Fall 2024

Space Policy (INTA 3043 / 8803)

Course Details

Meeting time:	Tuesdays and Thursdays, 8:00 to 9:15 am
Classroom:	Habersham G17
Catalog details:	Lecture, 3.000 credits
Canvas ID:	397956

Course Instruction

Instructor:	Thomas González Roberts
Email:	thomasgr@gatech.edu
Office:	Habersham 305
Office hours:	Tuesdays and Wednesdays, 9:30 to 11:00 am, or by appointment

Course Description

As satellites orbit the Earth hundreds or thousands of kilometers above our heads, they quietly play a critical role in our daily lives, the global economy, and military power. To study space policy is to interrogate the decision-making processes for the civil, commercial, and military uses of outer space from the dawn of the space age to the modern day, spanning issues of international coordination, sustainability, and security in the domain. Through this course, students will learn about the diverse factors that have historically shaped space policy thinking, from the original rationales for spaceflight, to the birth of the commercial space industry, to the development of international systems that promote long-term stability in a rapidly densifying environment.

By engaging with the debates and decisions that have shaped global space activities, students will gain an appreciation for the role of space technologies in global society, the critical challenges facing this domain, and the intricate politics driving contemporary space policy in both the United States and around the world.

Course Objectives

By actively participating in this course, students will earn familiarity with:

- The outer space environment as a geopolitical domain;
- The fundamental treaties, laws, agreements, and policies that apply to space operations; and
- The roles of key actors in the development and administration of space governance principles.

Using this knowledge, students will be able to:

- Examine the physical, social, political, and economic factors that have shaped global space policy and their impact on current and future space activities;
- Critically evaluate historical space policy proposals and decisions; and
- Develop clear and persuasive arguments for policy options that address current and future challenges in the space domain.

Core IMPACTS

This course is part of Core IMPACTS' Social Sciences area. Core IMPACTS refers to the core curriculum, which provides students with essential knowledge in foundational academic areas. This course will help students master course content, and support students' broad academic and career goals.

This course should direct students toward a broad Orienting Question:
- How do I understand human experiences and connections?

Completion of this course should enable students to meet the following Learning Outcome:
- Students will effectively analyze the complexity of human behavior, and how historical, economic, political, social, or geographic relationships develop, persist, or change.

Course content, activities, and exercises in this course should help students develop the following Career-Ready Competencies:
- Intercultural Competence;
- Perspective-Taking; and
- Persuasion.

Course Materials

All readings for this course will be made available at no additional cost to students. There is no need to purchase any textbooks. The readings will include a mix of open-access materials and library resources accessible through students' Georgia Tech Library credentials.

Required Readings

Required readings are those that must be completed before the Tuesday class meeting of the corresponding week. Content from required readings are subject to appear on the midterm exam. All required readings are posted as links in the "Course Schedule" section of the Canvas homepage or uploaded as PDFs to the "Files" repository of the course's Canvas page.

Suggested Readings

Suggested readings are those included as additional resources for students as they prepare their policy memos throughout the term, but feature content that will not appear on the midterm exam. Suggested readings appear on Canvas as links within the policy memo assignments. The following suggested readings offer background information related to the course as a whole and serve as richer introductions to the material for interested readers:
- James Alver and Micheal Gleasor, "A Space Policy Primer: Key Concepts, Issues, and Actors," The Aerospace Corporation, November 2018;

- James Clay Moltz, *Crowded Orbits: Conflict and Cooperation in Space* (New York: Columbia University Press, 2014); and
- Christopher D. Johnson, ed., *Handbook for New Space Actors* (Broomfield, CO: Secure World Foundation, 2017).

Grading

Class participation and all required assignments are graded on equally weighted points, totaling 100 points for the semester. Extra credit opportunities to add additional points to students' total for the semester are described in the "Assignments" section.

