Space Policy

INTA 3043/8803

Habersham G17
Fall 2023
Class Time: Tuesdays & Thursdays, 12:30-1:45 pm

Dr. Lincoln Hines
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Office: 212D
Office Hours: 2:30-4:30 pm Tuesdays or by appointment

Syllabus

Space technologies play a profound role in daily life, the global economy, and modern military power. This course surveys the beliefs and ideas animating space policy debates today and space capabilities' role in diplomacy, military power, and the global economy. Through this course, students will also learn about the physical threats to the future sustainability of the space domain, the risks of conflict and war in space, transformations in the global launch industry, the role of rising powers and other new space actors, the immense challenges of devising international norms and rules for governing behavior in outer space, and planetary defense. This course will not only leave students with an appreciation for the role of space technologies in human life and the critical challenges facing this domain but also an understanding of the politics that drive contemporary space policy debates.

Course Goals and Learning Outcomes

By the end of this course, students should be able to:

- Examine the domestic and international factors that shape space policy.
- Critically evaluate arguments related to commercial, military, and civilian uses of space.
- Assess contemporary policy debates regarding space exploration, commercial space, governance of the space domain, emerging trends, and the relationship between space policy and national security.

Course Materials

Most readings for this course are available online through the Georgia Tech Library or are open access. I have uploaded any readings that are not available through the library or online on Canvas. Students are not required to purchase any materials for this course. Reading must be completed before each class. Students are responsible for all assigned readings, even if the material is not explicitly discussed in class.

Course Requirements & Grading

Assignment	Dates	Weight
Class Participation		15%
Student Presentation	Assigned on the first day of class	15%
Midterm Exam	October 17	30%
Final Paper	December 5	40%

Grading Scale

Your final grade will be assigned as a letter grade according to the following scale:

A	90-100%
B	80-89%
C	70-79%
D	60-69%
F	0-59%

Assignments

Class Participation (15%)

Your success in this course depends on careful preparation for and active engagement in seminar discussions. You are expected to read and study all assigned materials, come to class prepared to contribute to the seminar, and engage in thoughtful, respectful, and critical discussions with your classmates and instructor. Attendance is a prerequisite for participation.

Midterm Exam (30%)

During Week 9 of the course, students will take an exam on course material from the previous week's classes. The exam will include short essays and short-ID questions. Students are encouraged to collaborate with peers in preparing for the midterm exam. The exam will take place during class on Tuesday, October 17th (the beginning of week 9).

Student Presentations (15%)

Throughout the course, students will present on a topic related to contemporary space policy. I will provide a signup sheet at the beginning of the course so students can choose one of the topics (and dates). Students may also propose an alternative topic from those provided after consulting with me and receiving my approval. These presentations will be 5-10 minutes in length, and students should prepare slides (with a concluding slide with references used to prepare the presentation).

Final Paper (40%)

For the final assignment, students will write an essay between 3-4,000 words on a topic of their choosing in space policy. Students should write on matters related to space policymaking rather than a paper focused on technical or design features of a given technology. Of course, your paper may touch upon some of these technical features, but it should focus more on policy challenges. For example, a paper might ask: "What are the legal and political challenges to removing space debris?"; "What are the risks and opportunities created by embracing new commercial space actors?"; "Should the United States and China cooperate in outer space?"

If you have a difficult time choosing a topic, we can discuss during office hours about finding an appropriate topic. For this essay, write with policymakers as an intended audience. For ideas of how this might look, you can refer to more policy-oriented journals or outlets such as *Space Policy*, *New Space*, *The Washington Quarterly*, *Texas National Security Review*, etc.

The due date for the final essay is by class time the final day of class (December 5th). Please send me your paper proposal by class-time September 19th. The proposal will be 1-2 pages double space, discussing your proposed research question, how you plan to research and answer this question, and bibliography with sources informing your topic. The research proposal will count 10% toward your final paper grade.

Note*: All papers will use Times New Roman 12, double space between sentences, 1" margins all around, insert student Name and Date in the header, and include the page number in the center of the footer.*

Extra Credit Memo (1-2 points)

For extra credit, you can attend a space policy event on campus or online, such as those held as part of the International Astronautical Congress (October 2-6) or by a think tank (such as CSIS Aerospace, Brookings Institution, Atlantic Council, etc.). After attending the event, please type a 1-2 page (double-spaced) synopsis and discuss either what you learned from the event, relevant themes from the course, and any questions you have. You will receive 1 point upon completion, which will be applied to your final grade. You can only submit two extra credit memos (for a max of 2 points), though you are encouraged to attend as many of these events as possible.

Office Hours

I will hold regular office hours on Tuesdays from 2:30-4:30 pm. Please come to discuss the material, things in the news, questions about assignments, or other topics related to this class. If my regular office hours do not work with your schedule, you can email me to set up a different time to meet.

