Science, Technology, & International Affairs (STIA)

STIA 1810 Interface of Humans Nature 3 Credits
We are living in the age of the Anthropocene, the period in geological history where humans have been the dominant force in shaping the world's climate and ecosystems. As the world's population grows, demands more natural resources, and expands geographically, the challenge of sustaining life on earth becomes increasingly difficult. Through the examination of a series of case studies, this course will examine challenges- and potential solutions- at the interface of humans and nature, such as: human-wildlife conflict, invasive species, wildlife trafficking, wildfires, and pollinator declines. Throughout the course, we will learn the relevant science required to both understand the problem and to imagine solutions. The approach will be interdisciplinary with a primary emphasis on the biological sciences. First and foremost, this course is designed to meet the goals of the Science For All program; You will develop a stronger understanding of the nature, process, and role of science in addressing complex, global issues. It is also designed to help you develop some important skills that will be useful throughout your college career and beyond, such as thinking scientifically to evaluate claims, writing thoughtfully and clearly, and using a systems perspective to understand complex problems. This course will help you build a solid foundation that will allow you to engage confidently with scientific information when studying and addressing global issues.
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)
Mutual exclusion: INAF 1810

STIA 1811 Sustainable Food Systems 3 Credits
Full Title: Science of Sustainable Food Systems. The production and processing of food along with disposal of food waste have some of the most profound global environmental effects of all human activities. Modern agriculture accounts worldwide for 11% of land use, 80% of tropical deforestation, 70% of freshwater use, 13% of carbon emissions, well over half of nitrogen emissions, and contributes to soil erosion, water and air pollution, and loss of biodiversity. A more sustainable food system is clearly needed if we are to feed the 9 billion human mouths expected on Earth by 2050. In this course we will examine the scientific underpinnings of a range of environmental issues that pertain to international agriculture since its invention roughly 12,000 years ago. We will look at topics such as the biological origins of crop plants and domesticated animals, patterns of land conversion and use, soil creation and loss, the use and contamination of water, fertilizer and its impact on nutrient cycling, pesticides and other novel chemicals employed in agriculture, the use of fossil fuels for food transport and processing, food packaging, and the processing of food waste. Some potential solutions to the challenge of global food sustainability will be examined such as the use of GMOs and other biotech approaches, the role of subsidies, energy and water policies, changing diets and food sources, alternate farming practices, and food justice issues.
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)
Mutual exclusion: INAF 1810

STIA 1812 Science and Energy Security 3 Credits
Access to affordable energy has become paramount to the national and economic security of every nation. From wood to coal, oil to natural gas, nuclear to wind, global primary energy sources continue to evolve. Shifts in energy usage track with advancements in energy, natural resource, environment, and health science. In this course, we will examine the fundamental concepts in chemistry, physics, geology, and biology that underpin energy. Drawing from an interdisciplinary set of scientific concepts, we will discuss how those concepts have led to advancements in science that have changed our primary global energy supply over time. We will highlight the links among international policy, scientific policy, the scientific enterprise, and how scientific understanding is ultimately developed, tested, and revised.
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)
Mutual exclusion: INAF 1810

STIA 1813 The Science of Water 3 Credits
Water is the basic element of life on Earth. Hydrology, the scientific study of water, includes topics about water in the atmosphere, on and over the earth's landscape, and beneath its surface. Water has unique properties that are vital to life on earth and define its movement and distribution across the landscape, as well as its quantity and quality. In this course, we will survey the components of the hydrologic cycle including the processes of precipitation, evaporation, transpiration, infiltration, ground-water flow, surface water runoff and streamflow. We will study the physical properties of water and explore basic methods of measuring and estimating rates of water transport as well as building a better understanding of human interactions with the hydrologic cycle. The course objective is to provide you with an introductory understanding of the science of hydrology and the knowledge and tools to collect and analyze water data to answer questions related to hydrological processes. The course includes both lecture and practical exercises with exams that cover both aspects.
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)
Mutual exclusion: INAF 1810

STIA 1814 Of Pests and People 3 Credits
Pests are by definition annoying. But more than just nuisances, many pests have had significant impacts on human societies, shaping our health, what we eat, and how we live. In this course, we will explore how some common pests like rats, mice, ticks, mosquitoes, and locusts are causing trouble for humans around the world - and in some cases, right here in DC. By spreading disease, affecting our crops, or causing economic loss, the impacts of these pests can be profound. We will also examine challenges and approaches to getting rid of, managing, or living with these pests. As a Science For All course, a primary focus will be on the biology of these pests and how the scientific process contributes to how we manage and cope with them. Beyond the science, we will also examine how policy, collaboration, and community participation can help us in our age-old battles with pests.
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 1816 Climate and Climate Change 3 Credits
Weather and climate affect people and societies across the world through agriculture, health, water supply, energy, economics, ecosystems and other sectors. Understanding how climate intersects with these and other sectors will be critical to understanding perhaps the most important global trend in the 21st century. Students will learn how the climate system works and the natural and anthropogenic forces that have caused changes in the climate across different timescales. The course will build this understanding by drawing on ideas and principles from the scientific disciplines that comprise modern climate science. Students will explore the implications of climate change on Earth's systems through physical, chemical, biological, and ecological examples. Finally, the course will address the implications of climate change for diplomacy, development, and national security. This course is cross-listed with ENST181-07. Some seats are reserved.
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 1817 DynamicEarth:IntroPhysGeology 3 Credits
The course will cover the drivers and patterns of major seasonal cycles including temperate and tropical seasons as well as seasonal events like the El Nino Southern Oscillation and monsoon cycles. We will consider the effects of human-driven climate change on these patterns for people, plants, and animals, focusing on topics like growing season length, agricultural productivity, and phenological mismatch. The course will also include some phenological observation on campus during the spring semester, though it will not have a lab.
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 1818 ClimateChngGlobalSeasonality 3 Credits
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 2100 Data Science for STIA 3 Credits
The Introduction to Data Science for STIA is a survey course of fundamental concepts and techniques used in data science. The course is focused on evaluating and analyzing public policy, telling stories with data to make compelling and fact-based arguments. The objective of the course is to equip students with the skills to allow data to take an active role in policy and strategy. Public policy is part of a large and sprawling social system. Parsing causality from a system of variables where everything is related requires a scalpel. This refined approach can be assembled from pre-written code and routines; but it still requires skilled assembly. We will teach an approach that leverages analytical routines that have already been written. The value of this course is in the mortar, not the bricks.
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)
Equivalent to STIA 210

STIA 2128 Environmental Geoscience Lab 2 Credits
STIA 228/BIOL 184 Environmental Geoscience Lab

Environment Geoscience Lab, STIA 228/BIOL 184, is a stand-alone lab course developed to accompany STIA 227/BIOL 183, Environmental Geoscience. Through a series of hands-on experiments, we'll develop the underlying analytic and quantitative skills needed to identify environmental problems, design approaches to study these problems, rigorously analyze experimental results, and reach independent conclusions. In the process, we'll gain an understanding of how to conduct environmental sampling and discover the joys of field research. We'll analyze pollutants in our local watershed, explore phenomena like fluid convection, acquire new skills, like scanning electron microscopy and next generation DNA sequencing, and generate our own biofuels and wet scrubbers. We'll learn proper lab techniques as well as quantitative methods of data analysis (including some basic statistics and data visualization). We'll also hone our ability to effectively communicate experimental findings to the scientific community, governmental agencies, non-governmental environmental organizations, and the public.

Enrollment Instructions There are no prerequisites, but permission of the instructor is required to enroll in STIA 228/BIOL 184, as is co-enrollment in STIA 227/BIOL 183, Environmental Geoscience. Students with seats will be informed about their enrollment status shortly after the close of the preregistration period (seats will be allocated based strictly on class year, major/minor, and whether a student has attempted to enroll in STIA 228/BIOL 184 previously) .
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 2152 Water, Science, and Society 1 Credit
Water is essential for life on Earth and of crucial importance for society. Humans simply cannot advance without the sustainable management of our finite water resources, whether it is too much, too little, too polluted, or too political. Climate change, population growth, and wealth inequality have challenged water security globally, leading to food shortages, vulnerability to disasters, and even conflict. Can technology and data, artificial intelligence, private sector investment, and international treaties help us address these complexities and ensure a more sustainable future? In this course, you will study the science of water, how it is impacted by human actions such as climate change, and how compounding factors around water affect development and geopolitics. Through interactive lectures, country and region-specific case studies, and guest speakers, you will learn how hydrology and environmental change relate to nearly every aspect of our lives. You will be encouraged to think critically about our complex water challenges and to develop innovative solutions that could address them.
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 2153 AI and Climate Change 1 Credit
In this seminar, students will examine the scientific foundations of the interplay between artificial intelligence (AI) and climate change, two forces rapidly shaping societies and global systems. They will learn about AI's potential to mitigate climate risks and enhance resilience, alongside its environmental footprint, including energy and resource demands. Students will also consider how these scientific insights inform policy, diplomacy, and sustainable development, gaining a deeper understanding of the global implications of AI–climate interactions.
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 2177 Epidemiologic App:Popltn Hlth 3 Credits
This course introduces the general principles, methods, and applications of epidemiology. Fundamental concepts covered in this course include outbreak investigations, measures of disease frequency, standardization of disease rates, study design, measures of association, hypothesis testing, bias, causal inference, disease screening, and ethical issues in Epidemiology studies. Lecture and case studies include applications of the discipline to infectious disease, chronic disease, social behavioral studies, health services research, and health policy.
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)
Course registration restrictions:
Enrollment is limited to students with a program in Science, Tech, Int'l Affairs.

STIA 2225 Intro to Ecological Security 1 Credit
Earth's systems are undergoing transformative change driven directly and indirectly by human activities. Drawing from scientific concepts, this course examines the security implications of anthropogenic changes in the biosphere, such as habitat change, biodiversity loss, degradation of ecosystem services, and the emergence of ecosystem disservices. Domains of discussion include forests, fisheries, wildlife, soil, water, and food.
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 2230 Eco of Glbl Chng Disease 1 Credit
We live in an era of rapid global change. As humans continue to alter the environment at an unprecedented pace, ecosystems are rearranging themselves and altering the face of infectious disease. In this course, we will first discuss how facets of human development including urbanization, climate change, and agricultural industrialisation are impacting infectious disease in wildlife and livestock populations. Second, we will examine how humans and animals interact and discuss the impacts of changing ecosystem health on human health. Taking examples from animal behavior, ecoimmunology, disease ecology, and the study of natural disasters, this course will bring you to consider how global change, ecosystem health, and public health are intertwined. You will learn how ecological systems are structured, how we rely on them, what we can do to exist in harmony with them, and the consequences of doing otherwise.
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 2240 Intl Dev: Ocean Sci Pol 1 Credit
Covering over 70% of the Earth's surface, it's no surprise that the ocean is an important component of all things global - the economy, biodiversity, climate, and even politics. Over the course of a semester, we will explore topics at the intersection of ocean science and international development policy and programming. We will discuss the importance of fisheries, both wild caught and farmed, to the global economy and global food security, and learn about the scientific methods and discoveries that help us understand this. We will also examine the multiple threats to fisheries sustainability, including illegal, unreported, and unregulated fishing as well as forced labor. The geopolitics of the ocean- as it relates to international negotiations for addressing the twin crises of biodiversity loss and climate change- will also be examined. In terms of addressing climate change, the ocean has a dual role to play, providing nature-based solutions for both adaptation (i.e., increasing the resilience of communities to the effects of climate change) as well as mitigation (i.e., drawing down carbon, and thereby counteracting the human-induced increase in atmospheric greenhouse gasses). The course will be highly transdisciplinary, considering the current scientific, social, political, economic, and environmental issues being faced by developing countries.
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 2244 Big Tech Child Protection 1 Credit
In the relatively nascent trust and safety ecosystem, online child protection is perhaps the most mature area with many third-party tools and technological solutions to enhance online platforms' content moderation operations. These includes Microsoft PhotoDNA to AI-based tools like Google's Content Safety API; open-source tools like Facebook's PDQ and commercial products like Thorn's Safer; traditional tooling to modern, collaborative initiatives like the Tech Coalition's Lantern.

The course is designed to foster critical thinking when engaging with Big Tech and their platforms. Through case studies, discussions and practical applications, you will learn how the technology to detect child sexual abuse material (CSAM) has evolved over the past 15 years. Every class will include guest speakers, for example, the Tech Coalition on their new Lantern program that leverages signal sharing to detect and prevent the spread of child sexual exploitation and abuse across platforms.
Level: Undergraduate
Grading: Pass/Fail Default

STIA 2411 Communications Geopolitics 1 Credit
This course explores the technical and political foundations of global communications. Students will examine the infrastructure that enables global connectivity—including undersea cables, terrestrial fiber networks, satellites, and wireless networks. The course will also cover how these systems are governed, evolving, and shaping international power dynamics, economic development, and cybersecurity. Students will gain a holistic understanding of how digital connectivity is built, contested, and regulated across borders.
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 2450 Marine Conservation Approaches 1 Credit
Covering over 70% of the Earth's surface, it's no surprise that the ocean is an important component of all things global - the economy, biodiversity, climate, and even politics. Over the course of a semester, we will explore topics at the intersection of ocean science and international development. We will discuss the importance of fisheries, both wild caught and farmed, to the global economy and global food security, and learn about the scientific methods and discoveries that help us understand this. We will also examine the multiple threats to fisheries sustainability, including illegal, unreported, and unregulated fishing as well as forced labor. The geopolitics of the ocean - as it relates to international negotiations for addressing the twin crises of biodiversity loss and climate change - will also be examined. In terms of addressing climate change, the ocean has a dual role to play, providing nature-based solutions for both adaptation (i.e., increasing the resilience of communities to the effects of climate change) as well as mitigation (i.e., drawing down carbon, and thereby counteracting the human-induced increase in atmospheric greenhouse gases). The course will be highly transdisciplinary, considering the current scientific, social, political, economic, and environmental issues being faced by developing countries.
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 2454 Weapons of Mass Destruction 1 Credit
For centuries, humans have threatened each other and their own existence with weapons of mass destruction (WMD). Nations and terrorists have created a variety of weapons, but only WMD have the potential to wreak illness and death on large numbers of people at once. The fear of annihilation is a powerful deterrent, and the threat of WMD has significant psychological effects on humans including numerous scientific misconceptions about WMD. Logic and critical thinking skills to improve students' abilities to read scientific communication and understand technically complex topics will be learned. This course will explore the science and ethics behind WMD. We will learn about our own scientific misconceptions about WMD and the psychological effects that the threat of WMD has on us. We will determine which of these ideas about WMD are valid and which are false while discovering scientific disciplines such as virology, toxicology, radiation, and epidemiology. Specific examples of everyday life, such as the influenza vaccine and pesticides, will be used to elucidate the science behind WMD. We will learn about how science informs international affairs through nonproliferation treaties and weapons inspections. Lastly, we will discuss the philosophy and ethics of war, weapons, and WMD, learning how scientists have proliferated, protested, and protected us from WMD.
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 2700 Space for Environmental Action 1 Credit
The class will introduce how space technologies can be used for societal benefit on earth and explore what a sustained human presence in the space environment means for our future. Topics will include the present and future state of public and commercial satellite earth observing missions, innovations in satellite-data applications for climate action and sustainable development, outlook on emerging space economies, and the sustainability of space operations.
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 2701 The Science of Energy 3 Credits
This course dives into the physical principles, technologies, and global implications of energy production and consumption. Designed for learners seeking clarity in a complex field, this course demystifies energy in all its forms—mechanical, thermal, chemical, electrical, and nuclear—while connecting scientific fundamentals to real-world applications. You'll begin with the basics: how energy flows, converts, and powers civilization. From there, you'll dive into the science and economics of fossil fuels like coal, petroleum, and natural gas, including emerging trends such as fracking and unconventional oil. The course then transitions to nuclear power, solar, wind, hydroelectric, geothermal, and biofuels, offering a balanced view of each source's potential and limitations.
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)
Equivalent to IPOL 3578

STIA 3005 Science Tech in Global Arena 0 or 4 Credits
Science and technology have revolutionized geopolitical strategy, helped to internationalize markets, created new possibilities for environmental degradation and nuclear destruction, enhanced economic development, addressed health issues on a global scale, and altered the conduct of warfare, economic trade, and political relations. The complexity of these issues requires individuals with some degree of technical and scientific knowledge—from scientists to well-trained experts—to assist in crafting solutions to the diplomatic problems that science and technology pose. STIA 305 is an introduction to how science and technology affect international affairs, and how international affairs impacts scientific and technological developments.