Grade Distribution

Requirement	Dates	Points
Class Participation Weeks 1-8 participation (5 pts.) Weeks 9-16 participation (5 pts.)	Tuesdays and Thursdays, August 20 through November 26 (see Course Calendar).	10
Policy Memos Six policy memos (5 pts. each, 250-500 words)	Due most Thursdays (see Course Calendar), uploaded to Canvas by the start of class.	30
Milestone presentation One short talk (3 pts., five to 10 minutes) Accompanying slide deck (1 pt.) Summary of key findings (1 pt., 100-150 words)	Topic selection due via sign-up sheet on Canvas by August 29; presentations in class on September 24, October 1, and October 8; slide deck and summary of key findings due on Canvas by selected presentation day.	5
Midterm Exam Short answers and identification (20 pts.)	In class on October 10.	20
Final Assignment One proposal memo (5 pts., 250-500 words) One essay (20 pts., 3,000-4,000 words) One policy memo (5 pts.,250-500 words) One short talk (3 pts., five to 10 minutes) Accompanying slide deck (2 pts.)	Topic selection due via submitted proposal memo on November 7; briefings in class on November 26, December 3, and December 6; essay and one-page policy memo due on Canvas by December 12.	35
	Total:	**100**

Grading Scale

The thresholds for earning an A, B, C, or D lettergrade are 90, 80, 70, and 60 points, respectively. Students who earn fewer than 60 points during the semester will fail this course.

Assignments

All assignments submitted during the course of the semester are due on Thursdays at 8 am ET on the dates described in the "Course Calendar" section. The final paper and corresponding policy memo are due at 10:50 am ET on Thursday, December 12. All assignments are to be submitted on Canvas.

Class Participation (2×5 pts.)

Active participation is essential to students' success in this course. Students are expected to come to each class well-prepared, having thoroughly read and reflected on the assigned materials. Engaging thoughtfully and respectfully with classmates and the instructor during discussions will deepen students' understanding of the course content and enhance their learning experience. Full credit for participation requires consistent attendance, preparation, and meaningful contributions to seminar discussions, including those led by guest lecturers and student speakers.

Class participation is graded twice during the term: at the halfway point and end of the course, reflecting student performance in the first and second halves of the semester, respectively.

Policy Memos (6×5 pts.)

When asked to make a decision, executive leaders rely on brief, digestible materials to inform their understanding of the problem at hand and process evidence-based arguments. To develop their practice producing these materials, students will use the required and suggested readings from the course to analyze the core issue presented in the provided prompt and present their opinion on the matter, supported by both evidence and explanation. In some cases, students will benefit from sharing their interpretation of the prompt, including providing the key definitions and reasonable assumptions on which their analysis is based.

Throughout the course of the semester, students will submit six 250- to 500-word policy memos, addressing a question introduced one week in advance. Although there are 10 opportunities to submit memos, students need only submit six in order to meet the course requirements. If students submit more than six policy memos, the top six scores will contribute to their final grade.

Grading will be based on clarity, accuracy, and style. Submitted policy memos should always be contained on a single page, written in 11- or 12-point Times New Roman or Arial font, and use footnote citations in the "Notes" format from the Chicago Manual of Style.

Milestone Presentations (5 pts.)

Throughout the history of space operations, a number of key milestones—from treaties, to speeches, to presidential directives—have had outsized impact shaping the direction of space policy in both the United States and on the international stage. To better understand these foundational materials, students will select one of these milestone and produce a five to 10 minute presentation describing its:

- Principal actors (Who was responsible?);
- Core contributions (What did it do?)
- Context in the history of space decision-making (When did it happen?); and
- Impact on space operations, including international affairs and space technology (Why did it matter?).

In addition to the presentation materials, students must produce a 100- to 150-word summary of their key findings, geared towards an audience with limited exposure to the course's topics. This summary and a copy of the student's slide is due on Canvas at the start of class on the date of the student's presentation.

Students may select any milestone that appears on a pre-approved list of topics or propose their own topic with instructor approval. Students must indicate their selection on the sign-up sheet on Canvas by Thursday, August 29.

Grading will be based on clarity, accuracy, and style. Students are encouraged to explore examples in which their selected milestone relates to technical topics in space engineering, including those that may seem non-obvious.

Midterm Exam (20 pts.)

Halfway through the semester, students will sit for a midterm exam designed to assess their understanding of the material from the first half of the semester, including topics from both lectures and required readings (Lectures 1 through 11). The exam will include short-answer and identification-based questions. The exam is scheduled for Thursday, October 10, during class.

Final Assignment (5+5+20+5 pts.)

At the end of the semester, students will write a 3,000- to 4,000-word paper on a space policy topic of their choice. Students are encouraged to select a topic that addresses issues directly affecting today's space policy decision-makers, such as the legal and political challenges of rendezvous and proximity operations, the role of commercial space actors in national security missions, or the opportunities and costs of international cooperation or coordination between the United States and foreign states.