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.

For information on Georgia Tech's Academic Honor Code, please visit http://www.catalog.gatech.edu/policies/honor-code/or http://www.catalog.gatech.edu/rules/18/.

Any student suspected of cheating or plagiarizing on an assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations. Using Chat GPT or other generative AI tools in your written assignments is considered plagiarism.

Accommodations for Students with Disabilities

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services at (404) 894-2563 or http://disabilityservices.gatech.edu/, as soon as possible to make an appointment to discuss your special needs and to obtain an accommodations letter.

Student-Faculty Expectations Agreement

At Georgia Tech, we believe that it is important to strive for an atmosphere of mutual respect, acknowledgment, and responsibility between faculty members and the student body. See http://www.catalog.gatech.edu/rules/22/ for an articulation of some basic expectations that you can have of me and that I have of you. Ultimately, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.

Electronics Policy

You may use laptops or other similar electronic devices during classes, but only for notetaking purposes. However, I reserve the right to forbid these items in class should they become a nuisance or distract from class discussion. Students cannot record lessons unless they have written permission from the Office of Disability Services. Students with this permission are only permitted to use these recording for their personal academic use, and cannot infringe on the privacy concerns of their peers and the instructor, or the copyright interests of the instructor by sharing the materials outside the class. At the end of the semester, any such recordings should be deleted.

Inclusion

This class seeks to foster an inclusive and welcoming space for individuals with a diversity of ideas, identities, and life experiences. Everyone in this class will treat each other with dignity and respect, regardless of differences in ethnicity, race, gender, sexual

orientation, religion, socioeconomic background, origin, or any other difference in identity. I am provided with each student's legal name through the Georgia Tech educational platform. However, I encourage students to contact me at the beginning of the semester if they prefer to be addressed differently (e.g., gender pronoun or name).

Absences

In-person student attendance is expected and necessary for classroom participation. However, there are several valid reasons why students may not attend class, e.g., illness, death of a friend or family member, disabilities, etc. If you anticipate that you are unable to attend class, I ask that, when possible, you notify me prior to class.

In addition, I ask that if you are feeling sick, *do not come to class*. In the interest of everyone else's health and safety, stay home and rest.

Appeals

It is rare that students need to contest a grade, but if you believe your given grade is not reflective of your quality of work, you may write 1-2 page memo explaining why your assignment deserves to be re-graded. In writing this memo, please provide as much detail as possible. After receiving this, I will re-evaluate your work, though please note that during the re-grade, your grade may be equal to, higher, or lower than your original grade.

Mental Health and Wellness Resources

If you or someone you know needs assistance, you are encouraged to contact the Center for Mental Health Care & Resources at 404.894.2575 (or 404.894.2575) or visit https://mentalhealth.gatech.edu. Georgia Tech has several resources for a student seeking mental health services (https://mentalhealth.gatech.edu/about/scheduling-appointment) or crisis support (https://mentalhealth.gatech.edu/seeking-help/get-help-now. Students experiencing an immediate life-threatening emergency on campus, call the Georgia Tech Campus Police at 404.894.2500. For more resources on managing stress, anxiety, relationships, sleep, etc., please visit https://mentalhealth.gatech.edu/mental-health-resources/self-help for a list of free online resources compiled by the Center for Mental Health Care and Resources.

Course Schedule

Week 1: Introductions and Space Policy Today

August 22nd: Introductions, Overview of the Space Environment

No readings assigned for first class. Just read the syllabus closely and check out the suggested resources below if you need a primer or background on physical features of the space domain.

***Suggested Resources (Not Required)**: Those who are interested in further primers (or reviews) on the space domain, physics, and orbital mechanics may find the following resources useful**:*

Richard A. Muller. 2008. *Physics for Future Presidents: The Science Behind the Headlines*. W.W. Norton & Company 2008. Part IV, Ch.15-18 (191-245)

- *The Aerospace Corporation*, The Physics of Space War: https://www.youtube.com/watch?v=SmFb-4KVG4M
- *The National Security Space Institute (NSSI)*, Launch, Propulsion, and Re-Entry: https://www.youtube.com/watch?v=5n2Px6hCvtg
- *NSSI*, Space Mission Operations: https://www.youtube.com/watch?v=5n2Px6hCvtg
- *NSSI*, Space Environment: https://www.youtube.com/watch?v=LIqPxnoprqY
- *NSSI*, Spacecraft Subsystems: https://www.youtube.com/watch?v=iXRjHp_p1n4
- *NSSI*, Electromagnetic Spectrum Basics: https://www.youtube.com/watch?v=4r59CaLhVNY
- *NSSI*, 2-Body Equation of Motion: https://www.youtube.com/watch?v=QrnTqefMNp8
- *NSSI*, Orbit Types: https://www.youtube.com/watch?v=BvjlBpP4zU8&t=93s
- *NSSI*, Classical Orbital Elements (COEs): https://www.youtube.com/watch?v=2gAYqtmNJx8
- *NSSI*, Conservation of Energy & Momentum: https://www.youtube.com/watch?v=4LbFqyM-j_A
- *NSSI*, Gravity: https://www.youtube.com/watch?v=0mFEtdBvZcw
- *NSSI*, Newton's Laws: https://www.youtube.com/watch?v=04Qjjnozgvc
- *NSSI*, Kepler's Laws: https://www.youtube.com/watch?v=djgPfNrEkp0&t=2s