Students learn through a combination of lectures from core STIA faculty and practitioners, readings, discussion sections, written assignments, and interactive simulations that depending on the semester may involve negotiating global environmental agreements, crafting global health responses, developing new technologies, advising on international development interventions, planning for energy security risks, or working through a nuclear crisis. The course is open to all Georgetown undergrads with priority given to STIA majors and minors, and is offered in both the fall and spring semesters.
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 3127 Environment in Africa 3 Credits
Poor resource management in many parts of Africa has resulted in serious social and environmental problems. This course will explore human and natural environmental interaction in Africa. An overview of Africa's environmental history and its current situation will be discussed through a series of lectures, case studies, guest speakers, brainstorming sessions, and other hands-on activities. Specific focus for this course will be on natural resource extraction and consumption, deforestation, food security, smart agriculture technologies for climate change adaptation, and water crisis. Additionally, students will be introduced to Geographic Information Systems and application for environmental management.
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)
Mutual exclusion: AFST 2294, INAF 294

STIA 3132 Ecosys Management in Int'l Dev 3 Credits
Natural ecosystems provide critical benefits such as food, fuels, fiber, and regulation of climate, floods, disease, wastes, and water quality. Many of the world's most valuable ecosystems are found in tropical, developing countries where many of the world's poorest people live and depend on nature for their livelihoods and survival. Multi-national companies are also investing in these areas to benefit from rich natural resources and are important drivers of economic growth in many developing countries. Sustainable development requires balancing ecosystem conservation, human welfare and economic growth yet achieving this balance can be challenging given the trade-offs between meeting short-term demands that place increasing pressure on natural resources and the long-term conservation of ecosystems to support basic human needs and national economic growth. This course will address the importance of ecosystems for human well-being and economic growth in developing countries and will explore the scientific evidence, gaps, tools and advances in leveraging natural ecosystems to support sustainable development. The goal of this course is to familiarize students with the ecological dimensions of poverty reduction and economic development, particularly in natural resource rich/low-income countries; understand the trade-offs and synergies in achieving social, economic and ecological outcomes associated policies/development projects; articulate risks and opportunities of international businesses working in natural resource rich countries; and become familiar with the landscape of international policy and financing mechanisms supporting ecosystem management globally. Students will be assessed through a combination of case studies on examples of ecosystem management for poverty reduction and a finally report analyzing scientific gaps and advances needed to better integrate ecosystem management into international development planning and policies.

Instructor Bio: Jane "Carter" Ingram has over 20 years of experience in integrating ecosystem management and conservation into economic development and poverty reduction in Africa, Asia, Latin America and the United States. Current, she is a Senior Manager at EY leading a natural capital service offering in the US to support private and public sector clients in identifying, measuring and valuing natural capital to support business strategy and decision making. Prior to EY, Carter established and led the Ecosystem Services program at the Wildlife Conservation Society where she worked closely with field staff, governments, multi-lateral institutions, non-governmental organizations, universities and global companies in Africa, Asia and Latin America to advance ecosystem conservation and integrate conservation into sustainable development strategies. Carter also helped launch and manage the Science for Nature and People (SNAP) Partnership focused on catalyzing interdisciplinary scientific working groups to address challenges at the nexus of nature conservation, economic development and human well-being. She has Master of Science and Doctor of Philosophy degrees from the School of Geography and the Environment from Oxford University, a Bachelor of Science degree in Biology and has written over 50 articles, reports and publications on integrating ecosystem management into markets, corporate strategies and government and community development plans and policies. She has held adjunct positions and taught courses on these topics at the Columbia University and New York University. Currently, she co-leads a USGS/SESYNC funded international working group on advancing natural accounting in the US, is a Conservation Fellow at the Wildlife Conservation Society, a member of the Science Advisory Committee for the Science for Nature and People Partnership and serves on the Technical Advisory Group member for the UNDP Equator Initiative.
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 3150 Ecofeminism and Health 3 Credits
This course will focus on the gendered perspectives of environmental sustainability and eco-efficient agriculture in order to assess aspects of food security and food systems including the equitable access to resources by male and female farmers. The course will present an overview of ecofeminism and gender analysis to understand patterns of land use conservation strategies and agricultural production efforts portrayed by rural communities' and agricultural entrepreneurs (value chain analysis and agricultural market participation). Students will be presented with real case studies worldwide to document gender gaps in access to a large range of natural resources, including water, land, forestry, fisheries and aquaculture, livestock, and other assets. The adoption of the 17 Sustainable Development Goals, and particularly Goal 5 (Gender Equality) will be highlighted along with research streams on gender and agriculture during class exercises, visits and lectures. At the end of this class, students will be able to undertake a gender analysis and access helpful methods to inform their research and/or future applied work. An independent module about Food Systems and Food Environments will be part of the course, in order to provide students with some qualitative research skills and tools to conduct firsthand research on a variety of topics that include gender and resources allocation in relation to development challenges in various world regions.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 3164 Env Security in the Arctic 3 Credits
This course will cover domestic and international issues as part of a profound environment transition that is creating new and extensive opportunities for energy development, shipping, fishing and tourism as the Arctic is transformed from a perennially sea-ice covered ocean to a seasonally ice-free sea. This environmental state-change is introducing inherent risks of political, economic and cultural instabilities with global repercussions. In this emerging strategic environment, U.S. security concerns will be presented with an integrated approach for assessing and responding to the risks as well as the opportunities generated by an environmental state-change. In this course, diverse perspectives on environmental security in the Arctic will be covered from the perspective of high-level diplomats, parliamentarians and government officials; leaders of Arctic indigenous people's organizations; international legal advisors; directors of inter-governmental and non-governmental organizations; and managers of multi-national corporations. The coursework will explore the urgent need for environmental security and the collection of environmental intelligence through a holistic approach to understand opportunities and risks as well as to expand the infrastructure necessary to sustainably develop Arctic resources.

Learning Outcomes: • Develop effective and professional writing skills necessary to work in national security; • Develop the analytic skills to assess and understand the emerging challenges and opportunities in the Arctic region; • Develop an ability to critically assess and write under time constraints; and • Develop the communication skills necessary to effectively brief on security related issues.

**Note: This course is designed primarily for future policymakers and government officials. Some scientific background is assumed , but students do not need to be familiar with Arctic environmental issues. The goal of this course is to provide students with enough familiarity with the major issues associated with Arctic security to effectively transition into a number of roles in the United States Government, including national security, diplomacy, resource management and crisis response.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)
Equivalent to STIA 4164

STIA 3173 Environmental Policy 3 Credits
The course will examine national and international environmental policies and the role that each of them plays within the public discourse over time and during different U.S. Administrations. The focus of the course will be on the science behind environmental regulations and how policy has changed within federal institutions (President, Congress, the Courts). The course will also cover the role of state and local governments, as well as how environmental governance involves private sector environmental policies and practices. Students will gain an appreciation for science, technology, and public policy dilemmas, including fracking, food production and water security; urban sustainability; and the viability of using market solutions to address policy challenges such as climate change. The course will include an in-depth analysis of global issues like the effectiveness of foreign aide to the developing world, increasing global energy demands, and China's quest for a green economy.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 3181 Water 3 Credits
Water is arguably our most vital resource. It is also one of the most difficult to manage and share. In this class we will examine how the physical nature of water interacts with social factors and politics to make water management so difficult and why people at the highest levels now discuss a Global Water Crisis and wars over water rather than oil. To gain our understanding, we will examine a range of real water issues around the world and a set of complex questions. Does water-saving technology actually save water? Can the use of contaminated water be "healthy"? Can water bring peace rather than war? By looking for answers to a range of questions like these, you will develop a solid foundation in water science and policy and the skills to think critically about water as one of the most pressing global issues in the 21st century. Learning takes place through lecture, discussion, readings, a movie, spreadsheets, your own rice farm and up to 3 field trips. At least 2 of the field trips will start before the regular class time. Keep this in mind when choosing to register for the class.
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)
Course registration restrictions:
Graduate level students may **not** enroll.

STIA 3196 Envir. Change/Engaging the Pub 3 Credits
Full Title - Environmental Change: Engaging the Public with Effective Science Writing. Course Description: Passionate about environmental and sustainability issues? Want to deepen your understanding of specific issues while improving your ability to effectively communicate about them? In this course, you will explore complex problems that arise from environmental change and examine questions such as: What are the implications of these changes? What causes them? And how can we address them? You will choose an environmental "beat" and conduct independent literature research on your topic to inform your writing. Each week, you will work on writing assignments meant for public audiences such as news summaries, blog posts, and op-Eds; in class, we will workshop student writing, which will help you hone your skills as an editor and writer. By the end of the course, you will have an interview-ready portfolio of writing samples that demonstrate your ability to communicate about complex environmental problems, as well as evidence of deepened knowledge of your chosen environmental "beat." This course is a Calderwood Seminar in Public Writing, seminars which are offered at select colleges around the country. Attendance in the first class meeting is required to participate in this course.
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 3200 Writing Science Politics 3 Credits
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 3221 Global Health Hist Pol 3 Credits
Global health is a term thats reflects a complex series of problems, institutions, and aspirations that have arrived fairly recently to the global scene. Global health has been described as “one of the great moral movements of our time.” The complexities within the global health framework involve the work of political institutions, charismatic leaders, scientists, community mobilizers, technicians, and health workers. This upper-level course will introduce broad topics in global health at the intersection of science and technology, and in doing so will dive deep into an analysis of the various factors that influence global health outcomes. The first part of the course introduces theories of disease emergence, convergence, and affliction from multiple disciplines, including epidemiology, biomedicine, anthropology, and public health science. The second part of the course will address the underlying theories and policies driving the organization of health systems, financing, foreign aid, biosecurity, and humanitarianism. In all that we do, we will discuss the science behind certain theories and interventions as well as the technologies that make global health impactful. We will take a social science approach to explore the political, social, economic, and cultural complexity of health problems, and critically examine the structure and methods of global public health institutions. This course also includes a case component. The cases, which you will work through in groups, are designed to deepen your understanding of key concepts, and give you an understanding of the complexity of global health interventions.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)
Mutual exclusion: STIA 3257, STIA 3257, STIA 357, STIA 357

STIA 3241 Global Health Politics Policy 3 Credits
Global health is a term reflects a complex series of problems, institutions, and aspirations that have arrived fairly recently to the global scene. Global health has been described as “one of the great moral movements of our time.” The complexities within the global health framework involve the work of political institutions, charismatic leaders, scientists, community mobilizers, technicians, and health workers. This upper level undergraduate course will introduce broad topics in global health at the intersection of science and technology, and in doing so will dive deep into an analysis of the various factors that influence global health outcomes. The first part of the course considers how theoretical frameworks for understanding disease emergence, convergence, and affliction among vulnerable populations. We will not only study what they are, but also what they do. The second part of the course will address how politics and policy affect health systems, financing, foreign aid, biosecurity, and humanitarianism. In all that we do, we will discuss the science behind certain theories and interventions as well as the technologies that make global health impactful. We will take a social science approach to explore the political, social, economic, and cultural complexity of health problems, and critically examine the structure and methods of global public health institutions. But we will also draw heavily on other disciplines like epidemiology and biology.
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 3257 Global Health Foundations 3 Credits
Registration Note: STIA 421 Global Health Foundations has been renumbered as STIA 357. If you have taken STIA 421 in past semesters, then you should not enroll in this course as it will not double count towards your major.

Course Description: Global health has been described as “one of the great moral movements of our time” and reflects a complex series of problems, institutions, and aspirations that have arrived fairly recently to the global scene. The complexities within the global health framework involve the work of political institutions, charismatic leaders, scientists, community mobilizers, technicians, and health workers. This foundational course will introduce broad topics in global health at the intersection of science and technology, and in doing so will dive deep into an analysis of the various factors that influence health, sickness, and disease around the world. The first part of the course introduces theories of disease emergence, convergence, and affliction from multiple disciplines, including epidemiology, biomedicine, anthropology, and public health science. The second part of the course will address the underlying theories and policies driving the organization of health systems, financing, foreign aid, biosecurity, and humanitarianism. We will take a social science approach to explore the political, social, economic, and cultural complexity of health problems, and critically examine the structure and methods of global public health institutions. In all that we do, we will discuss the science behind certain theories and interventions as well as the technologies that make global health impactful.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)
Mutual exclusion: STIA 421, STIA 421, STIA 3221, STIA 3221

STIA 3260 Resilience in a Turbt World 3 Credits
What does it mean to be resilient in the face of war, displacement, or economic collapse? Who decides what resilience looks like, and how do these definitions shape the lives of communities and the decisions of policymakers? In a world marked by turbulence and uncertainty, resilience is often used to celebrate survival and adaptation, but it is also a concept that is heavily debated, misapplied, and at times, imposed on populations affected by crisis. This course explores resilience as both human experience and analytical framework, drawing on insights from public health, psychology, sociology, anthropology, and international relations. Students will engage with contemporary case studies, theoretical debates, and community narratives from crisis and post-crisis contexts around the globe. Together, we will examine when resilience empowers, when it burdens, and how it can inform international policy and decision-making in ways that are ethical, effective, and attentive to human stories.

Moving beyond resilience as a policy buzzword, the course will investigate how individuals and communities adapt, resist, and rebuild amid conflict, displacement, economic hardship, and recovery. Students will critically evaluate the theories, interventions, and assumptions that define, or poorly define, the concept of resilience across disciplines and institutions. Class sessions will emphasize collaborative discussion, critical reflection, and the generation of new ideas. By the end of the course, students will be equipped to analyze resilience across multiple scales, from individual and community experiences to global governance and development practice, while remaining attuned to its complexity, limitations, and potential as a guiding principle in international affairs.
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 3262 Culture, Reproductive SciTech 3 Credits
Full Title: Culture and Reproductive Science and Technology. Course Description: This course examines social and cultural dimensions of reproductive science and technology in a global context. The focus in on medical anthropological ethnographic research of reproductive medicine. Topics to be examined include medical science and technology for the management of pregnancy, birth, menstruation and menopause; assisted reproductive technologies for infertility treatment; and prenatal diagnostic technologies. The course explores changes in reproductive healthcare in the context of globalization and under different state regimes and considers how an understanding of the influence of culture and social relations on reproductive health is crucial for the development of public and global health policy and practice.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)
Course registration restrictions:
Enrollment is limited to students with a major in Science, Tech, Int'l Affairs.

STIA 3266 Global Health through Film 3 Credits
STIA 366 is a seminar course dedicated to learning more about critical global health problems through film. The focus of the seminar will be on the growing field of global health and will highlight diverse experiences of health care and disease across the world. Drawing on perspectives from global studies, public health, and film studies, the course will introduce students to ways of analyzing and understanding global health issues through film. At the same time, students will learn skills for critically responding to films. We will explore how films: represent populations and diseases; create narratives about global health; expand our understanding of critical global issues; and compel different kinds of action in response to those issues.

Film is a powerful medium for storytelling and promoting our understanding of diverse cultures and experiences. Film is also a very effective communication tool—one that is gaining increased attention in public health and global health. As a result, we won't just be watching films for their entertainment value in this course. Rather, we'll be exploring and analyzing how films communicate, and what stories they tell about our contemporary world. Be prepared to watch films with a critical eye, asking many questions about their content, message, and style.

In addition to studying the films themselves, this course will use films to familiarize you with the emerging field of global health. Through films and readings, we will develop a historical understanding of contemporary global health issues, and learn more about pressing global health problems and their solutions. You should approach global health issues with an open mind, and be willing to learn about diverse cultures and experiences.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 3294 Global Health Security Dipl 3 Credits
Global Health Security and Diplomacy will explore the interconnection between international affairs and the science and technology of critical global health issues such as pandemic preparedness and response (eg, Zilka, Ebola, influenza); infectious diseases such as HIV, malaria, and TB; the rising spread of noncommunicable diseases such as tobacco and diabetes; regulation of medicines, health products and food; and the securitization of health. This seminar will examine the role of diplomacy and policymaking processes in addressing these issues including the development of national foreign policies for global health; the establishment of treaties and international agreements; negotiations with public, private and philanthropic players; and governance of international organizations and public-private partnerships. In this course, the student will seek to understand the role that diplomatic and political processes play in shaping global health programs, policies and operations through readings, discussion and lecture and present a paper on a specific topic chosen in conjunction with the professor of her/his choosing.
Level: Graduate, Undergraduate
Course attribute: FS54 name
Grading: Main Campus (UGrad, Grad)
Course registration restrictions:
Enrollment is limited to Undergraduate level students.

STIA 3331 Disruptive Technologies 3 Credits
Without Proactive strategies to manage intellectual property (IP) and regulatory aspects of commercializing new technologies and discoveries, new ventures often fail or do not capture appropriate economic value. Based on the premise that innovative approaches to regulatory and IP issues can be as critical to success as the quality of the new technologies, this seminar will provide a grounding of the key IP and regulatory challenges facing new technology and healthcare ventures and examine case studies of successful proactive approaches.
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 3334 Emerging Tech Policy 3 Credits
Technology is reshaping the fabric and function of global society, politics, economics, and international relations. Since the widespread adoption of generative artificial intelligence—beginning with large language models such as ChatGPT—science and technology have moved to the center of geopolitical competition, economic statecraft, and national security strategy. Governments now increasingly view technological leadership, control over critical supply chains, and access to data, compute, and talent as core elements of power.

In the years since the COVID-19 pandemic, the relationship between science, technology, and policy has fundamentally shifted. The global science and innovation system has become more fragmented, with heightened tensions over technological dependence, export controls, industrial policy, and digital sovereignty. Strategic competition—particularly between the United States, China, and other major powers—has accelerated efforts to “de-risk” or “decouple” supply chains in semiconductors, advanced computing, biotechnology, energy technologies, and critical minerals. At the same time, emerging technologies are increasingly intertwined with global challenges such as climate change, public health, food security, misinformation, and armed conflict.

Against this backdrop, the course examines how rapid advances in science and technology are reshaping international policy debates and global governance. It explores key emerging technologies—including artificial intelligence and machine learning, advanced computing and semiconductors, synthetic biology and gene editing, additive manufacturing, energy and climate technologies, food and agricultural innovation, space technologies, and blockchain—and analyzes their implications for economic development, trade, security, environmental sustainability, and global inequality.

Rather than focusing on technical detail alone, the course emphasizes governance, power, and policy choices: who sets the rules for emerging technologies, whose values are embedded in them, and how states, international institutions, companies, and civil society respond to technological disruption. Particular attention is paid to the growing role of national and subnational governments in shaping innovation through industrial policy, regulation, and public–private partnerships, as well as to the expanding influence of technology companies as geopolitical actors.

