

## Science, Politics, and Ethics GE Track

Engineers, especially those involved in large-scale projects or promoted to leadership positions, will need to manage interdisciplinary teams and negotiate with multiple stakeholders. This track encourages students to develop a mindset open to scientific uncertainty, moral ambiguity, and political compromise as well as scientific, moral, and political disagreement. Learning goals include: (1) understanding under what conditions diversity feeds productively or counterproductively into a group effort; (2) developing self- and other-awareness of the emergent properties of disagreement; and (3) appreciating how different kinds of social organization promote or undercut social cognition and collective action (cooperation, competition, coordination, and collaboration).

### List of Courses by GE Foundation Area

*Click on a Foundation Area or scroll below to see list of courses and descriptions.*

**ARTS AND HUMANITIES - LITERARY AND CULTURAL ANALYSIS (3 COURSES)**

**ARTS AND HUMANITIES - PHILOSOPHICAL AND LINGUISTIC ANALYSIS (0 COURSES)**

**ARTS AND HUMANITIES - VISUAL AND PERFORMING ARTS ANALYSIS (0 COURSES)**

**SOCIETY AND CULTURE - HISTORICAL ANALYSIS (7 COURSES)**

**SOCIETY AND CULTURE - SOCIAL ANALYSIS (7 COURSES)**

**SCIENTIFIC INQUIRY - LIFE SCIENCE (5 COURSES)**

### ARTS AND HUMANITIES - LITERARY AND CULTURAL ANALYSIS (3 COURSES)

**CLUSTER M71A – Biotechnology and Society.** Lecture, three hours; discussion, two hours. Course M71A is enforced requisite to M71B, which is enforced requisite to M71CW. Limited to first-year freshmen. Exploration of methods, applications, and implications of biotechnology and of ethical, social, and political implications as well as biological underpinnings. Letter grading. Credits: 6.0 Units.

**CLUSTER M71B – Biotechnology and Society.** Lecture, three hours; discussion, two hours. Enforced requisite: course M71A. Limited to first-year freshmen. Exploration of methods, applications, and implications of biotechnology and of ethical, social, and political implications as well as biological underpinnings. Letter grading. Credits: 6.0 Units.

**CLUSTER M71CW – Biotechnology and Society.** Seminar, three hours. Enforced requisite: course M71B. Limited to first-year freshmen. Topics include in-depth examination of ethics and human genetics, bioweapons and biodefense, sex and biotechnology. Satisfies Writing II requirement. Letter grading. Credits: 6.0 Units.

### **ARTS AND HUMANITIES - PHILOSOPHICAL AND LINGUISTIC ANALYSIS (0 COURSES)**

No courses for this GE Foundation area in this track

### **ARTS AND HUMANITIES - VISUAL AND PERFORMING ARTS ANALYSIS (0 COURSES)**

No courses for this GE Foundation area in this track

### **SOCIETY AND CULTURE - HISTORICAL ANALYSIS (7 COURSES)**

**CLUSTER M71A – Biotechnology and Society.** Lecture, three hours; discussion, two hours. Course M71A is enforced requisite to M71B, which is enforced requisite to M71CW. Limited to first-year freshmen. Exploration of methods, applications, and implications of biotechnology and of ethical, social, and political implications as well as biological underpinnings. Letter grading. Credits: 6.0 Units.

**CLUSTER M71B – Biotechnology and Society.** Lecture, three hours; discussion, two hours. Enforced requisite: course M71A. Limited to first-year freshmen. Exploration of methods, applications, and implications of biotechnology and of ethical, social, and political implications as well as biological underpinnings. Letter grading. Credits: 6.0 Units.

**CLUSTER M71CW – Biotechnology and Society.** Seminar, three hours. Enforced requisite: course M71B. Limited to first-year freshmen. Topics include in-depth examination of ethics and human genetics, bioweapons and biodefense, sex and biotechnology. Satisfies Writing II requirement. Letter grading. Credits: 6.0 Units.

**HIST 2B – Social Knowledge and Social Power.** Lecture, three hours; discussion, two hours. History of social knowledge and social power in the 19th and 20th centuries. Everyday ideas and practices about human nature, common sense, and community and relation of those practices to social thought, social engineering, and social science. Themes include development of social knowledges through public activities and discourses; how social knowledge differs in agricultural, mercantile, industrial, and information-based political economies; and how social science addresses these issues. P/NP or letter grading. Credits: 5.0 Units.

**HIST 3A – History of Science: Renaissance to 1800.** Lecture, three hours; discussion, two hours. Survey of beginnings of physical sciences involving transformation from Aristotelian to Newtonian cosmology, mechanization of natural world, rise of experimental science, and origin of scientific societies. P/NP or letter grading. Credits: 5.0 Units.

**HIST 3B – History of Science: Enlightenment to 1900.** Lecture, three hours; discussion, two hours. In this period science became part of Enlightenment campaign for reason and of culture of an Industrial Revolution. New social science and evolutionary debates about science and religion demonstrate its rising intellectual and practical significance. P/NP or letter grading. Credits: 5.0 Units.

**HIST 3C – History of Science: 20th Century.** Lecture, three hours; discussion, two hours. Ranging from startling new physics of relativity and the quantum, and of nuclear weapons, to molecular reductionism in biology and campaigns for statistical objectivity, examination of involvement of science in technological, military, intellectual, and political changes of the 20th century. P/NP or letter grading. Credits: 5.0 Units.