August 24th: Contemporary Debates in Space Policy

"Space Policy and Sustainability: Issue Briefing for the Biden Administration," *Secure World Foundation*, 2020: https://swfound.org/media/207084/swf_space_policy_issue_briefing_2020_web.pdf

Week 2: Rationales, Promises, and Constraints

August 29th: Rationales for Spaceflight

Archive Clip: JFK at Rice University, September 12, 1962—'We Choose to Go to the Moon' *JFK Library*, September 12, 1962 [Video]: https://www.youtube.com/watch?v=iQV9CAJWlVY

Cody Knipfer. 2016. Why Should We Go? *The Space Review*. 16 October: https://www.thespacereview.com/article/3351/1

August 31st: Promises and Constraints

Daniel Deudney. 2020. *Dark Skies: Space Expansionism, Planetary Geopolitics, & The Ends of* Humanity. Oxford University Press. Chapter 3: "New Heavens, New Earth."; Chapter 4 "Technological Imaginaries, Feasibilities, Syndromes, and Catastrophes" (65-145).

Jeff Becker, "A Starcruiser for Space Force: Thinking Through the Imminent Transformation of Spacepower," *War on the Rocks*, May 19, 2021: https://warontherocks.com/2021/05/a-starcruiser-for-space-force-thinking-through-the-imminent-transformation-of-spacepower/

Rebecca Reesman and James Wilson. 2021. Physics Gets a Vote: No Starcruisers for Space Force. *War on the Rocks*. 28 June: https://warontherocks.com/2021/06/physics-gets-a-vote-no-starcruisers-for-space-force/#:~:text=Currently%2C%20the%20Space%20Force%20does,because%20starcruisers%20will%20not%20exist.

Week 3: The Space Age and Its Military Origins

September 5th: The Space Age

Michael J. Neufeld. 2018. *Spaceflight: A Concise History*. MIT Press. Ch.1-3, 1-71.

September 7th: Military Origins of the Space Age

Bleddyn Bowen. 2022. Original Sin: Power, Technology, and War in Outer Space: https://www.youtube.com/watch?v=vX751_TiJqQ

Michael Neufeld. 2007. Wernher von Braun's Ultimate Weapon. *Bulletin of Atomic Scientists*. July/August 2007: 50-57.

Week 4: The Military's Role in Space

September 12th: Space Capabilities as a Force Multiplier

Larry Greenemeier. 2016. GPS and the World's First "Space War." *Scientific American*, 8 February 2016: https://www.scientificamerican.com/article/gps-and-the-world-s-first-space-war/

Ashton B. Carter. 1986. Satellites and Anti-Satellites: The Limits of the Possible. *International Security* 10(4): 46-98.

September 14th: Space Weaponization and the Rise of Space Forces

Kari A. Bingen, Kaitlyn Johnson, Makena Young. 2023. Space Threat Assessment 2023. *CSIS Aerospace Security Project*. April: https://csis-website-prod.s3.amazonaws.com/s3fs-public/2023-04/230414_Bingen_Space_Assessment.pdf?VersionId=oMsUS8MupLbZi3BISPrqPCKd5jDejZnJ: 1-20.

Kari A Bingen, Kaitlyn Johnson, John Dylan Bustillo, Marie Villarreal Dean. 2022. U.S. Space Force Primer. *CSIS Aerospace Security Project*. 22 December 22: https://aerospace.csis.org/us-space-force-primer/

Week 5: Clubs and Diplomatic Power

September 19th: Clubs and Status

Deganit Paikowsky. 2017. *The Power of the Space Club*. Cambridge University Press 2017. Ch.1,3 (1-28; 48-74)

September 21st: Diplomatic Power

The Artemis Accords: Principles for a Safe, Peaceful, and Prosperous Future. *NASA*: https://www.nasa.gov/specials/artemis-accords/index.html

A Strategic Framework for Space Diplomacy. *US Department of State*: https://www.state.gov/wp-content/uploads/2023/05/Space-Framework-Clean-2-May-2023-Final-Updated-Accessible-5.25.2023.pdf