Unlike the policy memos in this course, this final paper should be written for an audience informed on past and current issues in space policy. To guide their writing style, students may refer to the journal articles and policy reports featured in the course's lists of required and suggested readings. Essays should include:

- A clear introduction to the policy research question (What are the technical and political challenges surrounding this topic? Who are the stakeholders?);
- A literature review (What background information does the reader need to know on this topic to understand the author's argument? How is the selected research question contextualized in past scholarship?);
- Approach and methodology (How will the author try to answer the research question?);
- Data and analysis (What was learned by following the previously outlined approach and methodology?); and
- Discussion and conclusion (How do the previously presented results inform decision-making in space technology development and international affairs? What concrete recommendations does the author have for policymakers?)

To prepare students for success in the final paper, they will propose the topic of their paper in the style of a policy memo to the instructor. This proposal memo, worth five points, should preview the research question, demonstrate a cursory knowledge of the subject, feature a plan for the student's approach for answering the question, and preview preliminary results, if available. The proposal memo is due on Canvas on Thursday, November 7. Like the policy memos, proposal memos should be 250 to 500 words and no more than one page.

To demonstrate their skills briefing materials to decision-makers, students must prepare a five to 10 minute presentation, worth five points, sharing their findings with the rest of the class.

To demonstrate their skills writing policy memos, students must submit a final policy memo, worth five points, describing the findings of their final paper. If they lean on their memo-writing experience from the past memo assignments and their mastery of the subject matter from writing the final paper, successful students should spend no more than one hour on their last memo. Like previous policy memos, this final policy memo should be 250 to 500 words and no more than one page.

Both the final paper and the final policy memo are due on Canvas at 10:50 am ET on Thursday, December 12. All components of this final assignment—including the proposal memo, the final paper, and the final policy memo—should be written in 11- or 12-point Times New Roman or Arial font and use footnote citations in the "Notes" format from the Chicago Manual of Style.

Extra Credit (5 pts.)

Students can earn extra credit, increasing their total points for the course, in two ways: writing memos that summarize the proceedings of selected public events in the broader space policy research community and attending selected on-campus events at the intersection of space policy and technology. Students are encouraged to participate in all of the events eligible for extra credit, but can accumulate no more than five additional points to add to the total earned from the principal components of the course.

The space policy research community is exceptionally rich in opportunities for virtual engagement, including congressional hearings, panel discussions hosted by non-governmental research organizations, and keynote addresses by industry leaders, among many others. If students attend any event featured on SpacePolicyOnline.com's weekly "What's Happening in Space Policy" newsletter and write and submit one memo in the style of the course's policy memos, they will earn one point of extra credit. These memos should introduce the topic of the event, explain why it is important to contemporary issues in space policy, and summarize the viewpoints of its featured speakers, if applicable. Events on this list typically feature commentary from experts in the field; students are particularly encouraged to include verbatim quotes from these speakers, appropriately cited using the Chicago Manual of Style.

Throughout the course, the instructor will highlight on-campus events with invited speakers that plan to share their experience and research findings from their careers in space policy. Students will earn one point of extra credit for each session they attend; no memo necessary.

Course Schedule

While most of the scheduled class meetings feature an in-person lecture by the instructor or an invited guest (🏫), others feature a virtual lecture by the instructor (💻). Links to join virtual lectures will be available on Canvas; reminders will be sent to enrolled students prior to each virtual session.

The course calendar shows that schedule of instruction, as well as instructor office hours (🕒), assignment due dates (📝), and important items from the Institute's academic calendar (🐝). The class

meetings list shows the list of topics for each lecture. The version of this list on the course's Canvas page also includes required readings and links to each lecture's slide deck.

