



## Summer Science Program in Astrophysics

On the first day of SSP, participants are taught the celestial coordinate system, and how to interpret an ephemeris to select a near-earth asteroid to study. Each team of three then writes an “observing proposal” similar to what an astronomer would submit to an observatory. On the third night, weather permitting, teams begin scheduled observing runs, accompanied by a Teaching Assistant. Each team performs every step themselves: choosing their asteroid, pointing the telescope, taking images, reducing the data, calculating the orbit. Some go on to improve the accuracy of their calculated orbits using additional observations to make differential corrections. Another option is to use Visual Python to make an animation of their asteroid orbiting the sun. Each team’s observations are submitted to the Minor Planet Center of the International Astronomical Union, and used to improve future predictions of the asteroid’s position. Topics covered typically include:

- **Astronomy:** celestial coordinates, digital observational techniques, astrometry; brief introductions to planetary science, cosmology
- **Physics:** gravitation, celestial mechanics; brief introductions to the electromagnetic spectrum, relativity, quantum mechanics
- **Mathematics:** interpolation, coordinate transformations, differential and integral vector calculus, numerical methods, differential equations
- **Scientific Programming** in Python

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### Details

**Ages:** Teen

**Races:** All

**Genders:** All

**Intake Process:** Online Application

**Payment Options:** Fee for service

**Waiting List:** Limited Slots

**Contact:** Richard Bowdon

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### Services

Educational Programs   Youth Development

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### Locations

#### New Mexico Tech

*801 Leroy Pl.*

*Socorro, NM 87801*

**Mailing:**

*108 Whiteberry Dr*

*Socorro, NM 87801*

**Phone:** (866) 728-0999

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## **Parent Organization**

### **The Summer Science Program (SSP)**

Held at New Mexico State University and other college campuses, the Summer Science Program (SSP)'s mission is to inspire exceptionally talented and motivated high school students to accelerate their intellectual and social development. Our college-level, residential program immerses students in a challenging science curriculum with team-based, hands-on research to solve a central scientific problem.

*New Mexico State University  
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***Type:*** Nonprofit

***EIN:*** 94-3341965

***<http://www.SummerScience.org>***