The course also explores the promise and limits of technology as a tool for public purpose, including the use of AI and digital technologies for social good, development, humanitarian response, and climate resilience—while critically examining risks related to surveillance, inequality, bias, and democratic governance.

Through class discussions, case studies, and applied projects, students will develop a framework for understanding how science and technology shape contemporary foreign policy and global affairs. Guest speakers from government, international organizations, and global technology companies will provide practical perspectives on how technology policy is made and contested in today’s rapidly evolving geopolitical landscape. In addition, students will be exposed to some of the key drivers of technology change in the Silicon Valley, and around the world.
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)
Course registration restrictions:
Graduate level students may **not** enroll.

STIA 3375 Science Innov Entrepreneurs 3 Credits
The United States is widely recognized as one of the most innovative and entrepreneurial countries in the world. The question that this course focuses on is "Why is that?" What is the policy framework that shapes the US innovation ecosystem, that is, a set of policies and cultural beliefs that provide a dynamic environment that encourages risk-taking and invention. Often in the US we focus on the role of the lone entrepreneur, forgetting that they are rarely alone and often draw from government policies, programs, and research to develop innovative products and processes.

This course focuses on the intersection of science, technology and innovation policy – examining how our national innovation ecosystem works, with a particular focus on health, energy, high-tech products and manufacturing. A major emphasis of the course is the role of public-private-partnerships and the role federal and state government's role in the innovation ecosystem. The underpinnings of the U.S. innovation system are examined as are the approaches of other nations to science and technology policy. There is a special focus on the steps needed to transition ideas from universities and laboratories to the market and the respective roles of public incentives that work in combination with angel investors and venture capital. The overall goal is to build a better understanding of the realities of the U.S. innovation system as well as the challenges it faces and the opportunities it provides. The class will conclude with student assessments of policies that could help fill gaps in global innovation and the manufacture of products to meet global needs in health, energy and security--all areas where innovation plays a key role.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 3376 Financial Tech: Global South 3 Credits
Full Title: Financial Technologies in the Global South. Course Description: An estimated 2.5 billion people exist outside of formal financial systems. Government officials, development experts, and finance professionals argue that this is a major obstacle for issues of economic growth and national development, as well as social justice, education, and gender equality. Programs to incorporate more people into networks of global finance are often grouped under the term "financial inclusion" which describes the different theories, policies, and technologies that aim to extend financial products and services to people around the world. This course examines how "financial inclusion" emerged as a major development goal and provides students with a deeper knowledge of the ways in which financial technologies are restructuring economic lives throughout the Global South. Over the course of the semester we will analyze the relationship between financial technologies, institutions, and policy agendas and how resulting projects have been designed and implemented throughout Latin America, North Africa and the Middle East, Sub-Saharan Africa, and South Asia. Specific technologies and projects we will cover include Bolsa Familia and Progresa social welfare programs, microcredit and microfinance, digital remittances, M-Pesa mobile money, climate change and agriculture crop insurance, CreditVidya credit scoring, cryptocurrency and blockchain. By the end of the course, students will better understand the relationship between governments, international development agencies, and private industry in expanding access to global finance systems, and be able to critically analyze and compare the promises and outcomes of financial inclusion initiatives.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 3387 Emerging Tech Sci Fi 3 Credits
This course explores emerging technology and the societal implications through the lens of science fiction (Sci-Fi). Works of science fiction, such as short stories, film, and videos will frame the examination of human-like robots with Generative AI qualities, superpower suits, and digitally created worlds, such as the metaverse, and set the stage to understand and visualize the capabilities, limitations, and intended applications of each. Students will develop a familiarity with select emerging technologies and explore a more advanced combination of technologies, such as artificial intelligence (Generative AI/Large Language Models and Computer Vision), human augmentation, and virtual/augmented/mixed reality. In this rapidly developing space, the societal, ethical, security, and economic impacts of these technologies are integral to their application, so will be explored across the course. Through individual and group work, students will assess emerging technologies from a multidimensional perspective that includes security considerations, responsible use, and appraising both their impact on and utility to society.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 3389 Designing Development: Africa 3 Credits
How have technological innovations transformed the design and implementation of development projects in African states? Over the past two decades, new technologies have been touted as a means of "leapfrogging" older, legacy technologies in the quest to promote rapid and inclusive development. These innovations have significantly influenced development agendas both domestically and internationally. While some have viewed these technologies as panaceas, others see them as temporary "quick fixes" with little potential to generate transformative change. Focusing on specific case studies, this class will interrogate the process of technological adoption for development in sectors as diverse as education, health care, finance, water and sanitation, agriculture, and environmental sustainability.

This class will provide students with a broad understanding of the role of technological innovation in recent development projects across the African continent. By the end of the semester, students will understand: (i) the opportunities and challenges of technological innovation in Africa, (ii) how technology is reshaping the ways "development" is imagined, designed and implemented by states and private industries, (iii) the dynamics of donor-client country relationships and challenges that emerge around accountability and development effectiveness, and (iv) the promises of innovations in sectors that are not encumbered by legacy technologies and practices.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 3399 Data Democracies 3 Credits
The politics of data and algorithms Course Description: Data and algorithms are everywhere and affect everyday life. They include facial recognition, social media, policing, welfare programs and transportation. The course will prepare students to identify and understand the social and political impacts of the use of data and algorithms in society. We will investigate concepts of bias, discrimination, fairness, auditing, racism, hacking and whistleblowing. We will develop an ability to critically engage with the politics of data and algorithms particularly in ways that may not be obvious. Students will develop a critical understanding of data and algorithms in concrete, real world settings. Students will become aware of the politics of production, use and deployment of data. Finally, the course will examine strategies for getting producers of data and algorithms accountable. Learning goals: 1. Understand the individual and institutional choices that are made in the production, collection and analysis of data and algorithms. 2. Develop a critical understanding of the politics of data and algorithms. 3. Develop some strategies to make producers of data and algorithms accountable.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 3400 Mission to Mars 1 Credit
Landing humans on Mars and exploring the Red Planet (or other celestial bodies), whether by a nation or a commercial company, involves navigating a complex web of political, legal, and regulatory frameworks. This course works backwards from successful initial Mars landings by commercial companies, surveying the key considerations and outcomes that must have occurred to enable such missions, beyond the core technologies required for regular human missions to Mars. These considerations include: (1) the philosophical, national, and business imperatives for these missions; (2) contractual agreements, liability issues, and export control considerations; (3) domestic and international regulatory domains (launch and reentry authorizations; “on-orbit” authorities; frequency allocations; environmental and safety standards); and (4) international laws and policies, including the Outer Space Treaty, Liability Convention, and Planetary Protection and resource extraction policies.
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 3486 Defense Technology 3 Credits
This course will explore how emerging technologies such as artificial intelligence and machine learning, autonomous systems, blockchain, augmented and virtual reality, 3D printing, 5G, and the Internet of Things (IoT) could be leveraged in support of ensuring national security. The first half of the course will provide a high-level overview of national security priorities, introduce these emerging technologies, and then examine existing examples of national security applications of these technologies. The second half of the course will focus on a series of projects that will explore the opportunities and challenges of new ways of leveraging these emerging technologies across a wide range of national security priorities."

The course will be structured with the first half as a survey course starting with a national security priority intro and then introducing new technologies each week with a lecture and some interactive elements. The second half of the class will be spent doing two consecutive small group projects where each group picks a technology and national security priority and we work through the challenges and opportunities using a human-centered design process for how those technologies could be leveraged.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 3491 Cybersecurity: Policy/Tech/Ops 3 Credits
Cybersecurity has become an issue of national and international security significance. The growth of a nearly ubiquitous global information infrastructure and the availability of affordable, sophisticated information technologies has created an environment with potentially profound effects on the economic, financial, political, diplomatic, military, and technological affairs that shape our world, as well as on social networks that shape and the electoral systems that record our political preferences. Information has become, perhaps, our most valuable resource. Stealing it, altering it, and protecting it have become a high-stakes endeavor. Information technology governs many of our infrastructures, even as its use may become the arbiter of military power. The global information infrastructure also represents a common information environment for citizens, diplomats, businesses, academia, social movements, and intelligence. This course will explore the varying concepts of the use and evolution of cybersecurity, examining the policy implications of its use, its relationship to state sovereignty, its implications for the global private sector, its effects on a nation's critical infrastructure, and its potential effects on the balance of power among nation-states.
Level: Graduate, Undergraduate
Course attribute: FS54 name
Grading: Main Campus (UGrad, Grad)

STIA 3493 Intro to Nuclear Security 3 Credits
This course examines the historical, political, and technical contexts in which nuclear security is conceived. We'll cover various framings of nuclear dangers and strategies to mitigate them; the roles of nuclear weapons in international politics; nuclear nation building and atomic cultures; nuclear weapons effects; the intersections of technological developments with discourses of nuclear deterrence; and international regimes of arms control. Basic instruction (non-calculus based) on nuclear technologies will be woven into qualitative discussion of historical developments and political challenges. This course serves as a survey of nuclear security issues for future analysts, policy makers and concerned citizens who wish to approach technology from a variety of disciplinary and cultural vantage points. These will include (but not be limited to) realist and constructivist security studies; history and sociology of science and technology; anthropology and media studies; feminist critical theory; and policy-analytic theory. Students will complete weekly readings and short reading responses, and write a term paper on a research topic of their choosing. No prerequisites; course appropriate for all SFS majors.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 3501 Science Finance in Glbl Innov 3 Credits
This course presents and compares country-level innovation and innovation finance models, and provides students with theory, frameworks, tools and metrics to look into and across state bounds for insights into the likelihood of realization and the potential impact of innovation. After grounding the students in nation state innovation and innovation finance models, this course explores case studies of emerging tech that not long ago resided in the realm of science fiction – gene editing, quantum computing, 3D metal printing, and deep space exploration. The roles of government policy and subsidies, equity and credit markets, venture capital, knowledge flows and other factors will all be considered. In parallel with reading and discussing the case studies, students will gain hands-on experience with commercial and public research platforms for measuring progress in policy, research, invention and investment. About midway through the semester, students will self-assemble into small teams to conduct their own characterization, assessment and projection for an emerging technology of their choice, culminating in team presentations.
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)
Course registration restrictions:
Graduate level students may **not** enroll.

STIA 3530 Patent Law: Sci in Courtroom 3 Credits
Science in the Crosshairs: patent-law tackles the conflicts between business, governments, and the common good. Scientific research brings major life-changing breakthroughs such as the current COVID vaccines. Marketing such scientific success often results in conflicts of interest between business plans of companies, political strategies of governments, and the wishes of the general public. This course shows patent law as a professional tool to manage these conflicts. This course is designed for students who are ready to enter the international tensions between diverging interests which each support their claims by scientific discoveries. Because only a thorough understanding of the scientific principles can offer legal protection, students will acquire an in-depth understanding of diverse scientific fields, such as vaccine design, genetics, drug development, or global drug availability. Because the conflicting international interests are resolved by legal disputes, students will learn how patent law offers a global framework to negotiate, resolve, and litigate the application of scientific knowledge. Hence, this course offers students concrete real-life case studies in patent law which introduce both, key scientific concepts especially in the life-sciences and drug development, as well as essential legal concepts such as patent eligibility, infringement, or prosecution, and the structure of the patent system in the United States and its global affiliates. This course does not have any scientific or legal prerequisites.
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 3541 Geographic Info Systems 3 Credits
This course focuses on the use of geographic information systems (GIS) in studying the environment and health. From a technical point of view, this is an introductory course. No previous experience in GIS is expected. However, students are expected to bring to class knowledge of environmental sciences, international affairs, and health studies. Particularly students should have a good appreciation of the interface between science, technology, and international affairs.

GIS emerged in the 1960s as an innovative technology to capture, manage, manipulate, analyze, and present geographic and spatial information. With the advancement of personal computer, internet, and now wireless technologies, GIS has become a cross-cutting and pervasive technology used in the governmental, private, as well as non-governmental, non-profit sectors. Its applications range from location-based analysis for business, environmental assessment/monitoring, emergency preparation/response, demographic study, epidemiology, to homeland security.

In this course, students will build a strong foundation in understanding geographic data, GIS, and geographic analyses. Using geography as the basic framework, with real-life geographic data from various sources, students will gain hands-on experience in using GIS as a tool to understand complex environmental and health issues with an international emphasis.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)
Mutual exclusion: ENST 441

STIA 3590 Environmental Security 3 Credits
The inextricable links between humans, the physical environment and climate are complex and dynamic. Although humans have indeed been adapting to change for several millennia, empirical research has found that the high rate of such change in the Holocene epoch is unprecedented. Folke et al. (2005) question whether humanity has really adapted its capacity for learning and foresight to deal with this inordinately high rate of change. Climate changed coupled with increasingly interconnected economic and trade networks, new and disruptive technologies, changing demographics and changing governance structures present complex security challenges. Climate change thus affects national security by changing and oftentimes degrading the geostrategic environment populations. This course aims to develop knowledge of the characteristics and causes of issues that threaten human security across geographical, political, commercial and societal boundaries. By examining these traditional and non-traditional security challenges, this course seeks to produce competent and critical thinkers who are able to apply interdisciplinary analysis to understand the complexity of the human-environment relationship. Learning Outcomes 1. Critically understand the relationship between human security and environmental security; 2. Identify characteristics and major processes of transnational security challenges; 3. Develop rigorous science based policy writing skills; 4. Apply interdisciplinary analysis to understand and assess complex adaptive systems.
5. Produce analytic writing appropriate for environmental security disciplines.
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 3600 Cartography for Intl Affairs 3 Credits
This is an introductory course in practical cartography, intended to equip students with the skills to make their own geographic arguments. Just as clear and compelling writing is essential in scholarship and foreign policy, creating a map can provide a powerful visual message in professional and academic works. Whether making a standalone thematic map, illustrating a written work, or creating an engaging business proposal, the ability to make original maps is a skill that empowers a person to deliver a more powerful and tailored message.
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 3701 Desert Futures Design Studio 3 Credits
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)
Equivalent to INAF 2172

STIA 4001 Critical Minerals Energy Sec 3 Credits
This course offers an in-depth analysis of the pivotal role critical minerals play in shaping energy security, economic statecraft, and national security in a rapidly evolving global landscape. It examines the full spectrum of issues surrounding critical minerals, including their ownership, extraction, processing, and market dynamics, as well as the environmental impacts of their extraction and processing. The course addresses the increasing global energy demand tied to critical minerals, the geopolitics of resource distribution, and the strategic responses to dependency and vulnerabilities within supply chains. In addition, the course addresses the use of critical minerals in enabling advanced technologies, including their role in powering innovations such as renewable energy systems, electric vehicles, and advanced computing. Students will assess how these minerals underpin global technological progress and competitiveness, as well as their strategic importance in shaping economic and industrial futures. Further topics explored include the emerging frontier of space mining, with a focus on lunar resources, alongside the human rights, ethical considerations, and sustainability challenges associated with mining practices. Through a rigorous combination of case studies, scenario-based analyses, and policy evaluations, students will engage with how critical minerals underpin energy security, economic resilience, and international statecraft. By connecting these elements, the course equips students with the theoretical and practical tools needed to evaluate resource governance, craft strategic responses to resource dependencies, and develop innovative approaches to mineral diplomacy and global governance in an era of complex interdependence. Restrictions: Will add on once I have created the sections in CLSS
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4005 Foundations of Space Studies 3 Credits
From launching satellites that power global communications to exploring distant planets, space has become one of the most dynamic arenas of human activity. Today, it is shaped by strategic rivalries such as the U.S.–China competition, the rise of private launch companies, new missions to the Moon and Mars, and pressing debates over orbital debris and planetary defense. Navigating these developments requires both technical understanding and an appreciation of international dynamics. Foundations of Space Studies introduces students to the scientific, economic, political, security, and ethical dimensions of outer space, highlighting the ways in which decisions on Earth set the course for humanity's collective future in space. Open to both undergraduate and graduate students, this team-taught gateway course anchors the Graduate Space Studies Certificate and STIA Space Concentration. Depending on the semester, students may participate in exercises such as planning a commercial satellite launch strategy, calculating the motions of objects in space, negotiating a multilateral space treaty, addressing the risks of space conflict, and managing a mission to Mars.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4102 Clean Energy Innovation 3 Credits
Mitigating climate change will require adopting breakthrough clean energy technologies in the electricity sector at scale. This course will introduce students to three interconnected aspects of clean energy innovation to paint a broad picture of (i) the state of the art in clean energy technology, (ii) the economic application of technology in markets, and (iii) the use of policy to support emerging technologies on their path to market. For the first half of the course, students will learn the science behind clean energy technologies in the power sector including: solar, wind, nuclear, hydro, storage, and the electricity grid. This unit will require some familiarity with basic physics but otherwise will endeavor to build technical fluency from the ground up. For the second half of the course, students will study the economics and policy aspects of clean energy innovation. We will examine the market structure of the electricity sector, the benefits and costs of clean energy, mechanisms to pay for clean energy, and the economic theory of innovation and technological change. In addition, we will investigate policy options to bridge the gap between the laboratory and the marketplace. We will study both which policies can accelerate innovation as well as which can stunt it, and we will conclude with recommendations for U.S. policy on the domestic and international stages.

