Revised: 6/6/2024
Board Approved: July 2020

JC Schools Astronomy II Yearly Standards

Overarching Standards (Taught in all units)

9-12.ETS1.A.1
Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.

9-12.ETS1.A.2
Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

9-12.ETS1.B.1
Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.

9-12.ETS1.B.2
Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.

Unit	Priority Standards
Unit 1 Solar System Formation	**9-12.JCSD.ESS1.A.6** Compare and contrast the terrestrial planets and relate this to the nebular hypothesis. **9-12.JCSD.ESS1.A.12** Analyze stellar life cycles to understand the formation and initial development of the solar system.
Unit 2	**9-12.ESS1.C.2**

Planets	Apply scientific reasoning and evidence from ancient Earth materials, meteorites, and other planetary surfaces to construct an account of Earth's formation and early history. [Clarification Statement: Emphasis is on using available evidence within the solar system to reconstruct the early history of Earth, which formed along with the rest of the solar system 4.6 billion years ago. Examples of evidence include the absolute ages of ancient materials (obtained by radiometric dating of meteorites, moon rocks, and Earth's oldest minerals), the sizes and compositions of solar system objects, and the impact cratering record of planetary surfaces.] **9-12.JCSD.ESS1.A.6** Compare and contrast the terrestrial planets and relate this to the nebular hypothesis. **9-12.JCSD.ESS1.A.4** Analyze the characteristics of the planets (e.g., size, density, inferred interior structure, surface temperature, atmospheric/geologic features etc.) and compare and contrast these features to the earth. **9-12.ETS1.A.1** **ANALYZE** a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
Unit 3 Stars	**9-12.ESS1.A.1** Develop a model based on evidence to illustrate the life span of the Sun and the role of nuclear fusion in the Sun's core to release energy in the form of radiation. [Clarification Statement: Emphasis is on the energy transfer mechanisms that allow energy from nuclear fusion in the Sun's core to reach Earth. Examples of evidence for the model include observations of the masses and lifetimes of other stars, as well as the ways that the Sun's radiation varies due to sudden solar flares ("space weather").] **9-12.ESS1.A.3** Communicate scientific ideas about the way stars, over their life cycle, produce elements. [Clarification Statement: Emphasis is on the way nucleosynthesis, and therefore the different elements created, varies as a function of the mass of a star and the stage of its lifetime.] **9-12.JCSD.ESS1.B.6** Analyze the sun's activity (e.g., sunspots, solar flares) and its possible effects on Earth. **9-12.ETS1.A.2**

	Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.
Unit 4 Cosmology	**9-12.JCSD.ESS1.A.13** Describe the characteristics of components of the universe including galaxies and blackholes. **9-12.JCSD.ESS1.C.3** Discuss the evidence for current theories of the origin and evolution of the earth, the solar system, and the universe (e.g.Big Bang, inflation,steady state). **9-12.ETS1.B** Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.