

# SCIENCE, TECHNOLOGY, AND SOCIETY (STS)

## STS 47: Wilderness, Technology, and Society

3 Credits

Impact of developments in science, literature, and art on changing attitudes toward nature; consequences for conservation, preservation, environmental ethics.

Cross-listed with: SOC 47

Bachelor of Arts: Social and Behavioral Sciences

## STS 55: Space Science and Technology

3 Credits

The science and technology of space exploration and exploitation; physical principles; research and development; history, space policy, and social implications.

Cross-listed with: AERSP 55

Bachelor of Arts: Natural Sciences

Bachelor of Arts: Social and Behavioral Sciences

## STS 100: Science, Technology, and Culture

3 Credits

A survey of the development and culture of science, technology, and medicine in world history. S T S 100 Science, Technology, and Culture (3) (GH)(BA) This course meets the Bachelor of Arts degree requirements. 'Science, Technology, and Culture' surveys the development and culture of science, technology, and medicine in world history. This course will introduce students to using the humanities, social sciences, and the arts to understand the development and uses of science, technology, and medicine in human history. The course focuses on broad trends and changes over time in their social and cultural contexts. The course is intended to address the needs of a wide range of students. For students majoring in the the arts, humanities and social sciences, the course provides a deeper understanding of the relationship between lay/popular and techno-scientific cultures. For the scientific and technically oriented student, the class exposes students to the study of technical and scientific problems from a broader cultural and historical perspective. All students will develop a knowledge of the values that have motivated and informed scientific, technological, and clinical ventures as well as an appreciation of important cultural dimensions of techno-scientific work, including the influence of religious concepts and practices, the impact of race, class, and gender, the significance of language and symbols, and the role played by local and global traditions. The course also asks students to think critically about the role of science, technology, and medicine in world history and the impact of that history on today's world. Topics include: the role of scientific and technical expertise in society; the social and economic conditions that have fostered and impeded scientific development and technological innovation; the social, aesthetic, and symbolic considerations that have shaped the way scientific ideas have been framed and used; and the impact of scientific notions and technological innovations on social life. Students are required to read both primary and secondary texts. Students are also required to augment their classroom readings with scholarly material that they find through library and electronic research. In addition to regular

classroom discussions, students will also participate in team-based learning activities and projects that require the students to interact with their peers and to present their thoughts publicly.

Bachelor of Arts: Humanities

## STS 100H: The Ascent of Humanity

3 Credits

A survey of some of the intellectual achievements that highlight humanity's attempts to understand nature and shape the environment.

Bachelor of Arts: Humanities

Honors

## STS 101: Modern Science, Technology, and Human values

3 Credits

Relationships of science and technology to human aspirations, values, and arts.

Bachelor of Arts: Humanities

## STS 105: Food Facts and Fads

3 Credits

This course is an introduction to the central role of food and food production in all areas of human life. The social and technological bases of various food systems are examined from the hunter-gatherer to the agrarian to the modern industrial system and its discontents. The course also considers how different types of food (e.g., meat, milk, cereals, chocolate) are preserved and distributed, examining both the effects of the development of the science and technology on society and vice versa. The roles of various food components (e.g., proteins, carbohydrates, fats, and vitamins) are examined both within the foods as determinants of quality, and also in terms of human nutrition and health. Finally, various other ways food may be considered appropriate or inappropriate will be studied including scientifically based reasons (e.g., safety, taste, adulteration) and non-scientifically based reasons (e.g., ethical, legal, religious).

Cross-listed with: FDSC 105

Bachelor of Arts: Social and Behavioral Sciences

General Education: Health and Wellness (GHW)

GenEd Learning Objective: Crit and Analytical Think

GenEd Learning Objective: Integrative Thinking

## STS 110N: Chemistry in World Wars I and II

3 Credits

The study and assessment of chemical developments during the First and Second World Wars will form the backbone of this course. As the course is historically focused on the period from 1914 to 1945, the students will develop a basic understanding of the significant historical events that led to the development of chemical innovations in materials, medicine, and weapons. To understand the scientific context of these developments, the students will also learn about the basics of chemistry, including recognizing the nature of the scientific process and discovery. In addition, the students will read, evaluate, and discuss primary and secondary sources to provide them with further insight into significant figures, events, and developments. These lectures, readings, and

discussions (along with other assignments) will allow students to explore the ethical dimensions, the economic effects, the social consequences, and the public health impact that these scientific discoveries had on scientists, soldiers, and civilians. The students will also ascertain how many of the scientific discoveries made between 1914 and 1945 have had both beneficial applications and detrimental effects since 1945.