Learning Goals

• Have a basic technical understanding of the science behind clean energy technologies, achieve literacy in assessing their performance metrics, and gain exposure to research frontiers • Understand the economic factors that drive clean energy adoption and recognize energy market limitations that impede technology uptake • Appreciate the double-edged sword of policy in advancing or obstructing innovation and understand the policy options available to support domestic and international innovation
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4117 Sea Lvl ChangeCstl Adaptation 3 Credits
Description: Why is the sea level falling in the Arctic but rising globally? Why is the sea level on the US East Coast rising twice as fast as the global mean? And what makes some communities more vulnerable to flooding than others? This course will study the physical mechanisms contributing to sea level change over space and time and introduce policy options for coastal adaptation that reduce risks for coastal communities and ecosystems. We will study paleo records, instrumental records, climate and ice sheet models, and solid Earth models in order to understand how various processes are leading to non-uniform sea level change that we observe today as well as inform future change. This course will cover a variety of coastal adaptation options and the tradeoffs of each option. Students will use tools from the course to develop a sea level model to reconstruct
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4119 Energy Environ in Eurasia 3 Credits
This course will focus on the role played by energy and environment in the evolution of the successor states to the Soviet Union. The energy portion of the course will examine the challenges faced by energy-poor states in their transitions, as well as the very different challenges faced by oil and gas-rich successor states. The environment portion of the course will examine the Soviet legacy of persistent pollutants and “national sacrifice zones” and how the states have attempted to address them, as well as the transboundary pollution problems. The course will also review the role played by the successor states and the international community in attempting to improve the environment in this region, the emerging challenges posed to the region by climate change, and the resource management challenges (particularly in water) faced by these states.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4131 Phys Chem of Earth's Climate 3 Credits
In this course, we mine Earth’s geological record for the evidence that allows us to understand the links among the evolution of Earth’s oceans, lithosphere, cryosphere, and atmosphere. We will employ and extend concepts in physics, chemistry, biology, and system dynamics to understand the composition of the atmosphere and related climate at several stages in geologic time, including the present. Students will complete the course with a firm grasp of the forcings, feedback, and impacts of climate change. The principles in science and system dynamics that we will develop in the course have applications across a broad suite of issues in science and policy.

Learning Goals:

• Develop an understanding of the fundamental Earth processes that occur within and between the crust of the Earth, the ocean, the atmosphere, and ice. • Develop an understanding of how biological, chemical, and physical phenomena recorded in Earth’s geologic record have led to stable climates or slow evolution of climates through geologic time. • Understand how anthropogenic activities have altered the global landscape, the composition of the atmosphere, the composition of the oceans, and the global distribution of ice, and how current changes are both causes and impacts of the warming of the earth. • Understand and explain how and why the warming is not uniform, and how the overall warming creates greater extremes of temperature and precipitation in the troposphere, on the surface, and in the ocean. • Be able to develop, express, and explain these processes and relationships in a system dynamics context. • Recommend and defend appropriate actions to reduce anthropogenic warming.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4155 Glbl Energy TransitionsModels 3 Credits
This course will provide an introduction to Energy Systems Modeling for its use in aiding decision makers in implementing energy transitions, and will analyze and compare the structure of and planning approaches used for managing power systems around the world.

Addressing climate change will require unprecedented decarbonization of the global energy system this decade in order to reach “net zero” greenhouse gas emissions by roughly mid-century and keep the limit of 1.5 degrees Celsius warming within reach. However, decision makers across government, utilities, businesses, and consumers are often confronted with challenging questions on how to implement the energy transition. Energy Systems Modeling can be used to inform decision making by providing outputs on questions relating to alternative low-emissions technologies. For example, different models can address questions ranging from what mix of generation sources can meet load demand in the most cost-effective and low emissions manner; to how a policy will affect the power generation mix in different regions; to grid stability questions or the impact of demand-side measures on generation needs. These models range from “simple” analytical tools to more complex capacity expansion and grid production models, to integrated Assessment Models that capture entire energy and climate systems at subnational, national, regional, and global levels.

As we examine different models we will draw on examples from current policy topics in major economies and low-emission developing countries to consider how model scenarios have (or have not) impacted policy making and diplomacy, and explore the role of data, policy and market uncertainty, and stakeholder engagement.

Finally, the latter portion of this course will provide a comparative analysis of select power systems around the world, and explore the organization, structure and regulations of power system utilities in different countries, consider how utilities have used Integrated Resources Plans and other modeling and planning tools in their decision making, and consider the role of distributed generation and electricity access in developing countries
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4156 Life on High Seas: EcolPlcy 3 Credits
Roughly 43% of Earth's surface falls beyond national jurisdiction, and is known as the 'high seas.' The high seas makeup over 90% of Earth's habitable space and still remain largely unexplored. This region is a global commons, like the atmosphere, and the health of the high seas has an impact on life across the planet. Increasingly, emerging technologies and industries are moving into the high seas, and the choices that current and future leaders make about this commons will impact our planet for future generations. This course will introduce you to the environment of the high seas and the international policies relating to its sustainable use. We will begin with an introduction to oceanography and marine biology. We will explore the diverse ecosystems of the high seas, including the abyssal plane, deep-sea hydrothermal vents, whale falls, the pelagic zone, and life at the air-sea interface. After building a foundational understanding of high seas ecosystems, we will examine past and present international policies enacted to manage shared use of the high seas, including the United Nations Convention on the Law of the Sea. Finally, we will study the current state of international policy surrounding the high seas, with a focus on the United Nations negotiations to protect Biodiversity in areas Beyond National Jurisdiction (BBNJ).
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4159 Environmental Security 3 Credits
The inextricable links between humans, the physical environment and climate are complex and dynamic. Although humans have indeed been adapting to change for several millennia, empirical research has found that the high rate of such change in the Holocene epoch is unprecedented. Folke et al. (2005) question whether humanity has really adapted its capacity for learning and foresight to deal with this inordinately high rate of change. Climate changed coupled with increasingly interconnected economic and trade networks, new and disruptive technologies, changing demographics and changing governance structures present complex security challenges. Climate change thus affects national security by changing and oftentimes degrading the geostrategic environment populations. This course aims to develop knowledge of the characteristics and causes of issues that threaten human security across geographical, political, commercial and societal boundaries. By examining these traditional and non-traditional security challenges, this course seeks to produce competent and critical thinkers who are able to apply interdisciplinary analysis to understand the complexity of the human-environment relationship. Learning Outcomes 1. Critically understand the relationship between human security and environmental security; 2. Identify characteristics and major processes of transnational security challenges; 3. Develop rigorous science based policy writing skills; 4. Apply interdisciplinary analysis to understand and assess complex adaptive systems.
5. Produce analytic writing appropriate for environmental security disciplines.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4160 Climate and Planetary Health 3 Credits
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4161 The Electric Grid 3 Credits
This class will cover the evolution of the electricity grid, how it has grown and changed over a more than a century, policy and regulatory dynamics that determine the speed and direction of that evolution, and pathways to address climate change. By the end of this course, students will have a basic understanding of the technologies and infrastructure that constitute "The Grid," the regulatory structure that governs electric utilities' construction, use, and operation of the gird, and how that reacts to and drives change on the grid, basic structure and economics of electricity markets, how electricity system factors affect GHG emissions and climate change, new trends in technology (e.g., renewable energy and electricity storage), and electricity access and energy justice issues. Comparative aspects of the grid across different countries will also be covered.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4162 Tech, $, Pol for the Planet 3 Credits
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4164 Env Security in the Arctic 3 Credits
This course will cover domestic and international issues as part of a profound environment transition that is creating new and extensive opportunities for energy development, shipping, fishing and tourism as the Arctic is transformed from a perennially sea-ice covered ocean to a seasonally ice-free sea. This environmental state-change is introducing inherent risks of political, economic and cultural instabilities with global repercussions. In this emerging strategic environment, U.S. security concerns will be presented with an integrated approach for assessing and responding to the risks as well as the opportunities generated by an environmental state-change. In this course, diverse perspectives on environmental security in the Arctic will be covered from the perspective of high-level diplomats, parliamentarians and government officials; leaders of Arctic indigenous people's organizations; international legal advisors; directors of inter-governmental and non-governmental organizations; and managers of multi-national corporations. The coursework will explore the urgent need for environmental security and the collection of environmental intelligence through a holistic approach to understand opportunities and risks as well as to expand the infrastructure necessary to sustainably develop Arctic resources. Learning Outcomes: • Develop effective and professional writing skills necessary to work in national security; • Develop the analytic skills to assess and understand the emerging challenges and opportunities in the Arctic region; • Develop an ability to critically assess and write under time constraints; and • Develop the communication skills necessary to effectively brief on security related issues. **Note: This course is designed primarily for future policymakers and government officials. Some scientific background is assumed , but students do not need to be familiar with Arctic environmental issues. The goal of this course is to provide students with enough familiarity with the major issues associated with Arctic security to effectively transition into a number of roles in the United States Government, including national security, diplomacy, resource management and crisis response.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4172 Water Cooperation and Conflict 3 Credits
Water resources are in a state of crisis in many parts of the world. Despite such scarcity, water has been a catalyst for cooperation and environmental peace building among nations and other contending parties for millennia. In this course we will use regional case studies including farmer-herder confrontations in Africa, the weaponization of water, and a survey of existing water treaties and agreements, to better understand the dynamics of global hydro politics. Students will then be able to identify the contexts in which water is used and abused as an instrument of conflict and cooperation and to evaluate policy measures to achieve the most favorable outcomes.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4174 Int'l Energy Governance 3 Credits
This course will examine the bilateral, plurilateral and multilateral partnerships that provide a set of loosely coupled institutions around which countries conduct energy diplomacy, and how these partnerships have been shaped by national decision making and geopolitics. These partnerships cover a wide range of ad-hoc bilateral joint statements and announcements, to more formalized multi-country arrangements, treaties, and institutions (e.g., G7, G20, IEA, OPEC, OECD, IRENA, Arctic Council, Major Economies Forum, World Bank, GEF, GCF). In examining these institutions and modes of cooperation, we will consider the drivers for energy policy making across climate change, security, development and energy access, foreign policy, trade, and domestic politics for a range of major emitters and developing countries. We will also consider interlinkages between partnerships and institutions, and how they intersect with cooperation on climate change, development, energy access, and energy security. For the energy and climate nexus in particular, we will assess the evolving relationship between national plans and actions and international commitments made under the Paris Agreement on Climate Change.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4175 Energy Policy and Governance 3 Credits
Energy Policy and Governance: Domestic and Global Perspectives focuses on how energy systems are shaped by political institutions, economic forces, societal values, and international power relations. The course explores how governments and other actors govern energy production, distribution, and consumption in pursuit of broader goals such as security, affordability, economic development, equity, and climate change.

Students are introduced to the technical foundations of energy systems and then analyze domestic energy policymaking, regulatory institutions, market design, and political economy. The course expands to global and comparative perspectives, examining international energy governance, geopolitics, and variation across national and regional energy systems. Cross-cutting themes—including climate change, energy justice, development, finance, critical minerals, and misinformation—highlight the complexity of governing energy transitions in diverse political and economic contexts.

Through case studies, policy analysis, and an interactive simulation of international negotiations, students develop the analytical tools and practical skills needed to evaluate energy policies, understand governance tradeoffs, and communicate policy-relevant insights. The course is designed for advanced undergraduates and graduate students from diverse disciplinary backgrounds and emphasizes real-world policy challenges at the intersection of energy, society, and global change. The goal is to cultivate students who can think holistically and design policy solutions that account for real-world constraints — political, institutional, financial, and social.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4176 How Biotech Drives Bioeconomy 3 Credits
The rapid convergence of biotechnology, engineering biology, artificial intelligence, and advanced biomanufacturing is transforming the global economy. Building upon the scientific and policy foundations introduced in Innovating Biotechnologies (STIA 4220, not a prerequisite), this course explores how emerging biotechnologies drive the transition toward a sustainable global bioeconomy. Students will examine how innovations such as synthetic biology, genome editing, precision fermentation, microbiome engineering, cellular agriculture, and bio-based manufacturing are reshaping key sectors—including healthcare, agriculture, energy, materials, and environmental management. The course emphasizes how scientific discoveries move from the laboratory into commercial products, scalable industries, and national innovation strategies. Drawing on international case studies, students will analyze the scientific, economic, environmental, regulatory, and geopolitical dimensions of the bioeconomy. Particular attention is paid to the role of biotechnology in advancing sustainability, strengthening industrial competitiveness, and driving inclusive economic growth across both advanced and emerging economies. Integrating biotechnology, innovation policy, economics, and international affairs, this course equips students to evaluate how nations can harness emerging technologies to address complex global challenges.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4180 Sci Policy Dev in Latin Amer 3 Credits
STIA environment and energy; science tech and security; business, growth, and dev; biotech and global health Course Inactivation: Course Description: Science, Technology and Innovation policies are important to help address national and global challenges in a greatly competitive and fast-moving world. In the last few decades, many Latin American countries have designed and implemented public policies to encourage the adoption and diffusion of scientific advances and stimulate technological change.

This course aims at exploring the heterogeneous and diverse experiences of Latin American countries in designing and implementing Science, Technology and Innovation policies to identify opportunities and initiatives for domestic economic prosperity and global security, of relevance for US institutions and international organizations. The course is divided in four sections:

1. Background on the current socio-economic Latin American context and the state of the region's STI. 2. A historical regional perspective of the evolution and current trends of the STI policy making process. 3. Review of policy instruments and their impact in selected countries (science advisory ecosystem and institutional capabilities, scientific societies and national academies, financial incentives, funding and resources, STI priorities, output and outcomes from research investment and implemented policies). Government policy experiences will be contrasted, identifying good practices and developing recommendations for coordinating regional initiatives. 4. Policy opportunities for foreign policy interventions and international development cooperation.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)
Course registration restrictions:
Enrollment is limited to Graduate level students.

STIA 4181 Empire, Capital, and Code 3 Credits
This course examines how power and inequality are built into digital infrastructures — undersea cables, data centers, platforms, and algorithms — by combining science and technology studies with global history and social theory. Co-taught by Rajesh Veeraraghavan and Kate Chandler, the course is discussion-based and theory-driven, designed for students who want to think critically about technology from a global perspective; no technical background is required.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4200 The Biotechnology Revolution 3 Credits
In September 2022, Jake Sullivan—President Biden's national security adviser—stated that the U.S. government expects biotechnology to play an "outsized importance over the coming decade" in the context of geopolitical competition, because of the ability to "read, write, and edit genetic code, which has rendered biology programmable."

Driven by governments and businesses looking to meet emissions reductions targets, maintain resilient supply chains, ensure food security, and further reduce reliance on fossil fuels, experts anticipate that, by the end of the decade, biotechnology could be used extensively in manufacturing industries that account for more than a third of global output—a shade under $30 trillion in terms of value.

To compete during the computer revolution, countries developed new national security and economic strategies to address the geopolitics of information—all indications are that world leaders will need to similarly adapt to the biotechnology revolution. This 3.0 credit course introduces students to key trends and technologies, considers some of the major applications and geopolitical implications, and provides practical experience and insights for international affairs and the emerging bioeconomy.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4203 Decolonizing Global Health 1 Credit
The concept of "decolonialization" of academic curricula and research partnerships has gained momentum in recent years, stemming from frustrations at the implicit and explicit ways in which Western cultural, political, and educational hegemony pervade virtually all disciplines. In global health, false narratives of objectivity, universality, and apolitical interests cloud the realities of historical roots in European and North American colonial endeavors.

This one-credit course will provide an opportunity to learn about the concept of decolonization and how it is being applied to global public health issues, from leading academics and practitioners. It will be open to students in all schools at Georgetown. Students who are not enrolled in the course will be invited to attend individual lectures, which will also be open to registration from the general public.

The lineup of speakers will be set in late Summer 2020.

Class attendance is required. There may be up to 30-40 pages of readings assigned in advance of each class session or pre-recorded lecture material, depending on the topic, to ensure students are prepared to engage with the guest speaker.
Level: Graduate, Undergraduate
Course attribute:
Grading: Main Campus (UGrad, Grad)

STIA 4204 Conversations in Global Health 1 Credit
One-credit course that engages public, private and nonprofit leaders in exploring key issues in global health.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4210 STI Strat for Sustainable Dev 3 Credits
This course offers a comprehensive exploration of the intersection between STI policies and the realm of infrastructure projects. Enormous infrastructure projects, such as mines, dams, highways, and transoceanic canals, attract huge investments and drive major socio-environmental changes, encompassing deforestation and community displacement. While these impacts are well-documented, numerous proposed initiatives remain unrealized. These halted developments can have far-reaching consequences, even influencing legislation and policies. A thorough analysis of these unimplemented projects is crucial, demanding interdisciplinary study that integrates academic and decision-makers' perspectives. The course delves into the socio-environmental impacts of major stalled or canceled infrastructure projects using real-world cases, covering topics like technological and socio-environmental assessments, legal challenges, public opposition, and escalating costs. Illustrative examples include projects in Chile, Costa Rica, Canada, Panama, Colombia, the United States, and Nicaragua. The course scrutinizes the enduring effects of unrealized infrastructure projects, including their influence on research, societal norms, activism, land utilization, and equity. It provides an interdisciplinary perspective on development, governance, policy, knowledge, and environmental change. Emphasizing the necessity of studying even these unrealized projects, underscores their long-lasting impact on societies and landscapes. Students gain insights into the dynamics of development, power, and socio-environmental changes, not only in low and middle-income nations but also in Canada and the United States. This focus on their potential impact is vital for international lending and development organizations, as well as for global security and governance—an essential perspective for students interested in the field of STI policies. This course is essential for equipping students with the knowledge and skills needed to address evolving global challenges, such as climate change and global security, by mitigating the socio-environmental impacts of infrastructure projects and promoting sustainability. The course comprises four units: Introduction and case background, reasons for project disruptions, socio-environmental consequences of unrealized projects, and the global impact of unimplemented projects. Students will: Analyze STI policies' role in preventing project disruptions and propose effective solutions. Explore how innovative technologies can lead to sustainable infrastructure development. Investigate the impact of international STI policies on large-scale projects.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4217 Global Health Financing 3 Credits
The pandemic has highlighted the fact that health and wealth are inextricably linked in common discourse. Further, the way health systems and larger political systems are structured directly impact the ability to prepare for, manage, and respond to, large scale public health threats. The failure to act has implications not just on health, but on the daily lives and the economy of a system. Yet, preparation, management, and response – both at the national and international level – bears political, financial, and arguably, individual, costs. The pandemic has painfully highlighted this systemic under-resourcing of health systems, as well as the reality that common multilateral financial responses are incommensurate with the need and health burden at hand. This then leads to critical questions in international and national health system development: how are health systems financed? Who pays and how much? What are financial implications when the dimensions of equity, poverty, solidarity, and cost effectiveness are taken into account?
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)
Course registration restrictions:
Enrollment is limited to students with a major in Science, Tech, Int'l Affairs.

