

Montclair High School

Course Syllabus

Department: Science

Course: Astronomy

Level: Academic

Credits: 2.5

Course Description:

This is a course for juniors and seniors who are interested in science. Classes meet five times a week for a single period. Topics covered include history, instruments & measurement, gravity & orbits, light waves, our solar system & its components, black holes, and Einstein's theories.

Students must maintain an organized notebook and record sufficient notes. Students will be given the opportunity to conduct their own research on individual and group projects. Scientific research skills will be cultivated and tested. Students will enhance their knowledge through scientific inquiry. This course will examine the mathematical relationships between physical properties, but we will not do any in-depth calculations.

Standards:

HS-ESS1-1	HS-PS2-1	HS-PS3-2
HS-ESS1-2	HS-PS2-2	HS-PS4-1
HS-ESS1-3	HS-PS2-4	HS-PS4-5
HS-ESS1-4	HS-PS3-1	

Units of Study:

- Early History
- Constellations
- Heliocentrism
- Orbits, Kepler's Laws, and Universal Gravitation
- Electromagnetic Spectrum, Wave Properties & Behavior
- Fundamental Forces & Nuclear Reactions
- Inner Planets: Mercury & Venus
- Earth
- The Moon & Natural Satellites, Phases & Eclipses
- Mars
- Exoplanets
- Gas Giants: Jupiter, Saturn, Uranus, and Neptune
- Stellar Classification, Structure, and Sequence
- Solar Systems and Galaxies
- Black Holes, Hawking Radiation
- Einstein's Relativity and Space-Time Theory
- Time Dilation and Quantum Mechanics

Proficiencies:

By the end of this course, students will:

- Demonstrate understanding of Earth, the Moon, Stars, and other astronomical objects.
- Use instruments and data collection methods appropriate for a high school level to organize and analyze data.
- Develop problem solving techniques while conducting scientific inquiries.

Evaluation & Assessment:

- Projects/Presentation 40%
- Classwork/Do Now's 30%
- Quizzes 15%
- Homework 15%