International Cultures (IL)

General Education: Humanities (GH)

General Education: Natural Sciences (GN)

General Education - Integrative: Interdomain

GenEd Learning Objective: Effective Communication

GenEd Learning Objective: Integrative Thinking

GenEd Learning Objective: Soc Resp and Ethic Reason

STS 115: Pre-departure Intercultural Learning

1-3 Credits/Maximum of 9

STS 115 (1-3) Pre-departure Cross-cultural Engagement serves as a pre-departure introduction for students to the culture of their international travel destination affiliated with Penn State programing. The course content covers key social issues, practical cultural information that is relevant for travelers and students, and language use for essential communication. In addition, this course seeks to promote safety, mitigate cultural shock, make students more capable abroad, and help Penn State students to become better ambassadors of their university and country. Students in this course can expect to acquire the appropriate context and preparation necessary to confront challenges abroad and have a more enriching experience. In addition, learners will be provided context about the international travel destination to prepare them for their activities abroad, positioning learners to be able to connect course content to topics in science, technology, and society that will be explored in an international environment. By the end of this course, students will be able to express information important about the travel region's identity, demonstrate critical thinking related to the location of travel, evaluate cultural differences, articulate key concepts in the local culture and its cuisine, demonstrate proficiency in the ability to use appropriate vocabulary in the target culture, construct effective communication strategies, and employ a capability to be an effective communicator in the local context of their immersion experience abroad. In addition, students will engage in critical analysis of international institutions as they relate to those one is familiar with in their home country, foster cultural humility, and develop cultural intelligence. Students will broaden their comprehension of a variety of factors that influence the local, regional, and national environments. Themes of politics, environment, industry, immigration, history, and cultural tradition will be explored. Furthermore, students engage in critical analysis of international institutions as they relate to those one is familiar with in their home country. Human behavior as it relates to both the host and home country are a focus of the course. The course will employ various methods of distilling knowledge including at the epistemic, theoretical, and empirical levels as it endeavors to provide students with a framework to interpret and subsequently describe events in a global context. In addition, as international culture is a focal point of this course, it is a natural fit to meet the International Cultures (IL) requirement.

International Cultures (IL)

STS 124: History of Western Medicine

3 Credits

This course explores the history of health, illness, and medicine in western society from Ancient Egypt through the modern world. Relying on both primary and secondary sources, the course examines major developments in the understanding of health, illness, medical treatment, and medical practice in western society from Ancient Egypt to the present. The course will explore such themes as the changing status of medical practitioners, the experience of patients in different historical settings, artistic depictions of illness and healing, and the increasingly prominent role of medicine in public policy in order to better understand the links between medicine and its social, cultural, intellectual, and political contexts.

Cross-listed with: HIST 124

Bachelor of Arts: Humanities

International Cultures (IL)

General Education: Humanities (GH)

GenEd Learning Objective: Integrative Thinking

GenEd Learning Objective: Key Literacies

STS 151N: Technology and Society in American History

3 Credits

This course examines the development of technology in the United States from the colonial period to the present, and places into a historical context the reception and influence of these technological developments on the social, economic, and political life of the United States. The technologies serving American society—past and present—range widely and include, for example, new harvesting techniques, railroads and motor vehicles, assembly-line mass production, and electricity and its multiple dependent technologies. Technologies have always influenced, and been influenced by, human societies; this course examines how technologies and Americans have interacted and influenced each other.

Cross-listed with: AMST 151N, HIST 151N

Bachelor of Arts: Social and Behavioral Sciences

United States Cultures (US)

General Education: Humanities (GH)

General Education: Social and Behavioral Scien (GS)

General Education - Integrative: Interdomain

GenEd Learning Objective: Integrative Thinking

GenEd Learning Objective: Key Literacies

STS 197: Special Topics

1-9 Credits/Maximum of 9

Formal courses given infrequently to explore, in-depth, a comparatively narrow subject which may be topical or of special interest.

Bachelor of Arts: Social and Behavioral Sciences

STS 199: Science, Technology, and Society: Foreign Studies

1-3 Credits/Maximum of 12

Science, Technology, and Society foreign studies. Courses offered in foreign countries by individual or group instruction.