STIA 4220 Innovating Biotechnologies 3 Credits
STIA biotechnology and global health; STIA sceince, tech, and security; STIA business, growth and development Course Inactivation: Course Description: There is a growing recognition that biotechnology applications in health, the environment, agriculture and energy production can be a driver for sustainable growth and development worldwide. Because of their novelty and their rapidly evolving nature, their advantages and challenges are not sufficiently understood by consumers, industry, governments and policymakers.

This course examines the fundamental scientific research and concepts utilized in the creation and development of biotechnology products and processes. It will provide a comprehensive overview of the major industrial areas of biotechnology. Students will address the opportunities as well as the ethical, security and societal concerns relevant to controversial applications of biotechnology and the context of the international treaties and regimes in place.

While addressing the strategies used by industrialized countries through major clusters of innovation, the course will also emphasize on the efforts made by emerging economies looking to attract both businesses and human talent to drive their domestic industry. It will evaluate strategies used by developing nations to build their strength in biotechnology, focusing on identifying fundamental policy challenges through a multidisciplinary approach allowing for the perspectives of various stakeholders, of relevance for foreign policy and international development.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)
Course registration restrictions:
Graduate level students may **not** enroll.

STIA 4230 Data Sci. for a Changing Clmt 3 Credits
This course will introduce students to methods in data science applied to problems relating to climate change. Students should have a minimum of high school calculus and an introductory level statistics course. Topics will include: • Data analysis: time series analysis, regression, attribution, spatial kriguing, frequentist versus Bayesian methods • Model forecasting: Artificial neural networks, Kalman filters, model validation • Simulation modeling: sampling the parameter space, uncertainty quantification, Bayesian parameter estimation • Sampling methods for inference: Gibbs Sampler, Metropolis Hastings, Sampling Importance Ratios • Model evaluation: bias correction, weighting models.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)
Course registration restrictions:
Graduate level students may **not** enroll.

STIA 4233 Remote Sensing Digital Img 3 Credits
This course presents an overview of satellite remote sensing, including remote sensing data types, digital image analysis, sensor design, and the wide variety of applications in this active and expanding field. The course will focus on optical imagery but include material on lidar, radar, and fluorescence imaging. The course will devote time to the foundational electromagnetic principles underlying remote sensing, as well as the design and calibration of remote sensing instrument systems. Students will gain experience in selecting and synthesizing data from available satellite platforms in order to perform rigorous geospatial analysis of natural and anthropogenic surface processes. Digital image analysis techniques covered will include creating true and false color composites, calculating vegetation indices and similar data transformations, and performing classification and change detection analyses.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4234 Intro GIS Spat Data Analysis 3 Credits
Introduction to GIS and Spatial Data Analysis covers the fundamental concepts of Geographic Information Systems (GIS), a growing field with applications touching on climate and environmental science, urban studies, and human interactions with the natural and built environment. This course will introduce students to key concepts of cartography and GIS, as well as practical skills in spatial data analysis. Students will learn to use open source QGIS software to import and explore spatial datasets, display spatial trends and patterns, and carry out analyses relating multiple datasets to answer questions on spatial relationships. During this course, students will gain technical skills with QGIS software, greater confidence in navigating varied spatial analysis tools to perform valid and thoughtful spatial data analysis, and an improved ability to critically evaluate maps encountered in published media.

Topics covered in this course include: - Basic geographic and cartographic principles, as well as relevant computer science topics - The use of GIS software for displaying and analyzing data - Spatial data types, including vector and raster data, and sources for downloading common datasets - Identification of key variables whose spatial variation captures information of interest - Analysis methods, including georeferencing, spatial interpolation, and spatial statistics - Techniques for creating effective, clearly understandable maps
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4235 GIS for Environmental Analysis 3 Credits
This project-based course teaches the fundamental skills needed to map our world and answer basic environmental questions. Each session will be divided into two parts: the first will introduce students to a new concept or theory related to geospatial data; and the second will provide students space to apply and experiment with the former using geographic information system (GIS) software, namely ArcGIS Pro. Through weekly projects, students will learn practical skills that will allow them to tell compelling stories with data—and make magnificent maps. In the process, students will be exposed to a variety of data types as well, ranging from vector models to satellite imagery and LiDAR. Overall, this course is focused on applications, technical skill development, and written and graphical summaries of geospatial data.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4240 China Climate Envr Politics 3 Credits
China surpassed the United States as the world's leading national driver of environmental change – from global warming to deforestation and biodiversity loss – almost two decades ago, and its impacts continue to grow. With nearly a third of annual global greenhouse gas emissions and an environmental footprint stretching across the full spectrum of problems, Beijing is critical to finding and implementing solutions. But given increasingly complicated bilateral politics, how should the United States, other governments, and non-government actors approach China? What are their positions and what factors drive decision making in Beijing? This interactive seminar will use multiple lenses – history and culture, economics and politics, science and technology, foreign policy, and comparative studies, particularly with the United States – to explore those questions, with a particular focus on climate change. It is designed to teach practitioners and analysts – be they practicing or aspiring diplomats, journalists, academics, environmental specialists, or others – to think critically about China's climate and environmental policies and how the United States and other actors attempt to exert influence. We begin by studying China's domestic context, focusing on how its history, cultural traditions, and economic and political systems have shaped regulations. We then review both U.S. climate policies and challenges to meeting U.S. topline climate commitments. During the second half of the semester, we focus on efforts to shift Beijing's behavior, studying bilateral engagements and tools the United States and others might use going forward. Beyond building knowledge, the class will emphasize clear writing and effective persuasion, both essential skills for creating change. Students will participate in two one-hour writing seminars and produce both editorial-style articles and diplomatic "cable-style" memos. Throughout the semester, we will use real-life case studies and mock negotiations.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4243 Medicine Power in India 3 Credits
This course examines social dimensions of medicine, health and power in India. We begin with an exploration of the history of medicine in the colonial encounter to consider how disease, medicine, and public health reveal the interests, power, and limits of the British colonial empire. The focus will be on the social context of medicine and public health and on the lived experience of disease and medical care in postcolonial India. The course highlights the ways in which social structures of inequality relating to colonialism, race, class, caste, gender and religion complicate efforts to prevent and treat disease in India while also demonstrating how people negotiate structures of power in their efforts to prevent disease, endure illness and confront death with dignity. We will explore these issues through reading in-depth ethnographies and consider how knowledge gained through ethnographic research can help inform policymakers and practitioners involved in improving health and healthcare in the region. The course will be of interest to students of Asian Studies; science, technology and society studies; global health; and anthropology.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4250 Medicine Politics 3 Credits
Medicine is both art and science, experience and system. Medicine is a way of thinking—heavily mediated by culture and politics. It is a system through which knowledge is produced, workers are organized, and care is delivered. It is also a distributor of technologies, from pharmaceuticals to leg braces. In this course, we grapple with how certain medicines, from biomedicine to traditional medicines, have emerged and influenced the ways in which we experience health and healing. We also discuss how medicine politics frame the ways in which we think about health, access care, and live in the world with illness. Taking a global perspective, we examine multiple medical systems and question where they came from and what they do in the world today? Where are they and how have systems changed? We think about what medicine does well and what shortcomings may emerge that impede wellbeing. In doing so, we explore several case studies to consider: how is medicine produced? How and why is it conceived and enacted differently across contexts? How does it change through time? This course will bring students through a critical history of global medicines, politics, policy, and priorities from the late nineteenth century to the present. In all that we do, we will discuss the science behind certain theories and interventions as well as the technologies that make health interventions impactful. The course will involve deep engagement with classmates, ideas, theory, case studies, and readings in class, on zoom, and out-of-class on canvas.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4252 Conversations with GLID 1 Credit
The topic of this semester's Conversations in Global Infectious Disease class will be "How to End a Pandemic." This conversations class will focus on stories from the front lines of people engaged in ending the COVID-19 pandemic and the steps they have taken to mitigate the impacts of the virus. COVID-19 has demonstrated that ending a pandemic requires a multisectoral response, bringing together science, technology, and domestic and international policy. This course will highlight how such a multidisciplinary approach to infectious diseases has worked in practice. Guest speakers each week will discuss their pandemic activities, such as designing the logistics to vaccinate the American population, ramping up the vaccine development process, advising governments and private sector entities, creating surveillance testing programs, communicating public health practices to the public, standing up contact tracing programs, protecting vulnerable populations, organizing governors, and keeping hospitals safe. Students will be asked to introduce speakers, come up with weekly discussion questions, and write at least one reflection.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4270 Global Migrations and Heath 3 Credits
As global events such as climate change-induced natural disasters, public health emergencies, and political violence push vulnerable populations across borders more frequently, health systems comprised of an array of services provided by the state, non-governmental organizations (NGOs), and charities are forced to grapple with new pressures around human rights provision. As such, political and technology-based solutions to health care provision during and after migratory events are already occupying significant policy space in international affairs. Within this, different migratory patterns employ distinct tactics based on their political, geographic, institutional, and social contexts. As health and migration rise to the top of stakeholder agendas worldwide, new solutions will be required to meet the current moment. In this course, students will build an interdisciplinary knowledge of the academic concepts that inform debates in health and migration, applying them to real-world migratory events. In doing so, students will evaluate the diverse approaches used by different stakeholders, and practice translating technical arguments around health and migration themes into accessible and engaging presentations and written reports.The course is divided into three main sections, with an introductory week that provides an overview of the course and a conclusionary week in which students will present their final projects. The first part of the course will engage the "what" of health and migration studies by identifying and evaluating major debates and concepts that animate research and policy making. Topics in these weeks include: citizenship rights and human rights; differentiated membership; and border health care. During the second part of the course students will engage the "who" of health and migration by asking what it means to approach these debates from the viewpoints of different stakeholders. By putting themselves in the role of NGOs, national governments, global governance actors, and activist organizations, students will evaluate how different actors manage migration (or don't) and organize care (or don't) for displaced persons of varying legal status. The third part of the course will engage with the "where" of health and migration studies by applying course concepts and stakeholder knowledge to three global migration patterns: Haitian migration to the Dominican Republic, African migrations to Europe via Italy, and Rohingya refugee migrations to South and Southeast Asia.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4280 Habitable Planet Lab 3 Credits
This class explores the concept of extreme environments as a window into the potential habitability of other planets while also teaching students to look more closely at our own world. We will learn what types of environments on Earth are used as analogs for planetary exploration, and in what ways: testing rovers and instruments that will be sent into space, probing the limits of life at extremes of temperature, water availability, and salinity, and improving our methods of life detection. We will also practice the skill of close and careful observation, learning how to investigate Earth as though it were an alien planet during a week-long, hands-on journey through several noteworthy planetary analog sites in the Mojave Desert. All expenses will be covered. Students must be free to travel over Georgetown's spring break.
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4303 Haiti: Development Case Study 3 Credits
If there is a single country in which to study development interventions, it is Haiti. Haiti was the site of the UN's first multilateral development project, which applied technology to intertwined agricultural, environment, and energy challenges. Haiti has since served as a frequent testing-ground for development concepts—applied through command-and-control models or participatory approaches—before their application globally. When the 2010 earthquake refocused attention on Haiti, billions of dollars and thousands of technical experts poured in to implement a new wave of development experiments. Using the Haiti experience as a case-study for understanding global development, this course will focus on areas of STIA interest, including agricultural improvement, energy production, environmental health, disaster management and the roles of civil society and government. Learning will occur through lectures, discussions of select readings, and visits by prominent Haiti development experts. Assessment will be based on participation, a traditional exam, and projects designed to advance student-specific interests. The professor's lengthy experience in Haiti will help contextualize the interconnections between society, culture, and technology in global development project outcomes.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4321 Rocket Economics 3 Credits
The powerful equation of reusable rockets and smaller, more powerful satellites fueled by billions of dollars in capital is revolutionizing the space business. Rocket Economics 4321 will examine the fundamentals of the rapidly expanding space economy driven by applications for commercial, civil, and national security customers around the globe. The goal is to educate future business, government, and science leaders on next generation markets for space-based services. Fifteen, 120-minute, seminar-style sessions with space industry leaders will employ case studies, readings, and guest lectures to inform the dialectic method as we explore the business of space. Students are not presumed to have a technical background. The course will cover the basic principles of satellite communications, navigation, earth observation, launch, ground systems, and orbital mechanics. The material will require rigorous business and economic analysis. Students can expect lively debates on the future of space commerce and geopolitical competition for radio spectrum, orbits, and natural resources throughout our solar system. The course will utilize Space to Grow: Unlocking the Final Economic Frontier, a new book co-authored by Harvard Business School Professor Matthew Weinzierl and teaching fellow Brendan Rosseau (Strategy Manager at Blue Origin) as the primary text.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4323 Global Hunger 3 Credits
STIA 423 is a seminar course dedicated to learning more about global hunger. Global hunger incorporates understanding of the biology, politics, and ecology of hunger in order to unpack what drives hunger, consumption, and disease. Drawing on perspectives from nutrition, public health, anthropology, and food policy, the course will introduce students to the underlying complexities that drive the hunger-disease nexus. This nexus addresses both undernutrition and overnutrition, which provoke different health risks, diseases, and complications in everyday life. At the same time, the students will seek to understand what fundamental policy questions drive hunger and produce inequalities linked to food, consumption, and sickness. We will draw from case studies in urban and rural settings, wealthy and poor communities, and diverse cultural contexts. Thus, this course seeks to understand what economic and political factors drive hunger while addressing the technologies that alleviate or perpetuate the biological processes that produce risk and disease among some and not others.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4355 Reimagining Tech in Africa 3 Credits
Full Title: Reimagining African technology markets.

Course Description: Technology plays an increasingly important role in Africa's development and social and economic progress. Africa's digital revolution can be attributed to demand from a youthful population, increased digitization and digital transformation and increased investment in innovative products. That said, there are pervasive challenges such as poor critical infrastructure, a wide digital divide and skills gaps. While the tech sector has positioned itself to help solve Africa's challenges, there is inconclusive evidence on the sustainability of such corporate social impact and the sector's role in solving systemic challenges. As such, the class will examine the market systems approach to development and how to leverage the corporate sector for good.

Africa's fast adoption of technology for development provides a shift from typical "brick and motor" business models that focused on the construction of dated infrastructure and the distribution of goods, to one that leapfrogs and focuses on leaning in to the Fourth Industrial Revolution, a rising gig economy, increasing local manufacturing thus providing Africans with additional agency to craft their own progress.

This course will introduce broad topics related to Africa's development at the intersection of business, development and technology. Students will study factors relevant to the tech sector's success such as geopolitical influences such as China's digital belt road, cyber and information technology security, ethical considerations in product development and evolving legal frameworks. We will discuss the role of the private sector as a vehicle for change with a particular emphasis on how technological innovation is affecting the lives and livelihoods of Africans and African markets.

The course will involve deep engagement with classmates, guest speakers, and readings and real-life focused assignments that allow students challenge, design and reimagine tech in Africa.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4356 Technology Int'l Development 3 Credits
The uses of information and communication technologies (ICTD) have caused tremendous excitement and experimentation in international development. This seminar will develop a critical understanding of these experiments in using information technology to “solve” development “problems” in the global south. We will start by reviewing existing theories on technology and development from different standpoints such as those of designers, programmers, social scientists, and policy makers. We will then discuss case studies of using technology in several development domains. Some of the case studies we will discuss are uses of technology in mobile money, agriculture, transparency in government, public health, education and identifying the poor. The seminar is intended for students who want to design technology solutions to solve problems, create or inform technology policy, and/or understand how technology is changing the nature of development.

