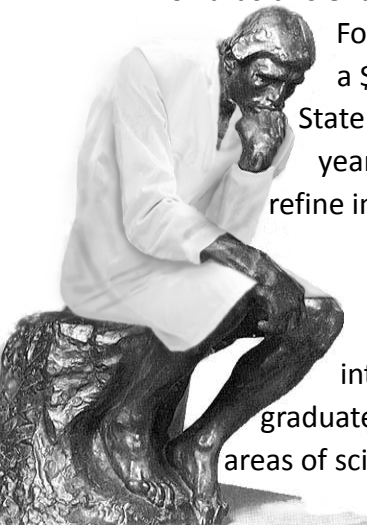


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Ethics issues routinely arise in the practice of science and engineering as well as in the complex relationships among science, engineering, technology and society. To address this variety of issues and the many constituencies involved, science and engineering education must draw upon relevant instructional research and include work in practical and professional ethics.

Towards this end, the National Science Foundation has awarded a \$300K grant to Arizona State University for a three-year project to design and refine innovative instructional models that integrate microethical and macroethical issues into ethics education for graduate students in emerging areas of science and engineering.



# *Integrating Ethics into Graduate Science & Engineering Education*

The project has four components: a Coordination Workshop; development of four instructional models for integrating micro- and macroethics in graduate science and engineering education; comprehensive project assessment; and a Results Dissemination workshop. “Microethics” refers to moral dilemmas and issues confronting individual researchers or practitioners. “Macroethics” refers to moral dilemmas and issues that collectively confront the scientific and engineering community, as well as broader societal issues in science and technology.



The grant builds upon previous CNS-ASU projects, including coursework, its summer experiential workshop in Washington D.C., and various laboratory engagements. The instructional models for the project include a standalone course on societal implications of science and technology, micro- and macroethics material embedded in a required science course, online instructional modules, and engagement of ethics in laboratory settings. The strengths and limitations of each model will be assessed for student outcomes in moral judgment, maturity and sensitivity to ethical issues, efficacy of learning, and influence of instructor–student communication on learning.

The project team includes Arizona State University faculty in ethics, science, engineering, science and technology studies, and communication, an Advisory Council of faculty from four other universities, and three consultants with national reputations in science and engineering ethics education.



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