### **SOCIETY AND CULTURE - SOCIAL ANALYSIS (7 COURSES)**

**CLUSTER M71A – Biotechnology and Society.** Lecture, three hours; discussion, two hours. Course M71A is enforced requisite to M71B, which is enforced requisite to M71CW. Limited to first-year freshmen. Exploration of methods, applications, and implications of biotechnology and of ethical, social, and political implications as well as biological underpinnings. Letter grading. Credits: 6.0 Units.

**CLUSTER M71B – Biotechnology and Society.** Lecture, three hours; discussion, two hours. Enforced requisite: course M71A. Limited to first-year freshmen. Exploration of methods, applications, and implications of biotechnology and of ethical, social, and political implications as well as biological underpinnings. Letter grading. Credits: 6.0 Units.

**CLUSTER M71CW – Biotechnology and Society.** Seminar, three hours. Enforced requisite: course M71B. Limited to first-year freshmen. Topics include in-depth examination of ethics and human genetics, bioweapons and biodefense, sex and biotechnology. Satisfies Writing II requirement. Letter grading. Credits: 6.0 Units.

**MCD BIO 50 – Stem Cell Biology, Politics, and Ethics: Teasing Apart Issues.** Lecture, three and one half hours; discussion, 90 minutes. Developmental biology of various types of human stem cells. Important functional differences between embryonic, hematopoietic, and adult stem cells, as well as differences in their biomedical potentials. Discussion of history of debate surrounding embryos, as well as various social, ethical, political, and economic aspects of stem cell research. P/NP or letter grading. Credits: 5.0 Units.

**POL SCI 60 – Ethics and Governance.** Lecture, three or four hours; discussion, one hour (when scheduled). To study question of can't we all just get along, students play games of cooperation, coordination, collaboration, and competition and examine whether and how diversity, disagreement, and democracy influence game play, to

understand under what conditions diversity feeds productively or counterproductively into group effort. Development of self- and other-awareness of emergent properties of disagreement to appreciate how different kinds of social organization promote or undercut social cognition and collective action. Such understanding needs to develop bottom-up through experiential and interactive learning, active and analytical learning, systems thinking, and realworld application. P/NP or letter grading. Credits: 5.0 Units.

**PUB AFF M130 – Biomedical, Social, and Policy Frontiers in Human Aging.** (Same as Gerontology M108 an Social Welfare M108.) Lecture, four hours. Limited to juniors/seniors. Course of human aging charted in ways that are based on variety of recent research frontiers. Use of conceptual frameworks to increase relevance of aging to students' lives and enhance their critical thinking—biopsychosocial approach that is based on recognition that aging is inherently interdisciplinary phenomenon, and life course perspective that is distinguished by analytical framework it provides for understanding interplay between human lives and changing social structures, and allows students to understand how events, successes, and losses at one stage of life can have important effects later in life. Focus on individuals as they age within one particular sociohistorical context. Letter grading. Credits: 5.0 Units.

**SOC GEN 5 – Integrative Approaches to Human Biology and Society.** Lecture, three hours; discussion, one hour. Introduction to concept of problem-based approaches to study of biology and society and areas of concentration, such as bioethics and public science policy, evolutionary biology, culture, and behavior, historical and social studies of life sciences, medical genetics and public health, and population genetics and history, and central thematic issues shared across concentrations, such as commercialization of life and public understanding of science. Letter grading. Credits: 5.0 Units.

#### **SCIENTIFIC INQUIRY - LIFE SCIENCE (5 COURSES)**

**CLUSTER M71A Biotechnology and Society.** Lecture, three hours; discussion, two hours. Course M71A is enforced requisite to M71B, which is enforced requisite to M71CW. Limited to first-year freshmen. Exploration of methods, applications, and implications of biotechnology and of ethical, social, and political implications as well as biological underpinnings. Letter grading. Credits: 6.0 Units.

**CLUSTER M71B Biotechnology and Society.** Lecture, three hours; discussion, two hours. Enforced requisite: course M71A. Limited to first-year freshmen. Exploration of methods, applications, and implications of biotechnology and of ethical, social, and political implications as well as biological underpinnings. Letter grading. Credits: 6.0 Units.

**CLUSTER M71CW Biotechnology and Society.** Seminar, three hours. Enforced requisite: course M71B. Limited to first-year freshmen. Topics include in-depth

examination of ethics and human genetics, bioweapons and biodefense, sex and biotechnology. Satisfies Writing II requirement. Letter grading. Credits: 6.0 Units.

**SOC GEN 5 – Integrative Approaches to Human Biology and Society.** Lecture, three hours; discussion, one hour. Introduction to concept of problem-based approaches to study of biology and society and areas of concentration, such as bioethics and public science policy, evolutionary biology, culture, and behavior, historical and social studies of life sciences, medical genetics and public health, and population genetics and history, and central thematic issues shared across concentrations, such as commercialization of life and public understanding of science. Letter grading. Credits: 5.0 Units.

**MCD BIO 50 – Stem Cell Biology, Politics, and Ethics: Teasing Apart Issues.**

Lecture, three and one half hours; discussion, 90 minutes. Developmental biology of various types of human stem cells. Important functional differences between embryonic, hematopoietic, and adult stem cells, as well as differences in their biomedical potentials. Discussion of history of debate surrounding embryos, as well as various social, ethical, political, and economic aspects of stem cell research. P/NP or letter grading. Credits: 5.0 Units.