Course Calendar

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1	Aug. 19	20 🏫 Lecture 1 🕒 Office hours	21 🕒 Office hours	22 🏫 Lecture 2	23
Week 2	Aug. 26	27 🏫 Lecture 3 🕒 Office hours	28	29 📝 Select presentation topic 💻 Lecture 4	30
Week 3	Sept. 2 🐝 Institute holiday	3 🏫 Lecture 5 🕒 Office hours	4 🕒 Office hours	5 📝 Policy memo 1 due 🏫 Lecture 6	6
Week 4	Sept. 9	10 💻 Lecture 7	11	12 📝 Policy memo 2 due 💻 Lecture 8	13
Week 5	Sept. 16	17 🏫 Lecture 9 🕒 Office hours	18 🕒 Office hours	19 📝 Policy memo 3 due 🏫 Guest lecture 1	20
Week 6	Sept. 23	24 🏫 Student presentations 🕒 Office hours	25 🕒 Office hours	26 📝 Policy memo 4 due 🏫 Lecture 10	27
Week 7	Sept. 30	Oct. 1 🏫 Student presentations 🕒 Office hours	2 🕒 Office hours	3 📝 Policy memo 5 due 🏫 Lecture 11	4
Week 8	Oct. 7	8 🏫 Student presentations 🕒 Office hours	9 🕒 Office hours	10 🏫 In-class midterm exam	11
Week 9	Oct. 14 🐝 Institute holiday	15 🐝 Student recess	16 🕒 Office hours	17 📝 Policy memo 6 due 🏫 Lecture 12	18
Week 10	Oct. 21	22 🏫 Lecture 13 🕒 Office hours	23 🕒 Office hours	24 📝 Policy memo 7 due 🏫 Lecture 14	25
Week 11	Oct. 28	29 🏫 Lecture 15 🕒 Office hours	30 🕒 Office hours	31 📝 Policy memo 8 due 🏫 Lecture 16	Nov. 1
Week 12	Nov. 4	5 🏫 Lecture 17 🕒 Office hours	6 🕒 Office hours	7 📝 Final paper proposal due 🏫 Lecture 18	8
Week 13	Nov. 11	12 🏫 Lecture 19 🕒 Office hours	13 🕒 Office hours	14 📝 Policy memo 9 due 🏫 Lecture 20	15
Week 14	Nov. 18	19 🏫 Lecture 21 🕒 Office hours	20 🕒Office hours	21 📝 Policy memo 10 due 🏫 Guest lecture 2	22

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 15	Nov. 25	26 🏫 Student presentations 🕒 Office hours	27 🐝 Student recess	28 🐝 Institute holiday	29 🐝 Institute holiday
Week 16	Dec. 2	3 🏫 Student presentations	4 🐝 Reading day	5 🏫 Student presentations	6

Class Meetings

Most Tuesdays and Thursdays will feature an in-person (🏫) or virtual (💻) lecture. All guest lectures are in person. Classes will not meet (🚫) during student recess or institute holidays.

	Lecture	Date	Topic
Week 1	1 🏫	Tuesday, Aug. 20	Class Introductions
	2 🏫	Thursday, Aug. 22	Outer Space Environment
Week 2	3 🏫	Tuesday, Aug. 27	Key Issues, Institutions, and Milestones in Space Policy (Part I)
	4 💻	Thursday, Aug. 29	Key Issues, Institutions, and Milestones in Space Policy (Part II)
Week 3	5 🏫	Tuesday, Sept. 3	The Global Space Launch Industry (Part I)
	6 🏫	Thursday, Sept. 5	Getting to Orbit: the Global Space Launch Industry (Part II)
Week 4	7 💻	Tuesday, Sept. 10	Military Activities in the First Spage Age
	8 💻	Thursday, Sept. 12	Military Activities in the Second Space Age
Week 5	9 🏫	Tuesday, Sept. 17	Military Activities in the Third Space Age
	– 🏫	Thursday, Sept. 19	Guest lecture: Kaitlyn Johnson (U.S. Space Force)
Week 6	– 🏫	Tuesday, Sept. 24	Student Space Policy Milestones Presentations (Part I)
	10 🏫	Thursday, Sept. 26	Human Space Exploration (Part I)
Week 7	– 🏫	Tuesday, Oct. 1	Student Space Policy Milestones Presentations (Part II)
	11 🏫	Thursday, Oct. 3	Human Space Exploration (Part II)
Week 8	– 🏫	Tuesday, Oct. 8	Student Space Policy Milestones Presentations (Part III)
	– 🏫	Thursday, Oct. 10	***In-class midterm exam***
Week 9	– 🚫	Tuesday, Oct. 15	*Student recess*