## STS 200: Critical Issues in Science, Technology, and Society

3 Credits

An overview of interactions between science, technology, and society from social sciences and humanities perspectives.

Bachelor of Arts: Social and Behavioral Sciences  
General Education: Social and Behavioral Scien (GS)

## STS 201: Climate Change, Energy, and Biodiversity

3 Credits

Studies of global warming, energy options, and biodiversity; their interrelations as sciences and as societal issues.

Bachelor of Arts: Natural Sciences  
Bachelor of Arts: Social and Behavioral Sciences

## STS 233: Ethics and the Design of Technology

3 Credits

Humans have always created artifacts and artificial environments to aid us in our survival and to help fulfill our needs and desires. Moreover, today technology is all pervasive, transforming and conditioning our social and political relations, our cultural understanding of ourselves, and our relationship with other animals and the natural environment. Designers make important choices concerning the creation, development, and deployment of many if not most technological innovations. Consequently, the task of the designer is an ethical one. It is therefore important to give future designers the opportunity to reflect upon the meaning of technology, particularly in its moral dimensions. Two means will be used to achieve our course goals. Much of the time will be spent thinking about and discussing the various impacts that particular technologies have upon the social, cultural, and political lives of human beings and upon the natural environment. To facilitate thoughtful discussion, we will read a number of authors, writing short papers in preparation for critical discussion in class. The second means is aimed at putting our ideas into practice by working in teams on several design projects. These design projects will require the integration of readings, discussion, and research and their synthesis to resolve the moral aspect of a design problem. Student teams will work cooperatively on these projects and make oral progress reports as well as final written and oral reports.

Cross-listed with: PHIL 233  
Bachelor of Arts: Humanities  
General Education: Humanities (GH)  
GenEd Learning Objective: Crit and Analytical Think  
GenEd Learning Objective: Integrative Thinking  
GenEd Learning Objective: Soc Resp and Ethic Reason

## STS 235: Science and Religion

3 Credits

This course investigates the relationship between science and religion in multiple cultures. S T S 235 Science and Religion (3) (GH)The purpose of this course, designed to fulfill general education requirements in the humanities (GH), is to encourage students to investigate the relationships between the disciplines of science and religion. While most of the

emphasis of the course will be on the historical interaction between science and Western religion, we will also investigate science ('natural philosophy') in the Islamic, Hindu, and Eastern religious traditions. Students will read classic texts that discuss science and religion from scientists such as Newton and Darwin as well as from world Scriptures and contemporary positions of various influential scientists and religious scholars concerning views of the material world as it relates to the spiritual world. There will be no attempt to encourage students to accept a particular religious or secular viewpoint. Rather, the course will be successful if at its conclusion the student can articulate a personal viewpoint while appreciating the reasons others might have for holding alternative opinions. Students will develop an understanding of the arguments and the historical context in which they originated which lead to differing positions. Thus, individual students will be expected to demonstrate this understanding in a series of examinations scheduled throughout the semester, and in a final examination if required by the instructor. Discussion and debate are useful devices in the search for understanding. In order to facilitate such discussion, students will be required to make one presentation to the class on an assigned topic. This presentation will serve as the starting point for class exploration of the topic. To encourage active and collaborative learning, the student presentations may be group efforts, however, no group will consist of more than three students.

**Prerequisite:** completion of a basic composition course or the equivalent, S T S100 or S T S101 , or completion of 30 credits of coursework  
General Education: Humanities (GH)

## STS 245N: Globalization, Technology, and Ethics

3 Credits

The objective of Globalization, Technology, and Ethics is to prepare students (especially but not limited to engineering, information sciences & technology, and business students) who are headed into the corporate, NGO (non-profit) or government sectors for the challenges and realities of working in a rapidly globalizing world. This course will encourage students to become leaders in a mobile and diverse transnational workplace and help them to become critical citizens of that world. Through team-centered projects and readings from the social sciences and humanities, students will broaden their understanding of engineering, technology, and culture and then be introduced to how one makes ethical decisions about that world. This course is designed to provide skills, theories and experiences that will help them to be respectful, diplomatic and professional while being able to successfully work with technology in multiple cultures and contexts. Students will understand the relationships and the effects on industry, economics, and the many facets of society in an interdependent global economy. These interrelationships will include the differing impacts on individual countries (winners and losers), the question of responsibilities of use or development of technologies and science (long term verses short term impacts). Students will be able to apply ethical analysis to these and many other issues that professionals face.