Learning goals: 1. Develop a critical understanding of existing theories on information and technology as they are related to addressing international development challenges. 2. Develop a sense for critical reflection while engaging in technical interventions. (for the more technically-minded students) 3. Develop an enlightened socio-technical imagination for thinking about ICTD projects.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4360 Digital Tech in Emergencies 3 Credits
Digital technologies are transforming the core functions, power dynamics, and global positioning of modern states. They have become central to how governments respond to polycrises, ranging from war and political violence to pandemics and climate disasters. Digital identity and payment systems are vital when people are displaced by conflict and need security and support, while data-sharing and cloud-based systems are critical for ensuring continuity of government operations during disruption. This course examines how emerging technologies are adapted in moments of crisis, exploring both their potential to enhance human security and the new vulnerabilities they create. Students will critically analyze the dual-use nature of public-interest technologies in military and civilian contexts, such as the use of civic platforms for crowdsourced intelligence in occupied territories, and the evolution of technology (f.e. drones) in asymmetric warfare. Through case studies, including Ukraine’s wartime digital innovation, Israel’s cybersecurity and resilience strategies, Taiwan’s civil defense networks, Estonia’s interoperable digital infrastructure, and Russia’s weaponization of cyber and information space, students will explore how states build digital capacity and sovereignty. The role of international organizations, such as the UN and humanitarian digital response networks, will also be examined in addressing displacement, education, welfare access, and cross-border coordination. Core topics include digital sovereignty, digital public infrastructure, interoperability, human-centered design, data governance and privacy, cybersecurity, defense tech, dual use, open-source ecosystems, global standards, and the international diffusion of digital tools (e.g., Estonia’s X-Road, IndiaStack, Ukraine’s Diia). Through simulations, policy design exercises, and scenario planning, students will assess the promise and peril of digital government in an era defined by geopolitical competition, emerging technologies, and the blurred boundaries between civilian and military digital systems.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4361 Heath, Tech, and AI 3 Credits
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4370 Geopol of Critical Minerals 3 Credits
“Critical minerals,” loosely defined, refers to several dozen minerals and metals that are necessary to contemporary and future technologies and green transition goals. In this course, we will review some of the most sought-after minerals and the applications and geopolitical considerations fueling swelling demand for them. We will also examine how countries' critical mineral deposits, reserves, and mining and refining capabilities are affecting their international influence, alliances, and interests. Specific issues to be studied include historical factors that contributed to China’s present-day dominance of the global supply of many critical minerals and how Beijing may leverage that dominance; green energy transition goals and other macro considerations shaping consumer countries' critical minerals policies; and threats and opportunities facing Global South countries with abundant critical minerals deposits.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4371 AI Gov and National Policy 3 Credits
Taught by Colin Shea-Blymyer: This course will explore topics in the foundations, applications, and geopolitics of Artificial Intelligence (AI). We will start with a brief overview of AI technology and policy definitions and examples to outline a framework for AI governance. Readings, discussions, and lectures will then shift to specific applications, interactions, and implications of AI governance and policy. The course will consist of weekly readings, guided discussions, and guest lectures from experts in the field. Students do not need specific prerequisite knowledge, but general technical/scientific maturity is helpful.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4375 Markets,Sec,Transform Anlytcs 3 Credits
This course examines information technology's role in transforming the global financial system and in providing new tools to help policymakers understand and anticipate the still unfolding international security implications of this transformation. The IT revolution that led to financial innovation, deregulation, and the proliferation of financial markets around the world continuously spawns capabilities for sense-making. New (and new combinations of) methods, models and tools for the collection, aggregation, processing and sense-making of financial market data emerge. One can analyze tens of millions of financial instruments with millions of price updates per second, streaming topic-coded news in foreign languages, supply chains, private equity and venture capital investments, social media, and projects offers and tenders from around the world. Economic indicators, which have long been staples for policy makers are losing ground to near real time financial indicators of systemic risk, nation state stability, disease spread, agricultural prospects and other critical topics. Through combining social science, quantitative finance, data science and IT, teams are increasingly able to harness financial data to keep policy makers informed and better able to anticipate national security events and crises.

The objective of this course is to introduce students to empirical methods, models, and tools from the peer reviewed literature and the financial and security domains by demonstrating their utility using real data against real world use cases. This course will acclimate students to challenges and opportunities inherent in trying to provide situational and option awareness to policymakers in a decision-theoretic framework. Professors will introduce students to ontologies, typologies, taxonomies, data models, and industry classification schema, and demonstrate how they are used with IT and financial data to answer real world questions. Causation, correlation and various approaches to anticipatory analysis will be explored and demonstrated. A guest lecturer will provide a succinct and practical lecture on "big data". Professors will demonstrate Bayesian, machine learning and other approaches for sense-making and anticipatory analysis as well as financial industry analytics and visualization tied to real world use cases. Lectures and demonstrations will be followed by student exercises and problem solving employing the types of methods, models, tools and data demonstrated in class.
Level: Graduate, Undergraduate
Course attribute: FS54 name
Grading: Main Campus (UGrad, Grad)

STIA 4400 Space Diplomacy 3 Credits
Spaceflight increasingly serves as a powerful tool for diplomacy, fostering collaboration between nations and shaping global relations. This interdisciplinary course explores the role of outer space in international relations, examining how space programs, missions, and technologies influence political, economic, and strategic interactions on Earth. Throughout the semester, students will investigate how spaceflight has served as a tool of diplomacy, while also examining how diplomatic frameworks and negotiations are essential for space exploration. Key topics include the role of multinational organizations like the United Nations in space policy, landmark programs in space history (such as the Apollo-Soyuz Test Project and the International Space Station (ISS), and the emerging opportunities and challenges of space commercialization and the growth of national space programs. Students will discuss the ethical, legal, and environmental implications of space activities, including the militarization of space, space traffic management, managing natural resources, and efforts to preserve space as a global commons. Additionally, the course will encourage students to critically assess the broader role of space diplomacy in addressing terrestrial issues, from climate change to global health to disaster relief. By the end of the course, students will understand the dynamic, symbiotic relationship between spaceflight and diplomacy, and be equipped with the skills to engage with the evolving discourse on space policy.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4401 Astronomy and Space Debris 1 Credit
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4403 Earth and Planetary Science 3 Credits
In this course, we will study the Earth as an evolving, dynamic planet and how humans have come to affect it. We'll survey the underlying scientific principles—based on chemistry, physics, and biology—that govern the natural world. We'll study the Earth's physical structure, including how the properties of fluids on our rotating planet shape wind patterns and ocean currents. We'll consider the interrelationships among the biosphere, atmosphere, hydrosphere, and geosphere, investigating long and short-term climate variability and biogeochemical cycles. And we'll learn to analyze the scientific underpinnings of environmental problems with an eye toward real-world situations, from mineral resource use and implications for environmental justice to agricultural productivity and our ability to feed Earth's population. Through hands-on active learning, we'll evaluate the risks associated with biodiversity loss, air and water pollution, and natural hazards; think critically about potential solutions; and apply the fundamental concepts we've learned to begin solving problems of practical importance to society.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4404 Weaponization of Space 3 Credits
This course builds directly on the success of Space Security by moving students into the most contested and urgent debate in contemporary space policy: whether outer space has become or is becoming a warfighting domain and what that means. For decades, space was militarized primarily through enabling functions such as, communications, navigation, intelligence, and early warning while overt weaponization remained constrained by norms, treaties, and strategic restraint. That equilibrium is now eroding and strategic drift is omni present. Intensifying great-power competition, the creation of dedicated space forces, rapid commercialization, and renewed ambitions to establish a sustained human presence on the Moon and Mars have fundamentally altered the strategic landscape.
This course traces the historical evolution of military space activity, examines the drivers of contemporary militarization, and interrogates the accelerating weaponization of space systems, with particular attention to counterspace capabilities such as anti-satellite (ASAT) weapons. Students will critically assess whether prevailing strategic concepts deterrence, escalation control, and arms restraint remain viable in an increasingly congested, competitive, and contested orbital environment. Prerequisites: GOVT 1600 International Relations (or equivalent)
Level: Undergraduate
Prerequisites: GOVT 1600
Grading: Main Campus (UGrad, Grad)

STIA 4405 The New Space Economy 3 Credits
Almost single handedly, Elon Musk and Jeff Bezos have touched off a growing commercial space industry that NASA and the Pentagon increasingly rely on for services that for decades had been the exclusive domain of governments. Private companies now fly cargo, supplies and people to the International Space Station; they are developing the habitats that will eventually replace the aging ISS, the spacecraft that will ferry astronauts to the surface of the moon, and the spacesuits astronauts will wear while there. In addition, private companies are working to build rovers and developing the technologies, from generating power to building habitats, that will sustain a lunar base. Similarly, the Pentagon and intelligence agencies now increasingly rely on the commercial space industry to launch its most sensitive satellites to space and to even build the spacecraft. This course will do a deep dive into the rise of SpaceX, Blue Origin, and the U.S. commercial space industry, including topics like NASA's choice to outsource cargo delivery and how the Artemis program was born. Students will also consider what may come next for the commercial space sector.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4406 Space Security + Exploration 3 Credits
Satellites provide a foundation for Earth and space science, weather forecasting, treaty verification, strategic and military intelligence, global communications and navigation, and projection of military power. This course will focus on intersections between space and international security, with additional discussion about modern space exploration and new private companies. We will cover four broad areas: fundamentals of astronautics and satellite applications, space security in the Cold War, scientific exploration and commercial development, and modern space security dilemmas. Throughout the course, students will explore technical, strategic, economic, and policy issues using real-world examples.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4408 Justifying Space 3 Credits
This will be a seminar class about the changing visions and motivations for space exploration, historically and to the present day. Readings will include historical perspectives such as those of K. Tsiolkovsky, Arthur C. Clarke, Gerard O'Neil, and Carl Sagan, the poetry of Diane Ackerman, the newsletters of space enthusiast organizations such as the National Space Society, the L5 society, and the Planetary Society, as well as more current readings from the popular and space policy literature, and from the field of space environmental ethics. Perspectives will also include other cultural reference frames through readings from the literatures of Afrofuturism and Chinese science fiction. Through selected readings students will become familiar with the history of space advocacy, a range of ethical perspectives, and the various idealistic and utopian predictions and visions that have been associated over time with ideas of human crewed and uncrewed space exploration. We will look at how past visions and promises have measured up against the reality of space exploration and also, through this lens, critically examine the visions and motivations being espoused by today's range of government and corporate space organizations and enthusiasts.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4409 Orbital Dynamics 3 Credits
Orbital Dynamics are the physical and mathematical principles governing the motion of all objects in space—from satellites orbiting Earth to spacecraft traveling toward the Moon and beyond. This course introduces Newtonian gravitation, Kepler's laws, satellite motion in cislunar space, including the three-body problem, and key elements of Einstein's general theory of relativity. Students will learn how these invisible "rules of the road," dictated by gravity, momentum and energy, bound how space can be accessed, used, and ultimately governed. Familiarity with fundamental calculus is helpful but not required. By the end of the course, students will be equipped with an understanding of basic orbital physics to smartly inform policy debates and decisions.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4410 Cislunar Governance 3 Credits
Cislunar governance concerns the rules for the region of space, extending from Earth's orbit out to and including the orbit and surface of the Moon. This zone is fast becoming a crossroads for science, commerce, and security, yet no agreed playbook exists for how countries and companies should operate there, or how existing treaties and agreements should guide behavior. In this class, students will explore why cislunar space matters, how it could shape the future balance of power, open new markets, and how its exploration may unfold cooperatively or competitively. Students will examine the unique governance challenges of this domain—from tracking spacecraft to setting navigation and timing standards to preventing conflict—and debate how rules for safety, access, sustainability, and commerce might be designed to shape the next phase of human activity beyond Earth.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4411 Strats for Govt-Industry Rltns 3 Credits
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4412 Intro to Space Law 3 Credits
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4414 Mission Design Lab 3 Credits
Mission Design Lab for Astrobiology This interdisciplinary course will take you through our shared history of exploring space, from learning what the surface of Mars looks like up close to detecting ice plumes on Saturn's moons. We will learn how we take measurements on remote celestial bodies, what we have found so far, and how those measurements have gradually reshaped what we think about the possibilities of "life" out there. We move mission by mission, from setting foot on our Moon to sending rovers to Mars to bringing back dust from an asteroid, asking what each mission can claim given its constraints. Then students will practice the central habit of astrobiology: following the ladder of evidence, where contamination control, repeatability, and context matter as much as the signal itself. We will examine why particular instruments are chosen, what each measurement can and cannot imply about habitability or life, and how mission design quietly encodes our assumptions about biology. Your training culminates in a collaborative project: a defended analysis of a proposal for your team's own life-detection mission.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4415 AI and Autonomous Systems 3 Credits
Artificial intelligence (AI) has experienced rapid development in recent years, particularly with the advent of deep neural networks. The impacts have been felt in fields as diverse as transportation, healthcare, natural language translation, finance, and robotics. The key drivers for this transformation have included advances in computing hardware, new algorithms, and the availability of massive data sets. Many nations are investing heavily to "win the AI race", and it is clear that these technologies will continue to progress rapidly.

This course will examine these recent developments in AI, paying particular attention to autonomous systems such as driverless cars, drones, and robotics. These systems are special, because they bring AI directly into the physical world, creating different challenges and opportunities than fully software-based AI. They also rely on a range of physical sensors and actuators to function, which are themselves experiencing technology innovation.

We will examine the economic, ethical and policy implications of the introduction of autonomous systems, and AI more broadly. We will also examine the geopolitical consequences of AI development and adoption in various countries. In parallel, we will develop an understanding of the core technologies through programming exercises, which will require a basic familiarity with Python.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4416 Spaceflight and Globalization 3 Credits
Through the 20th century and into the 21st, spaceflight has become increasingly important to the human experience. It has served as a vital site of imagination across cultures, reshaped the textures of everyday life on every continent, and changed our conceptions of the Earth and the cosmos. It contributes to increased flows of trade, consumer culture, and the movement of ideas, peoples, and technology across the world. Initially provoked by geopolitical competition, spaceflight aids diplomacy, international scientific cooperation, and the global marketplace. This course will cover spaceflight's dynamic relationship with the process of globalization, giving special emphasis to the global economic, social, and political implications of space development.

At the beginning of the semester, we will discuss how spaceflight developed through distinct historical contexts, from the Cold War conflict between the US and USSR that resulted in signature accomplishments such as national security reconnaissance, the Apollo Moon landings, and space-based communications and environmental monitoring; to the end of the Cold War, with its strong emphasis on market-based space initiatives. The course then shifts focus to themes within contemporary spaceflight and globalization: national space programs; reconnaissance and military space; Earth Systems Science and climate change; satellite communications and navigation; and the "New Space" economy.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4417 Nat'l Lab Space Research Forum 3 Credits
This seminar offers students a guided introduction to the cutting-edge space research conducted at Lawrence Livermore National Laboratory (LLNL). Over the course of the semester, participants will hear from prominent LLNL scientists and engineers working on topics such as spacecraft instrumentation, remote sensing, astrophysics, planetary defense, small sats, earth system science, and astrobiology. Students will gain a unique perspective on the inner workings of a national laboratory, and how its structure, priorities, and mission differ from those of a university setting. Lectures will be supplemented with behind-the-scenes case studies of LLNL's projects and virtual lab tours and reinforced through close reading and discussion of relevant publications that showcase innovative research. Through interactive Q&A sessions, group discussions, and short presentations, students will deepen their understanding of the scientific, technical, and organizational challenges of national-lab–scale space research. By its close, students will be well positioned to engage confidently with mentors and hit the ground running if selected for Georgetown's LLNL summer externship. Students will also be introduced to post-baccalaureate opportunities at national labs, helping them envision potential career pathways.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4418 Astronomy Astrophysics 3 Credits
This class will introduce students to a variety of active research topics in astrophysics today as well as the context and basics of the particular area of study from the Big Bang to the formation of stars and planets. The course will also provide an overview of different astronomical techniques and observatories as well as a discussion of career pathways for students who are interested in astronomy and astrophysics as an undergraduate or graduate major. Finally, the course will end with the outstanding big questions in the field and how these are likely to be addressed by the national and international scientific community.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4419 US-China Space Race 3 Credits
This class focuses on the US-China Space Race through a variety of analytical perspectives. It presents five overarching rationales employed to justify spaceflight in the US and China: geopolitics; national security; economic competitiveness; scientific discovery; and social/cultural impacts. We will examine the history and strategic motivations of each program, such as why nations pursue cooperation or competition in orbit; the national security implications of space missions and operations, including their relevant space industrial bases and supply chains; the economic structure of each program including how budgets are formulated, as well as the roles of government, military and commercial actors; the value of scientific discovery and how space science missions are developed; and, the cultural and social drivers propelling interest in spaceflight in the US and China.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4420 Cybersecurity Confl + Policy 3 Credits
Cybersecurity Conflict and Policy is an introduction to the fights—both policy and literal—to control cyberspace, secure data, and ultimately define the relationship between citizen and government. Beginning with the nation state and working our way to the individual, the class will take a technology-based approach to mapping the landscape of cybersecurity law and policy. Over the semester, students will develop a baseline understanding of the technology, relevant actors, policy responses, and stakes underlying the most pressing and consequential cybersecurity conflicts. The semester will break down into six primary cybersecurity focus areas: (1) the technology fundamentals of network security, (2) the threat landscape, (3) the private sector, (4) national security, (5) law enforcement, and (6) privacy and the rule of law. Classes will explore the many tensions between privacy and security, as well as the challenges the government and private sector face in defending against a vast array of bad actors with many tools. We will cover topics ranging from cyber warfare, cybercrime, and surveillance —and how to tell the difference—as well as emerging threats and allocations of private and public responsibility. At the end of the semester, students will have a basic understanding of computer and network technology, will be able to identify the major open questions in cybersecurity policy, and have a language and context for addressing those policy challenges.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4427 Spectrometry for Space 3 Credits
Mass spectrometry is a foundational analytical technique for identifying and characterizing molecules, and it plays a central role in planetary exploration. This course introduces the core principles of mass spectrometry, with an emphasis on how this technique can be applied to spaceflight. Students will examine how molecules are ionized, separated by mass-to-charge ratio, and detected to produce a mass spectrum. They will learn to interpret spectral data, including peak patterns, isotopic signatures, fragmentation, and relative abundances. Emphasis will be placed on developing the skills needed to read and interpret spectra, assess data quality, and understand the capabilities and limitations of different mass spectrometry approaches. No prior experience with mass spectrometry is required.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4432 Technology Intelligence 3 Credits
This course examines the application of technology to the collection and analytic challenges facing intelligence agencies, using the United States as a model but exploring other national systems as well. We will review the Cold War emergence of partnerships among American intelligence agencies and military services, the academic and scientific communities, and industry in developing and deploying powerful communications and imagery collection systems. We will further explore the contributions of this partnership and these technological advances to national security policy formation, diplomacy, arms control, and other policy priorities while focusing heavily on the challenge of adapting these elaborate and expensive “legacy” systems to the current and future threat environment. Specifically, we will consider the implications of the current proliferation of advanced technologies such as public cryptologies, new communications and data storage media and methods, commercial satellite imagery, and global positioning systems on intelligence collection and analysis. This course will also analyze the implications of the revolution in military affairs and the war in war in Southwest Asia for the Intelligence Community, look at the “marriage” between intelligence and the military in the Afghan and Iraqi military campaigns, and study the Intelligence Community’s efforts to implement new technologies and transform itself into an integrated team of “agile agencies” under a new Director of National Intelligence.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4434 Artificial Intel: Pol Prob 3 Credits
This class considers the policy implications of artificial intelligence (AI). It teaches students the basics of how artificial intelligence algorithms work and how they can go awry, particularly in real world applications. No prior technical knowledge of artificial intelligence is needed to be successful in the class. The class considers the interaction between technical experts and subject matter experts as AI is implemented in a specific domain: how much friction will accompany that implementation? Will the unique challenges of implementing AI in policing or autonomous cars or the life sciences weaken or even undercut the general analytical power of marquee AI algorithms? What types of errors occur and what are their consequences and what are strategies to measure and mitigate them in different domains? The class considers broader policy questions including whether AI inherently favors autocracies by closing the space for political dissent through persistent surveillance and the greater ease with which they can gather and use large databases of various sorts of information. The class studies various policy frameworks, some implemented and most merely posited, to maximize benefits from the use of these algorithms and to minimize their risks. The implemented frameworks include, among others, the frameworks to regulate AI in countries including the United States, China, and the European Union.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4440 Sci Tech Nuclear Statecraft 3 Credits
With the revival of great power politics, nuclear technology will continue to play an important role in shaping international relationships. Nuclear weapons states are currently modernizing their nuclear arsenals; emerging technologies are introducing new dimensions to the challenge of nuclear deterrence; and nuclear-energy infrastructures are being re-deployed as a form of international soft power. These developments pose long-term risks to global security. This course will develop a technical understanding of nuclear infrastructures – both peaceful and military – as they pertain to great power competition and cooperation. We will follow a standard physics-course format – with weekly homework sets and three short exams -- to establish mathematical (and some calculus-based) skills and physical intuition. Technical lessons will be interspersed with regular qualitative discussion to develop appreciation for the political opportunities and consequences posed by the technology examined.
Level: Graduate, Undergraduate
Course attribute: FS54 name
Grading: Main Campus (UGrad, Grad)