	Lecture	Date	Topic
Week 9	12 🏫	Thursday, Oct. 17	The Commercial Space Industry (Part I)
Week 10	13 🏫	Tuesday, Oct. 22	The Commercial Space Industry (Part II)
	14 🏫	Thursday, Oct. 24	Communications Satellites
Week 11	15 🏫	Tuesday, Oct. 29	Earth Observation Satellites
	16 🏫	Thursday, Oct. 31	Position, Navigation, and Timing Satellites
Week 12	17 🏫	Tuesday, Nov. 5	Space Surveillance
	18 🏫	Thursday, Nov. 7	Space Sustainability (Part I)
Week 13	19 🏫	Tuesday, Nov. 12	Space Sustainability (Part II)
	20 🏫	Thursday, Nov. 14	Space Coordination (Part I)
Week 14	21 🏫	Tuesday, Nov. 19	Space Coordination (Part II)
	– 🏫	Thursday, Nov. 21	Guest lecture: Josh Ingersoll (Astranis Space Technologies)
Week 15	– 🏫	Tuesday, Nov. 26	Student Final Paper Presentations (Part I)
	– 🚫	Thursday, Nov. 28	*Institute holiday*
Week 16	– 🏫	Tuesday, Dec. 3	Student Final Paper Presentations (Part II)

Course Guidelines

The following subsections describe the course's guidelines with respect to academic integrity (including the prohibition of generative artificial intelligence for submitted writing assignments), accommodations for students with disabilities, the student-faculty expectations agreement, the use of electronics during class meetings, inclusion, class absences, grade appeals, and issues of mental health of wellness that may affect students' performance in the course.

Academic Integrity

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. Any student suspected of cheating or plagiarizing on a policy memo, the midterm exam, or the final assignment will be reported to the Office of Student Integrity (OSI), which will investigate the incident and identify the appropriate penalty for violations. For more information on the Honor Code, visit the OSI website.

Using ChatGPT or other generative artificial intelligence (AI) tools to write any portion of a submitted assignment in this course is considered plagiarism. All assignments submitted in fulfillment of this course's requirements are subject to review for plagiarism using commercial plagiarism detection software.

Accommodations for Students with Disabilities

Students with learning needs that require special accommodation should contact the Office of Disability Services at (404) 894-2563 or via their website as soon as possible to discuss their needs and to obtain an accommodations letter. Students with special accommodations should make an appointment with the instructor as soon as possible to discuss their learning needs.

Student-Faculty Expectations

The Georgia Tech community believes that it is important to continually strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. These beliefs are described in detail in Georgia Tech's Rules and Regulations 21. Ultimately, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. We remain committed to the ideals of Georgia Tech, agree to abide by these principles in our time here, and will encourage each other to uphold these responsibilities.

Electronics Policy

Students may use laptops or other similar electronic devices during classes for note-taking purposes. The instructor, however, reserves the right to forbid these items in class in cases when they become a distraction from class discussion. Only students with written permission from the Office of Disability Services may record class meetings. Even in those cases, students cannot infringe on the privacy of their peers and the instructor, and any such records should be deleted at the end of the term.

Inclusion

This class is designed to be an inclusive and welcoming environment for everyone, regardless of their background, ideas, or life experiences. All participants should treat one another with the dignity and respect that every person deserves, recognizing and valuing differences in ethnicity, race, gender, sexual orientation, religion, socioeconomic background, origin, or any other aspect of identity. Because the instructor receives students' legal names through the Georgia Tech roster, students who prefer to be addressed by a different name or gender pronoun should contact the instructor at the beginning of the semester.

Absences

In-person attendance is expected and essential for classroom participation. However, there are valid reasons why students may be unable to attend class, such as illness, the death of a friend or family member, or disabilities. Students who anticipate being unable to attend class are asked to notify the instructor prior to the affected class meeting, when possible. Additionally, if a student is feeling unwell, they are advised to stay home and rest in the interest of the health and safety of the entire class.

Appeals

It is uncommon for students to contest a grade. However, if a student believes that the grade received does not accurately reflect the quality of their work, they may submit a one-page memo in the style of the course's policy memo explaining why the assignment merits re-evaluation. This memo should include as much detail as possible. Upon receiving the memo, the instructor will re-evaluate the work. Please note that the grade may remain the same, increase, or decrease following the re-assessment.

Mental Health and Wellness Resources

Students in need of assistance are encouraged to contact the Center for Mental Health Care and Resources at (404) 894-2575 or visit their website. Georgia Tech provides various resources for students seeking mental health services or crisis support. In the event of an immediate, life-threatening emergency on campus, students should call the Georgia Tech Campus Police at (404) 894-2500. For additional resources on managing stress, anxiety, relationships, sleep, and more, students are advised to review this list of free online tools compiled by the Center for Mental Health Care and Resources.