**Enforced Prerequisite at Enrollment:** ENGL 15 and CAS 100

Cross-listed with: SOC 245N  
International Cultures (IL)  
General Education: Humanities (GH)  
General Education: Social and Behavioral Scien (GS)  
General Education - Integrative: Interdomain  
GenEd Learning Objective: Crit and Analytical Think  
GenEd Learning Objective: Global Learning

GenEd Learning Objective: Integrative Thinking  
 GenEd Learning Objective: Soc Resp and Ethic Reason

STS 299: Foreign Studies

1-12 Credits/Maximum of 12

Science, Technology, and Society foreign studies. Courses offered in foreign countries by individual or group instruction.

Bachelor of Arts: Social and Behavioral Sciences  
 International Cultures (IL)

STS 399: Science, Technology and Society: Foreign Studies

1-3 Credits/Maximum of 12

Science, Technology, and Society foreign studies. Courses offered in foreign countries by individual or group instruction.

STS 408: Cultural Foundations of Communications

3 Credits

Examination of oral, scribal, print, industrial, and electronic cultures; analysis of impact of technology on communications and social structure. COMM 408 / STS 408 Cultural Foundations of Communications (3)(BA) This course meets the Bachelor of Arts degree requirements. COMM 408 / STS 408 traces the development of communications technologies and their impact on culture over the last 500 years. Students will examine how different tools for communicating changed the way people organized and made sense of their worlds. The course begins by looking at oral cultures and moves on to the scribal, print, industrial, electronic and post-industrial or postmodern cultures, studying the media developments that marked each of these eras. With each period and its corresponding technology students will examine how and why the new media altered not only the form of communication (the type of speech, form of writing and/or speed of information transfer), but also how such changes altered the content of knowledge (how people made sense of their lives and communities). Readings are drawn from a range of disciplinary perspectives on the issues, from history, sociology and anthropology, to philosophy, communication studies and cultural theory. The historical and theoretical knowledge provided by the course will give students a solid foundation for coming to terms with media trends in present-day society and for thinking through their possible epistemological, political and cultural impacts. The course is a communications elective for the Journalism and Telecommunications majors and the Media Studies minor.

**Enforced Prerequisite at Enrollment:** Select 3 credits from the following: COMM 100 or COMM 110 or COMM 118 or COMM 150 or COMM 180 or COMM 251 or COMM 320 or COMM 370  
 Cross-listed with: COMM 408  
 Bachelor of Arts: Social and Behavioral Sciences

STS 416: Race, Gender and Science

3 Credits

The class will focus on race and gender as products of science, and how societal values shape scientific activity.

Cross-listed with: AFAM 416  
 International Cultures (IL)  
 United States Cultures (US)

STS 420: Energy and Modern Society

3 Credits

Technology and economics of energy resources, production, and consumption; environmental factors, exhaustion, new technology.

**Enforced Prerequisite at Enrollment:** 3 credits of SOC  
 Cross-listed with: EMSC 420, SOC 420  
 Bachelor of Arts: Social and Behavioral Sciences

STS 428: The Darwinian Revolution

3 Credits

The origins and implications of evolutionary theory.

**Prerequisite:** an introductory science course and a history course  
 Cross-listed with: HIST 428  
 Bachelor of Arts: Humanities  
 International Cultures (IL)

STS 433: Ethics in Science and Engineering

3 Credits

Ethical issues arising in the practice of science and engineering and their philosophical analysis.

Cross-listed with: PHIL 433  
 Bachelor of Arts: Humanities  
 Bachelor of Arts: Social and Behavioral Sciences

STS 460: Science, Technology, and Public Policy

3 Credits

The all-pervasive importance of science and technology policy in modern societies and mechanisms and processes by which it is made.

**Prerequisite:** 3 credits in natural sciences or engineering, 3 credits in social and behavioral sciences  
 Cross-listed with: PLSC 460  
 Bachelor of Arts: Social and Behavioral Sciences

STS 470: Technology Assessment and Transfer

3 Credits

Nature of technology assessment and technology transfer in product design and development process from federal and university labs, and internationally.

Bachelor of Arts: Social and Behavioral Sciences

STS 499: Foreign Studies

1-12 Credits/Maximum of 12

Science, Technology, and Society foreign studies. Courses offered in foreign countries by individual or group instruction.

Bachelor of Arts: Social and Behavioral Sciences  
 International Cultures (IL)