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| UNIT TITLE | Unit 1: Investigating Motions of the Sky |

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| TOPIC | Exploration One: Motions of the Sun in the Sky |
| DURATION | 4-7 Days |
| DATES |  |

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| ESSENTIAL QUESTION | How does the position of the sun in the sky change throughout the day and throughout the year? |

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| DESIGN QUESTION | | |
| Introducing New Knowledge (DQ2) | Deepening or Practicing (DQ3) | Generating and Testing Hypotheses (DQ4) |

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| STANDARDS |
| SC.912.E.5.10 Describe and apply the coordinate system used to locate objects in the sky.  SC.912.P.12.2 Analyze the motion of an object in terms of its position, velocity, and acceleration as functions of time. |

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| ASSESSMENT AND MONITORING | |
| Formative | Making Claims (p. 4), Pause and Reflect (pp. 6, 8, 12, 13), Checking In (pp. 7, 11) |
| Summative | Final Thoughts (p.14) |

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| LEARNING GOALS |
| The daily path of the sun – the rising, moving across the sky, and setting – as observed from Earth is caused by Earth’s rotation of its axis.  The differences in the daily path of the sun as observed at different times of year and the differences in the daily path of the sun as observed from different locations on Earth are caused by a combination of Earth’s revolution around the sun over the course of a year and the tilt of Earth’s axis relative to the plane of Earth’s orbit around the sun. |

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| LEARNING TARGETS | | |
| 2.0 Simpler Content | 3.0 Target | 4.0 More Complex |
| * Identify sunrise in east, sunset in west * Define altitude, azimuth, transit, celestial sphere | * Provide evidence that sun appears to move across the sky due to Earth’s rotation * Provide evidence that the differences of the path of the sun throughout the year are due to the Earth’s revolution around the sun and the tilt of the Earth’s axis |  |

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| LESSON SEQUENCE / ASSIGNMENTS |
| * Day 1   Introduction to the Challenge (p.3)  First Thoughts: Making Claims (p.4)  Activity 1: Modeling the Earth’s Rotation (p.5)   * Day 2   Activity 2: Observing the Sun from Outside the School (p.8)   * Days 3-6   Activity 3: Analyzing the Sun’s Daily Path at Different Times of Year (p.12)   * Day 7   Activity 4: Observing Local Sunset (p.14)  Final Thoughts: Revisiting Your Claims (p.14) |

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| RESOURCES AND MATERIALS |
| Textbook, Stellarium software, journal |

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| ADAPTATIONS FOR UNIQUE STUDENT NEEDS (ELL, SPECIAL ED, GIFTED) |
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| AFTER LESSON – TEACHER REFLECTION |
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