

Program goals	Student learning outcome. Upon completion of the program students will be able to:	Assessment
Prepare program graduates to formulate and test multiple hypotheses based on the scientific method.	Demonstrate knowledge of how to ask questions that can be addressed by scientific investigation, help further understanding of observed phenomena, and help clarify scientific explanations and relationships.	<ul style="list-style-type: none"> • Lesson plan on conducting an experimental physics experiment (e.g., pendulum) • Final report on a Field Limnology project
Propose workable solutions to societal problems related to resource exploration and development, construction with the Earth, and environmental issues related to Earth processes.	Apply knowledge of engineering practices to define problems, determine specifications of designed systems, and identify constraints.	<ul style="list-style-type: none"> • Lesson plan on developing an engineering design and prototype (e.g., design of a knee support) • Final report on an Environmental Science and Engineering project (e.g., design of a water treatment process)
Prepare program graduates to design inquiry-based lesson plans to investigate the natural world using an integrated science approach based on the California Next Generation Science Standards.	Apply knowledge of patterns, cause-and-effect, scale, proportion, and systems characteristic of natural phenomena and engineered systems.	<ul style="list-style-type: none"> • Lesson plan on developing a field investigation (e.g., choosing the right combination of tools for a geophysical survey) • Final report on a Geochemistry or Planetary Science project (e.g., investigate an alkaline lake, or design a new sensor for a satellite to Venus)
Provide program majors with the tools to guide K-12 learners through the processes of experimental design, collection of data in the outdoors, and formulation of conceptual models.	Demonstrate ability to plan an NGSS-aligned lesson, coherently moving through the 5-E's sequence (engage, explore, explain, elaborate, evaluate).	<ul style="list-style-type: none"> • Lesson plan on conducting astronomical observations (e.g., recording the phases of the Moon, or using an app to track the movement of Jupiter over several days) • Final group presentation on a biological investigation (e.g., the nature and mechanics of genetics)
Prepare program graduates to incorporate sound ethical and emotional values, cultural values, open and productive communication, and group collaboration into their educational persona.	Effectively incorporate ethical and cultural values of K-12 learners in their NGSS lessons	<ul style="list-style-type: none"> • Lesson plan on the universal character of science and engineering (e.g., the universal right to safe water) • Final group presentation on the contributions of indigenous knowledge regarding nature (e.g., indigenous fire management)
Prepare program graduates to incorporate sound ethical and emotional values, cultural values, open and productive communication, and group collaboration into their educational persona.	Effectively incorporate group collaboration and respectful communication/discussion in their NGSS lessons	<ul style="list-style-type: none"> • Lesson plan on teamwork and group discussion (e.g., neighborhood survey of environmental assets) • Final group presentation on the differences between different types of human knowledge and problem-solving (e.g., a respectful discussion on religious, artistic, and scientific approaches)