STIA 4450 Reimagining Tech in Africa 3 Credits
The course will survey the development of the Sub-Saharan African economies since independence. The focus will be on economic development, but aims to place the subject in its broader political, social and cultural context. The approach will be historical: starting with a brief review of the colonial inheritance, then covering the largely optimistic period to the early 1970s, moving on to the problems and stagnation of the 1980s, followed by the slow recovery of the 1990s which has accelerated in the first half of this decade. The survey will conclude by looking at where Africa is today and the prospects going forward. The course will explore key issues and themes that marked each period and try to piece together an overall story concerning where African economies have been and where they are going.
Level: Graduate, Undergraduate
Course attribute:
Grading: Main Campus (UGrad, Grad)
Equivalent to AFSP 4450

STIA 4521 Addiction Politics 3 Credits
Alcohol, 420, opioids: For centuries, societies have struggled with various forms of addiction. In this course, we will discuss how different cultures in the past have conceptualized states of intoxication and analyze how modern nation-states have attempted to regulate the use of (illegal) drugs. Students will create academic posters in which they illustrate and examine, for example, government measures against addiction and their impact on those affected within a temporal and spatial context of their choice and present their findings in class.
Level: Graduate, Undergraduate
Grading: Enrolled Transcript Display

STIA 4554 Remote Sensing 3 Credits
The course objective is to provide students the fundamentals of remote sensing and the knowledge and tools to collect, process, visualize, and analyze geospatial data to answer research questions in the earth and environmental sciences and to address national security and energy and climate policy issues. The course includes both lecture and practical laboratory sections with exams that cover both aspects. The course will be project oriented where the students write a research paper on a geoscience, environmental, or national security topic of their choice and present results to their peers at the end of the semester. Topics include remote sensing concepts such as the electromagnetic spectrum, net balance, atmospheric scattering, and image visualization and interpretation. We will discuss remote sensing instrumentation, collection processes, data and formats, and fundamental image processing. To prepare for final projects, earth and environmental science and national security geospatial analysis case studies will be discussed. The laboratory section of the course includes hands on digital image processing and data manipulation in remote sensing and geographic information systems software to enable geospatial analysis, geo-statistics, and generation of informative maps.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4555 Global Medicine and Technology 3 Credits
This course examines the innovation, dissemination and adoption of medical technologies in a global context. Using an anthropological lens and drawing from ethnographic research, we will consider medical technologies as assemblages of transnational scientific expertise, global capital, and bioethical standards that are shaped by culturally distinct and socially unequal global and local contexts. Students will learn analytical concepts such as global assemblages; biological/therapeutic citizenship; bioavailability/relationships among race, gender, class, nationality and medical research and technology; pharmaceutical governance; the routinzation of medical technology; and critical analyses of bioethics. Technologies to be explored include organ transplants; assisted reproductive technologies; genetic engineering; pharmaceuticals and clinical trials; biological cell research; and the emergence of global health science. We will consider how these technologies are produced, flow and practiced across the globe. This course will be of interest to students in Science, Technology and International Affairs; Global and Public Health; Asian Studies; and Anthropology. This is an advanced seminar-style course.
Restrictions: N/A
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)
Equivalent to STIA 3555

STIA 4556 Rethinking Water 1 Credit
This interactive course emphasizes the critical role of water in society with a unique focus on the potential role of finance and investment in solving water problems. After an in-depth overview of the origins of current water challenges, students will develop frameworks to understand the potential, and potential limitations, of finance and investment in their solution. While the issues covered will often be global in nature, the United States will serve as the primary case study. Learning takes place through lectures and related materials, discussions with industry and business leaders and key thinkers, field trips, and a significant project focused on a solution to a real water problem. Students will gain specific skills in the use of financial tools and models relevant to water investment and will engage in ethical considerations surrounding water management. The course is led by Alexander Loucopoulos (SFS '97) with assistance from Quinten Dreesmann(SFS '23) and Albert Cho (SVP Xylem).
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4557 Business of Space: Intl Comp 1 Credit
This course explores the rapidly evolving space industry at the intersection of business, technology, and international affairs. Students will examine the structure and dynamics of modern commercial space enterprises, including launch providers, satellite manufacturers, communications networks, earth observation services, and emerging markets such as space tourism and resource extraction. In parallel, the course investigates how governments, militaries, and international institutions shape the industry through regulation, funding, partnerships, and geopolitical competition.

Key themes include the commercialization of space launch and satellite services, the role of private capital and venture investment, the geopolitics of space exploration, security concerns related to space assets, and multinational cooperation through organizations such as the European Space Agency and the United Nations Office for Outer Space Affairs. Students will analyze case studies of leading companies (e.g., SpaceX, Blue Origin, Rocket Lab, OneWeb, Planet Labs), assess the impact of national and international space policies, and consider the implications of great-power competition in space.

By the end of the course, students will have a foundational understanding of both the business mechanics of the space economy and the international frameworks that govern its growth. They will be able to identify key trends, opportunities, and risks shaping the future of human activity in space.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4600 Trauma, Disability, and War 3 Credits
War and violent conflicts leave wounds that often are not visible to the naked eye, and yet just as painful and incapacitating as physical ones. These invisible wounds are borne not only by the victims of violence, but also by the perpetrators and sometimes even by observers. Today in the US, whose troops have been involved in countless war theaters in the last thirty years, there are hundreds of thousands of former soldiers who are grappling with the wounds these conflicts caused to their minds and to their moral compass. At the same time, there are millions of individuals in faraway countries who are battling the psychological traumas caused by those very same conflicts. Through case studies ranging from child soldiers in Sierra Leone to women in Afghanistan, from US military personnel recovering at home to the civilian victims of repressive authoritarianism in Argentina, and beyond, we will investigate what violence and war do to the mind and the psychological dynamics of people who have been exposed to such phenomena, as well as explore the degree of disability that pervades the afterlife of war. We will discuss literature from anthropology, psychology, psychiatry and public health, and will include in our conversations the personal experiences of the instructor, who served in the armed forces for years and was deployed to several war theaters abroad, as well as guest speakers who have lived through experiences of violent conflict.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4601 SciTech for Child Development 3 Credits
This course employs an interdisciplinary lens to consider how science and technology play a role in early childhood development (ECD) on a global scale, drawing from neuroscience, developmental psychology, economics, social anthropology, public health, environmental studies, and early learning research. Students will study how young children's physical, cognitive, socio-emotional, and language development is shaped by interactions with caregivers and communities, health systems, early learning settings, and broader ecological conditions. The course also examines emerging global policy challenges for young children and their families. Students will explore how to mitigate the impacts of environmental pressures – such as air pollution, heat exposure, food insecurity, and climate-related emergencies and displacement –- and delve into the opportunities and risks related to digital technologies, including early learning tools, health monitoring platforms, and exposure to online content.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4700 Planes, Trains, Automobiles 3 Credits
Whether it's how we commute to work each day or how goods move through global supply chains, transportation has a profound impact on the environment. This course has two main goals: first, to explore the complex ways transportation systems contribute to environmental issues such as climate change, noise pollution, and the degradation of air and water quality; and second, to understand why solving these problems is so challenging. We'll survey the science, engineering, economics, and public policy behind sustainable transportation, while also taking a deep dive into case studies that highlight policy successes and offer lessons for the future. After taking this course, students will be able to: 1) Recognize the role and policy context of various transportation modes including aviation, shipping, rail, personal and commercial internal combustion engine vehicles, electric vehicles, and public transit; 2) Understand the wide range of environmental domains affected by transportation, such as climate change, local air pollution, noise, persistent pollutants, water quality, and land degradation; 3) Link environmental issues to human health and well-being using frameworks like cost-benefit analysis, environmental justice, and the precautionary principle; 4) Explore solutions to transportation-related environmental challenges at the local, national, and international levels. While this course will explore some technical topics in economics, atmospheric chemistry, epidemiology, and quantitative policy analysis, there are no prerequisites beyond an interest and willingness to engage. For students who already have a background or experience in these areas, this course will be able to build upon and expand that knowledge through a cross-disciplinary lens.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4710 Climate, Energy, Congress 3 Credits
Climate, Clean Energy, and Congress: Translating Science to Policy is a seminar course dedicated to understanding how scientific data is translated for policymakers and how environmental policy decisions are made. This course combines training in policy, politics, and communications to better prepare students for a future in environmental advocacy and policy engagement.

This course will draw from the Professor's 20+ years working on environmental policymaking in the U.S. federal government, resulting in historically significant climate, clean air, and environmental protection programs; new clean energy tax incentives; a National Park, and other environment and sustainable energy federal policies. Much of this work was directly in the U.S. Senate Environment and Public Works Committee as well as in the OMB, or the Office of Management and Budget. These real-world scenarios will provide students with an on-the-ground perspective of how environmental policy is understood, negotiated, and made.

Good policy depends on good data and informed policymakers, who are guided by experts capable of bridging the divide between science and policy. This course helps students begin to build that bridge, developing the communication skills necessary to effectively engage with policymakers and other stakeholders who rely on science to inform decisions. Using real-world environmental policy scenarios, students will examine how scientific data can help shape public policy and learn how to translate complex data into clear, actionable insights for policymakers. Students will also learn how to apply power-mapping, strategic foresight methods, and other strategies to better prepare e for the ever-changing communication needs for policy engagement. The course will require active engagement from the students, with heavy emphasis on class discussions, group exercises, presentations, and concise writing.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4803 Pathway to Food Security 3 Credits
This course provides an overview of food security, food systems and food sovereignty, globally and regionally, with emphasis in the Latin America Region (and comparative views with other world regions). According to the State of food security and nutrition in the world 2024, approximately 733 million people face hunger and suffer from food insecurity worldwide and don't have access to adequate nutrition. Food security and nutrition policy play an important role in any given society and aim to understand extreme situations that range from under-nutrition to the causes of overweight and obesity that affect large populations. The Sustainable Development Goals (SDG) particularly Goal 2 (Zero Hunger) and 5 (Gender Equality) will be analyzed to provide a needed framework to reach consensus and adopt strategies to engage under-served populations and to address issues of inequality. The course will introduce the main pillars of food security, the causes and repercussions of the most recent food crisis (Covid-19, etc.), along with sustainable development patterns, value chain analysis, consequences of climate change, food losses and waste and how countries in Latin America dealt with these issues through their institutions and policies. All topics will be introduced through a gender lens and the need to consider gender as a prerequisite to reach food security. The course dynamics will examine complex case studies and alternative approaches at local and global levels to reach food and nutrition security. It is expected that the course will be enriched by the participation of guest speakers from government, UN Agencies, NGOs and other Washington DC based think-tanks from a variety of related disciplines. Students will be presented with hands-on activities and research tasks to enhance their understanding of food production, transformation and market access as needed ingredients to access food for all through a critical perspective.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4804 CriticalClimateHumanSecurity 3 Credits
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4860 Economy Technology in Africa 3 Credits
This course examines the relationship between economy and technology in contemporary African countries. To understand the wide variation and divergent economic realities of a region with 54 countries and 42 separate currencies, this course focuses on the institutions, technologies, and policy making that shape economic life on the continent. Throughout the course we examine an interrelated set of questions and topics such as: What kinds of technological innovation underpin economic development in the region? What are everyday experiences of saving, borrowing, and lending in rural vs. urban contexts? How do different economic zones and monetary unions impact circuits of exchange and the movement of goods across the continent? What are the politics of popular demands for domestic and regional currency reform? How are new material and digital infrastructures changing the ways that people access financial services? And what is the role of diaspora communities and remittance technologies in building and sustaining financial flows to and from the continent? The goal of this course is to provide students with a methodological framework for studying questions of economy and technology in Africa from an interdisciplinary perspective and understanding their real-world dimensions. Our course material therefore draws on an interdisciplinary body of scholarship including anthropology, political science, economics, urban planning, and science and technology studies.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4882 ST Diplomacy in Practice 3 Credits
This course will use a practitioner's lens to explore how U.S. policymakers evaluate and devise diplomatic strategies about science and technology issues. This course will also examine the changing role of international institutions in science and technology diplomacy. Students will gain an understanding about how issues such as non-proliferation, energy security, pandemic response, and emerging technologies have come to play a larger role in U.S. diplomacy and crisis response. The course will also examine the U.S. national security decision-making process and the role of various U.S. government entities in developing and implementing diplomatic approaches to S&T issues. We will discuss the formal and informal processes that drive national security decision-making using real-world examples involving science and technology situations. We will explore crises involving science and technology issues and evaluate the U.S. response
This course will be highly participatory. Students will be expected to absorb large amounts of information in order to draft concise policy recommendations and present them in class. The course will include interagency simulations in which students will role-play senior officials managing the response to a science & technology related national security challenge.
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4883 Cooperation Competition: ST 3 Credits
This course will explore how science and technology issues feature in U.S. diplomacy with major and emerging powers. This course will provide a practitioner's perspective on how science and technology issues have affected U.S. relations with Russia and China during periods of cooperation and competition, and how technology issues feature in U.S.-India relations. This course will combine a study of diplomatic relations with Russia, China, and India over the last 25 years to understand how technology issues have come to play a larger role in U.S. national security and foreign policy.

This course will also examine the U.S. national security decision making process. We will discuss the formal and informal processes that drive national security decision-making, using real-world examples involving science and technology in international affairs.

