

Maryland
High School

Starry Night Lesson Plans
In order of relevance

GOAL 2: CONCEPTS OF EARTH/SPACE SCIENCE

1. Expectation: The student will identify and describe techniques used to investigate the universe and Earth.

G1-G3 H1-H3 I1-I3 F2

Indicators of Learning

(1) The student will describe the purpose and advantage of current tools, delivery systems and techniques used to study the universe.

H1-H3 I1-I3 G1-G3

- Tools (optical and radio telescopes, spectrometers)
- Delivery systems (satellite-based, ground-based, space probe)
- Techniques (imaging, spectroscopy)

I1-I3 F2
I1-I3 F2
I1-I3 F2

2. Expectation: The student will describe natural forces and apply them to the study of Earth/Space Science.

A1-A5 B1-B2 C1-C3 D1-D3 F1-F3 G1-G3
H1-H3 I1-I3

Indicators of Learning

(1) The student will explain the role of forces in the formation and operation of the universe.

- Newton's Universal Law of Gravitation
- Structure and evolution of galaxies and the universe (Big Bang Theory)

C2
H1-H3 I3

- Stellar structure and evolution (life cycle of stars, stellar systems, H-R diagram)
- Formation and evolution of the solar system (Nebular Theory, small bodies)
- Kepler's 3 Laws of Planetary Motion
- Sun-Earth connection (thermonuclear process, sunspot cycle, coronal mass ejection, flares, solar wind, auroras)

G1-G3
F3 C1-C4 D1-D3
C2
F1 F2

(2) The student will explain the role and interaction of revolution, rotation and gravity on the Sun-Earth-Moon system.

A1 A2 A3 C2 D3 F3

- Seasons (change in solar angle, yearly variation in length of day/night, absorption/reflection/scattering of insolation, solstices and equinoxes, rotation/revolution/precession, yearly variation of the sun's altitude and azimuth)

A2 E1-E4

- Eclipses (lunar, solar, total, annular, partial, umbra, penumbra, 2 eclipse "seasons" per Earth year, yearly/monthly variations in lunar position and length of visibility of the moon)

A4 A5

- Earth-moon interactions (relationship between lunar phase and tide, tidal bulge and rate of lunar revolution, tides and Earth-moon distance, sidereal and synodic lunar months)

A3 A4 A5