

SCIENCE, TECHNOLOGY, ETHICS AND POLICY MINOR (ENGR)

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<http://spp.umd.edu/your-education/undergraduate/minors/science-technology-ethics-and-policy-step-minor/>

Program Director: David Tomblin, Ph.D.

The minor in Science, Technology, Ethics and Policy (STEP) explores the powerful social, ethical, and political relationships that drive research and innovation. The program delves into the challenges of living and innovating in a world where emerging science and technologies are becoming increasingly interconnected, pervasive, and powerful. The STEP minor offers students the knowledge and analytical skills to understand and assess the complex interactions among science, technology, policy and ethics, providing students the opportunity to explore the ways that scientific practice and technological development are embedded in social, cultural, humanistic, and political systems.

STEP welcomes students from all majors who are interested in understanding how we can responsibly maximize the societal benefits of scientific inquiry and technological innovation. The program's primary goal is to give students analytical skills that help connect science and technology to broader social needs. Coursework emphasizes the importance of interdisciplinary modes of inquiry to generate new scientific knowledge and technologies, and to understanding the ethical considerations and social benefits that flow from them.

Electives are grouped in three concentrations, each linked to a learning outcome. Students can go deep in one concentration or choose across groupings. The end product of the program is a capstone research project of the student's own choosing, which is developed under faculty mentorship. At the onset of the capstone course, students will complete an assignment that allows them to articulate how their elective courses have shaped their understanding of science, technology, ethics and policy and how it informs their choice of capstone project.

Minor concentration areas:

Social, ethical and policy implications: This concentration explores the contemporary societal implications of science and technology. These courses ask students to think about the role science and technology have played in creating local and global social and environmental crises and what science and technology can do to help solve them.

Science and technology development: This concentration focuses on cultural, legal, organizational, and institutional forces that have shaped science and technology. It asks students to think about what causes knowledge production and technical practices to change over time and how these changes can improve implementation going forward.

Information economy: This concentration focuses on how the information economy has shaped scientific and technological practices. Students are asked to think about society's evolving relationships with information as a driving force in the private and public sector.

Sustainability, Social Responsibility, and Engineering: This interdisciplinary concentration within the STEP Minor is designed for all majors to receive a hands-on design experience that incorporates

sustainability and social responsibility into learning about the development of new technology. The end products of this concentration are tangible deliverables that go out into the public domain. This can include physical builds and implementations, process or curriculum plans, or packages that can be taken to potential licensors or funders.

Student Learning Outcomes

1. Articulate and explore the social, ethical, and policy implications of how scientific ideas emerge and technologies are designed, developed, and used (Social, ethical and policy implications concentration)
2. Identify political and legal contexts governing science and technology (Social, ethical and policy implications concentration)
3. Recognize lessons from the historical contingency and legacy of scientific knowledge and technological development (Science and technology development concentration)
4. Synthesize broad implications of the "information economy" for science, technology, and society (Information economy concentration)
5. Interpret the rules, customs, and cultural practices that are the foundation for scientific and technological institutions. (Science and technology development concentration)

REQUIREMENTS

Course	Title	Credits
Required Courses (2 classes)		6
ENES240	Ethical, Policy and Social Implications of Science and Technology ¹	3
ENES440	Science, Technology, Ethics, and Policy: Minor Program Capstone ¹	3
Electives (3 classes)		9
For a comprehensive list of electives see website. ²		
Total Credits		15

¹ Students must earn a minimum grade of B- in ENES240 in order to register for ENES440.

² Six credits must be at the 300-400 level.

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