This course will be highly participatory. Students will be expected to draft concise policy-oriented memos and present them in class. The course will include a mock National Security Council meeting to make a recommendation on an issue discussed in the course.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4930 CLab: Destabilized Arctic 3 Credits
The Arctic region is undergoing a rapid transformation due to climate change. Temperatures are warming at a rate never encountered in the geological record. There are few places on Earth where the convergence of science, technology, policymaking, and diplomacy are more critical than in the Arctic. This semester's course will train students to better understand and solve some of the unique problems that have emerged in the Arctic over the last decade. Students will do intensive research and set up meetings, expanding their network in Alaska with local community leaders. Later in the semester, students will organize and lead a half-day "Arctic Solutions Forum" to present their research and have discussions with policymakers and thought leaders on ways to tackle Arctic challenges. If conditions allow, we hope to offer a travel component to the Arctic in Alaska either in late May/early June. (All travel is subject to change based on GU Travel Policy, Health & Safety conditions; and consultation with indigenous AK communities. See the application page for details). Students must have some background related to the course topic as demonstrated by prior coursework (e.g. STIA 305, 364, 373) or experience. Although some knowledge of the region is helpful, it is not required. Instructor approval is required. Admission to the C-Lab is by application and interview. Please visit the application (also hyperlinked to the course title) for more information, requirements, and eligibility.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4931 CLab: Destabil Arctic (IFW) 1 Credit
Please visit the application web page for more information,requirements, eligibility, and contingency plans if travel is not an option due to Covid-19 restrictions. The Arctic region is undergoing a rapid transformation due to climate change. Temperatures are warming at a rate never encountered in the geological record. There are few places on Earth where the convergence of science, technology, policy making, and diplomacy are more critical than in the Arctic. This semester course (3cr) and the associated experiential one-week (1cr)will train students to better understand and solve some of the unique problems that have emerged in the Arctic over the last decade. For those students who are interested, the 1 credit course will provide time for students to do intensive research and set-up meetings, expanding their network in Alaska with local community leaders. If conditions allow, we hope to offer travel to the Arctic in Alaska either over spring break or in early summer. (All travel is subject to change based on GU Travel Policy, Health & Safety conditions; and consultation with indigenous AK communities. See application page for details and contingency plans). Later in the semester,students will organize and lead a half-day "Arctic Solutions Forum" on the (either from AK or online) to bring together policymakers and thought leaders to tackle Arctic challenges. Students must have some background related to the course topic as demonstrated by prior coursework (e.g. STIA 305, 364, 373) or experience. Although some knowledge of the region is helpful, it is not required.
Level: Graduate, Undergraduate
Prerequisites: (STIA 364 or STIA 3164) or (STIA 364 or STIA 3164) and (STIA 305 or STIA 3005) and (STIA 373 or STIA 3173)
Corequisites: STIA 4930
Grading: Main Campus (UGrad, Grad)

STIA 4935 Public Interest Tech: Senegal 3 Credits
This course is co-led by Prof. Rajesh Veeraraghavan (SFS), Prof. Kate Chandler (SFS) and Prof. Sidy Ndou (President, Senegal's Dakar American University of Science and Technology). Students from both institutions delve into the role of public interest technology in addressing global challenges from an interdisciplinary perspective. The course aims to address the impact of technology on policy and how we can design policies that reimagine technology designs to foster alternate futures. To understand and innovate technologies that respond to a public interest we will develop projects that use technology as community bridges, linking communities from the Global North and South. Technology is a driving force in transforming production, commerce, creating new industries, and shaping work dynamics. However, the perception of technology as either a utopian vision or a source of alienation that amplifies inequalities remains prevalent in the public imagination. Recent years have witnessed several technologies, such as video conferencing, artificial intelligence, drones, blockchains, mobile money, and gig work apps, fundamentally disrupting social and international relations.

Engagement in the course will primarily occur through online interactions throughout the semester, as well as a lab, complemented by in-person exchanges. Notably, SFS students will have the unique opportunity to spend their spring break in Senegal, providing first hand exposure to diverse work contexts and cultures. In a departure from other programs, we will also have Senegal students spend their spring break in Washington DC. Georgetown students are expected to fully support the Senegal students on their visit and spend as much time as they can during the week they are here.

A central focus of the course will involve developing alternate imaginations of technology infrastructures to foster community interactions. We will likely be working on a developmental project in Senegal as part of the course. Through design exercises, simulations, policy papers, site visits, and speculative fiction, students will explore creative solutions and policy frameworks to mitigate challenges while embracing the potential for new opportunities that emerging technologies bring. The class is part of the Georgetown Dialogues Initiative and aims to include students from diverse backgrounds and viewpoints.

By fostering interdisciplinary collaboration, this course explores innovative ways to shape public interest technologies aiming for a more equitable and inclusive society where technology supports rather than undermines the livelihoods of marginalized communities.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4936 Public Interest Tech: Sen. Lab 1 Credit
Required in-person lab for STIA 4935.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4949 Tutorial: STIA 0-6 Credits
Permission of STIA Field Chair Required
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4960 Cancer, Culture, Politics 3 Credits
Cancer is the second leading cause of death worldwide. Global structural inequalities compound uneven prevention, treatment and health outcomes for cancer patients and complicate the lives of patients' families, medical practitioners and other caregivers. Research and development in oncological science and technology and global health cancer interventions are shaped by unequal transnational flows of capital and labor and by both national and nationalist interests. Cancer is hyper-charged with cultural metaphors and discourses of morality leading to both victim-blaming and to narratives of survivor and techno-medical heroics. Social activist movements and global public health initiatives use varied strategies with mixed results to destigmatize cancer and to hold carcinogenic-producing, environmentally hazardous industries accountable. This course examines these cultural politics of disease, medical science and technology through close reading of ethnographies of cancer to understand the lived experiences of cancer in diverse contexts around the world with case studies from the United States, China, India, Botswana, and Brazil (among others). We will consider how ethnographically grounded research can point to solutions for more equitable prevention, treatment, and care.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4961 Sr. Sem: Climate Sci Policy 3 Credits
Climate change is a global environmental, social, technological and economic challenge. Responding to this challenge will fundamentally affect global energy systems, development strategies, investment patterns, and distributional equity. This course examines the nature of the climate challenge from multiple perspectives in order to frame the climate change policy design process currently being deliberated around the world.

We begin by studying the science and impacts of climate change, discerning controversies from uncertainties. We then turn to the role of carbon in the energy system and in forests, the technologies available for greenhouse gas mitigation, and the economics of climate change. We then move into a detailed discussion of the policy options to address climate change, including a close study of policy implementation to date around the world including the role of carbon markets, cap and trade, and carbon taxes. We will examine how climate change can be addressed in the developing world—both the least developed countries and the emerging economies—including the role of technology transfer and the clean development mechanism. We will cover both the history and the future of the international climate change regime, with a focus on current issues under negotiation as countries work towards a new international climate change treaty.

The goal of this course is to provide students with a comprehensive look at climate change science and policy using methodological tools and theoretical framings from multiple disciplines, including international relations and diplomacy, energy and environmental policy and law, economics, science and technology studies, and the earth and atmospheric sciences.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4962 Deep Decarbonization 3 Credits
As climate change accelerates its devastating impacts, the world faces the enormous challenge of decarbonizing the global economy. Every sector - energy, transportation, industry, agriculture and others - will need to implement major changes to bring greenhouse gas emissions to net zero by mid-century and avoid climate catastrophe. The good news is that many technologies and practices already exist that can deliver a lot of the emissions reductions that we need. Unfortunately, the pathway to using them at scale faces many hurdles that are political, technological, and economic in nature.

In this class we will examine the options for deeply decarbonizing all major sectors of the global economy. We'll look at technologies such as renewable and nuclear power, low-carbon hydrogen and ammonia, carbon dioxide recycling, carbon removal, and geo-engineering to understand the role they could play in a decarbonized economy of the future. In parallel, we'll study the current and future costs and environmental impacts of using these technologies, as well as the policies, regulations and other factors that affect their widespread adoption. Along the way we'll learn key quantitative analysis tools such as life-cycle carbon accounting, techno-economic analysis and technology cost forecasting that underpin our understanding of how climate-relevant technologies will evolve in the future.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4963 Pol for Clean Air Glbl Hlth 3 Credits
Where there is fire, there is smoke! This course will focus on the global health and development-related aspects of improving air quality. Air pollution is the most important global environmental risk factor to global health. Over 95% of the world breathes unhealthy air (exceeding World Health Organization's air quality guidelines), resulting in over 6 million premature deaths each year. Building from the evidence linking combustion source pollution (from tobacco, ambient air pollution, and traditional cooking/heating practices) with adverse health effects, this course will address the leading sources responsible for the greatest environmental risk factor to health on a global scale, including household air pollution from cooking and heating with traditional stoves and fuels, traffic, industry, and forest fires. The effectiveness of several large scale efforts to improve air quality for health will be reviewed. In addition, the importance of ensuring the availability and transparency of data on air quality to 1) increase public demand for clean air and 2) design appropriate air quality management plans will be discussed. Students will gain a deep understanding of trends in air quality and health, and explore differences in trends by region and/or level of development. Students will also work collaboratively to develop in-depth case studies and/ or urban air quality management plans focused on addressing leading sources of pollution.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)
Course registration restrictions:
Enrollment is limited to students with a major in Science, Tech, Int'l Affairs.

STIA 4964 Infrastructure Environment 3 Credits
In this course, we explore how infrastructure interventions are used to manage and 'improve' the environment and livelihoods of people. The engineering solutions often promise a technical fix to complex social, economic and environmental issues. They often, however, come to materialize specific ideologies, power imbalances, and systematic ways of discrimination and exclusion. In this course, we take a critical perspective on large-scale engineering projects as socio-technical and environmental interventions. The case studies take us to different continents and different scales, from cities to cross-border regions. We learn about the history of infrastructure interventions in a variety of domains and geographies, and their impact on communities. We review contemporary infrastructure initiatives and plans in the face of climate change and urbanization, the projects' implementation and possible future impact on communities and ecosystems, and how those are measured (e.g. environmental impact and sustainability assessments). We discuss infrastructure as a 'promise' for betterment, but also the racism, colonialism and violence embedded in many of those projects.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4965 Research on Nuclear Issues 3 Credits
Full Title: Senior Seminar: Nuclear Proliferation Crises in Iran and North Korea. Course Description: This course will place the Iranian and North Korean nuclear programs into political and historical context, and examine similarities and differences between the international crises that have surrounded those programs. Technical primer of nuclear programs will be covered; histories of US diplomacy with both countries will be compared and contrasted. Research topics for students can include (but are not limited to): open-source technical studies; analysis of the effect of sanctions on (Iranian or North Korean) domestic politics or nuclear decision making; role of alliance politics and regional actors; histories of international nuclear cooperation and exclusion.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4966 EnergyEnvironmnt:China 3 Credits
China's energy rise has global implications—for foreign policy and international relations, international trade and competitiveness, the rise of emerging powers, the build out of fossil and low carbon energy systems, and for energy and environmental policy design. In this course we will examine China's key energy challenges in terms of security, sustainability, and innovation. Beginning with the premise that an understanding of China's energy system is crucial to understanding its economic and environmental limitations, the first section of the course examines China's energy industry in detail. The middle section turns to the examination of the impact of China's energy use on China's natural environment, the current energy technology and policy options available to reduce this impact, and the strategies the government is promoting to develop new clean energy industries for use at home and abroad. The final section shifts to looking at China in a global context, examining the internationalization of China's policymaking with respect to the environment and particularly China's crucial role in the international climate change negotiations, global trade and global energy markets. As both a STIA Senior Seminar, upper-level STIA elective and a graduate elective, students will complete weekly problem-driven, interactive labs that are designed to teach interdisciplinary research skills and relevant software and tools for data analysis.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)
Course registration restrictions:
Enrollment limited to students in the School of Foreign Service college.

STIA 4967 Sr. Sem: Surveil, Govern IT 3 Credits
This seminar course will motivate students to think critically about how information and changing technology impacts governance and what that means for the private and public sectors as well as civil society. Governments need information to fulfill their traditional mandates and meet new challenges in public service delivery, development and security. At the same time, individuals value privacy, are wary of surveillance and want transparency in decision-making. A rapidly changing technology environment and growing excitement about "big data" have resulted in unprecedented collection and release of information as made famous by Wikileaks. These contemporary developments are bringing the role of technology and information in governance to sharp focus. This class will explore information technologies ranging from paper and mobile phones to body-worn cameras, the TOR network and drones in varying political contexts including the British colonial empire, the largest social security program (India's National Rural Employment Guarantee Act), "liberation technologies" in Latin America and civic technologies in the US. Students will i) critically evaluate existing theories on information technology and governance and ii) develop their own understanding of how state, technology and society interact iii) apply their understanding to a case of their own choosing. The course is intended for students who want to design technology solutions, create or inform technology policy, and/or understand how technology is changing the nature of information, society and governance. For their final project, students will be asked to reflect on an information and technology based solution to a governance problem that they develop, or critically write about an existing information technology based approach in a governance context. Learning goals: 1)You will learn how to systematically think differently about how the state, technology and governance. 2)Critical understanding of existing theories on information and technology as they are related to addressing global governance challenges. 3)Conceive, develop and present a final paper and project. 4)Develop a sense of critical reflection while engaging in technical interventions. (for the technical minded students)
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)
Course registration restrictions:
Enrollment is limited to students with a program in Science, Tech, Int'l Affairs.

STIA 4968 Sr Sem:People/Plagues/Tech 3 Credits
Plagues are embedded in human history, shaping demographics and understandings of human landscapes. In this senior seminar we will examine epidemics from a social scientific perspective and explore the intersection of peoples, plagues, and the technologies they use to alleviate suffering. We will examine a range of issues that question how plagues come to be, how and why they afflict certain populations, and what people do to mitigate both the social and biological repercussions of epidemics and pandemics. Some relevant questions include: Why do epidemics occur? What are the political-economic and social factors that put certain populations at risk? Why do some epidemics get extensive media attention, while others that kill many more people remain invisible? By looking for answers to a range of questions like these and looking in depth at one question of personal interest to you, you will develop a solid foundation in global health understanding and the skills to think critically about health as one of the most pressing global issues.

Learning Goals At the end of this course, students who attend all classes, complete all the required readings, and participate in class fully should: 1) Consider the role of epidemics in shaping how people move, interact, and think; 2) Recognize that epidemics can be highly politicized or more marginalized depending on who they afflict (e.g., who dies); 3) Describe how social and political factors shape epidemics and the technologies developed to mitigate them; Understand the role of medical technologies to curb epidemic diseases.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)
Course registration restrictions:
Enrollment is limited to students with a major in Science, Tech, Int'l Affairs.

STIA 4969 Mind Madness Meditation 3 Credits
This senior seminar will explore how people around the global navigate global capitalism, flows of information, and changing cultural norms and societal expectations through the prism of mental illness. In this course we use biomedical ways of identifying mental illness—such as those defined by the Diagnostic and Statistical Manuel of Mental Disorders (known as the DSM-5)—as well as locally defined disorders that may not appear in psychiatric diagnoses. Anthropologists call these “etic” (global, cross-cultural) and “emic” (local and culturally embedded). Recognizing that global definitions and experiences of symptoms and diagnoses may differ in significant ways across cultures matters when thinking about who experiences what and where. But it also tells us a great deal about society and global politics and security: people wear social and emotional stress and trauma in and on their bodies. We will pull back the layers to these challenges and more in this senior seminar. Along the way, we will also engage in radical self-care, ending each class together in meditation and keeping self-care log each week.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)

STIA 4997 STIA Thesis Proposal Workshop 1 Credit
This seminar will provide both practical guidance for tackling a senior thesis and also gather the STIA thesis writers into a writing group to share their collective experiences, organizational tactics, writing practices, and, occasionally, frustrations. The most successful academic writers are able to transform their writing practices from isolated experiences into collective collaboration: they share, critique, encourage, and push each other to produce high quality work. The end result will be a detailed thesis proposal to submit to the STIA faculty for review and approval for students who wish to join the honors thesis program.
Level: Undergraduate
Grading: Main Campus (UGrad, Grad)
Course registration restrictions:
Enrollment limited to students in the School of Foreign Service college.

STIA 4998 Honors Research Seminar 3 Credits
This seminar course is for honors candidates in the STIA major. It offers the opportunity to: 1) develop skills for conducting and presenting original research and 2) write a thesis for honors based on original research focused a topic of your choosing related to the intersection of science, technology and international affairs. The seminar will meet weekly for most of the term to learn skills but more importantly share experiences, receive feedback from your fellow students and from the seminar instructor, and hear presentations on shared problems and techniques. For the most part, you will work independently under the guidance of your research mentor. Student grades will be based on their participation in the seminar in the fall semester and on the quality of their thesis when it is completed in the spring.
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)
Course registration restrictions:
Enrollment is limited to students with a major in Science, Tech, Int'l Affairs.

STIA 4999 STIA Honors Thesis 1-3 Credits
Enrollment Restricted to STIA Honors Thesis Candidates only
Level: Graduate, Undergraduate
Grading: Main Campus (UGrad, Grad)
Course registration restrictions:
Enrollment is limited to students with a major in Science, Tech, Int'l Affairs.

STIA 5200 Writing Science Politics 3 Credits
This class will produce the first-ever student publication volume for Science Politics indexed via Digital Georgetown. Science Politics was launched in 2025 by the STIA program to build civic trust through solutions-focused journalism addressing six core themes: energy, food, technology, health, environment, and space. We've honed a writing form we call a "journazine" (a hybrid that combines academic rigor with journalistic storytelling): 3-5 times a week, we publish feature-length articles that combine a journal's deeply researched, original insight with the accessible, explanatory language of a magazine. We also publish longer-form essays as special collections that are available in print and online. By making information free and easily accessible, we hope to build more dialogue and possibly more trust in scientific experts.

Students will write several articles in the style of Science Politics. You will learn many aspects of working on the journazine, from writing your own opinion pieces, researched articles, explainers, book reviews, and letters to the editor to editing, fact-checking, managing the website, business side of our publication, drafting the final copy, and design for the student-run volume. With this process, our contributors 1) learn practical writing and journalistic tools to strengthen clarity and influence; 2) understand the Science Politics model of audience, solutions orientation, and impact; and 3) join a growing network of scientists and policymakers committed to advancing science communication.

Your professor is seasoned journalist Prof Kelly J Kelly, who has long worked in journalism in the DC area, including 12 years for Voice of America and 20 years as a fellowship coach for The OpEd Project. She is also founding Executive Editor for Science Politics. The course will produce its first-ever student volume of essays for Science Politics, and you will learn the ins and outs of producing a "journazine". This is a skills-based class that is a particularly good fit for students who anticipate communicating with the public and establishing themselves as thought leaders. We will do limited outside reading but plenty of writing.
Level: Graduate
Grading: Main Campus (UGrad, Grad)

STIA 7949 STIA Tutorial 0-3 Credits
Level: Graduate
Grading: Main Campus (UGrad, Grad)