

SEN/SEL Course Learning Goals

SEN/SEL Description:

Science and engineering encompass the study of the natural and constructed worlds, their impact on humanity, and the human impact on them. These disciplines teach principles, methods, and systematic thinking, how to innovate theories and methodologies, how to test hypotheses and prototypes by analyzing data while managing uncertainty, and how to enhance the built world through creativity and design. Fundamental to science and engineering are the methods and habits of mind in which models are developed, critiqued, and refined, thereby enriching and expanding our ways of understanding – and fascination with – the natural and constructed environments, and our own positions within them.

*To receive an SEN/SEL Designation, **most of the course content and assessments must address the Disciplinary Core Ideas and Scientific and Engineering Practices listed below.** Faculty are encouraged to incorporate elements of STEM Communication, Societal Applications of STEM, and Attitudes Towards STEM into their courses as well.*

Disciplinary Core Ideas

- Develop robust understanding of key theories, hypotheses, and concepts
- Address fundamental questions of current scholars
- Make connections across discipline

Scientific and Engineering Practices

- Apply innovative theories and methodologies to plan and execute inquiry
- Define problems and design creative solutions to enhance the built world
- Test hypotheses and prototypes by analyzing data while managing uncertainty
- Develop, critique, and refine models
- Critically assess the credibility of information from a variety of sources and engage in evidence based discourse

Communicate STEM Ideas/Evidence

- Communicate ideas in oral, written, and/or graphical form to a diverse audience

Societal Applications of STEM

- Incorporate STEM understanding and resources into social, economic, personal, or political decisions

Attitudes Towards STEM

- Appreciate the creativity and excitement of STEM inquiry and innovation
- Recognize STEM as a human endeavor that advances by the contributions of a diverse scientific community.

SEL Designations

The SEL Designation is reserved for courses that provide students with substantial laboratory/field experience and skills. There are no set time requirements for an SEL Designation, thus, earning this designation does not necessarily require additional course hours beyond the typical 3-hour per week load. For SEL courses that incorporate domestic and/or international travel as a significant component for gaining laboratory/field skills, in the event the planned travel is unexpectedly canceled, please reach out to the CST to discuss a suitable alternative to this experience for satisfying the SEL designation.