
- Learn simple but effective problem-solving techniques.

### **WHERE this could take you:**

Honors 9 Physics can bring about many opportunities for students and is a great entry point into the honors and AP science pathway at LC. Taking honors physics prepares students for the next levels of science courses, such as, foundations in chemistry that precede the AP Physics and AP Chemistry courses. The laboratory activities, along with data analysis and science writing, are essential skills that will help students regardless of their future plans.

### **OPTIONAL Course Outline (“scope and sequence”, sequence chart, etc.)**

#### ***Honors 9 Physics Learning Topics***

- Scientific Methods, including introductory measurement theory and statistics.
- Forces, including Newton’s Laws, and Energy, including open and closed systems and how to account for dissipated energy.
- Electrical Circuits, with a focus on dissipated energy in radio circuits.
- Chemistry, with emphasis on content to prepare students for Honors 10 Biology.