Andrew Jones. 2023. China Attracts Moon Base Partners, Outlines Project Timelines. *SpaceNews*. 19 June: https://spacenews.com/china-attracts-moon-base-partners-outlines-project-timelines/

Week 6: Commercial Space

September 26th

Matt Weinzierl and Mehak Sarang. 2021. The Commercial Space Age is Here. *Harvard Business Review*. 12 February: https://hbr.org/2021/02/the-commercial-space-age-is-here

Mica Maidenberg. 2023. Elon Musk's SpaceX Now Has a 'De Facto' Monopoly on Rocket Launches. *The Wall Street Journal*, July 7, 2023: https://www.wsj.com/articles/elon-musks-spacex-now-has-a-de-facto-monopoly-on-rocket-launches-3c34f02e

Miriam Kramer. 2023. SpaceX's Starship Could Transform the Space Industry. *Axios*, 18 April: https://www.axios.com/2023/04/18/spacex-starship-transform-industry

Debra Kamin. 2022. The Future of Space Tourism Is Now. Well, Not Quite. *The New York Times*. 7 May: https://www.nytimes.com/2022/05/07/travel/space-travel-tourism.html

September 28th

Jamie Morin and Robert S Wilson. 2020. Leveraging Commercial Space for National Security. *Center for Space Policy and Strategy*. November: https://csps.aerospace.org/sites/default/files/2021-08/Morin-Wilson_Leveraging_20201113.pdf.

Vivek Wadhwa. 2022. How Elon Musk's Starlink Got Battle-Tested in Ukraine. *Foreign Policy*. 4 May: https://foreignpolicy.com/2022/05/04/starlink-ukraine-elon-musk-satellite-internet-broadband-drones/

Jack Detsch. 2023. Starlink Cuts Off Ukrainian Drones. *Foreign Policy*. 9 February 9: https://foreignpolicy.com/2023/02/09/ukraine-russia-war-starlink-drones-musk-spacex/

Adam Satariano, Scott Reinhard, Cade Metz, Sheera Frenkel, and Malika Khurana. 2023. Elon Musk's Unmatched Power in the Stars. *The New York Times*, 28 July: https://www.nytimes.com/interactive/2023/07/28/business/starlink.html

Week 7: The Public, and the Making of Space Policy

October 3rd: The Space Policy Ecosystem

John Paul Byrne, Robin Dickey, and Michael P. Gleason. 2021. A Space Policy Primer: Key Concepts, Issues, and Actors. *The Aerospace Corporation*. January: https://aerospace.org/sites/default/files/2021-01/Gleason-Dickey_SpacePrimer2_20210118_2.pdf.

October 5th: Space Policy and the Public

Roger D. Launius. 2003. Public Opinion Polls and Perceptions of US Human Spaceflight. *Space Policy* 19(3): 163-175.

Brian Kennedy and Alec Tyson. 2023. Americans' Views of Space: U.S. Role, NASA Priorities and Impact of Private Space Companies. *Pew Research Center*. 20 July: https://www.pewresearch.org/science/2023/07/20/americans-views-of-space-u-s-role-nasa-priorities-and-impact-of-private-companies/

Bryan Bender. 2020. The Netflix Show the Pentagon Can't Stop Talking About. *Politico*. 23 May: https://www.politico.com/news/magazine/2020/05/23/space-force-netflix-steve-carell-274951

Week 8: Exploration, Space Science, and the Search for Life

October 10th: Exploration and Space Science

Virginia Barnes. 2022. The Space Launch System is America's Space Program. *Space News*. 23 August: https://spacenews.com/op-ed-the-space-launch-system-is-americas-space-program/

Michael Lind. 2011. Why we should embrace the end of human spaceflight. *Salon*. 12 April: https://www.salon.com/2011/04/12/nasa_spaceflight_future_government_robots/

Eric Berger. 2018. In-depth study: Commercial cargo program a bargain for NASA. *Ars Technica*. 8 November: https://arstechnica.com/science/2017/11/in-depth-study-commercial-cargo-program-a-bargain-for-nasa/

Jeff Foust. 2019. NASA dealing with cost growth on planetary science flagship missions. *Space News*. 19 March: https://spacenews.com/nasa-dealing-with-cost-growth-on-planetary-science-flagship-missions/

October 12th: The Search for Life

Why Europa. *NASA*: https://europa.nasa.gov/why-europa/ingredients-for-life/

Searching for Life on Jupiter's Moon Europa. *NASA*: https://europa.nasa.gov/resources/62/searching-for-life-on-jupiters-moon-europa/

Ross Andersen. 2017. What Happens if China Makes First Contact? *The Atlantic*. December: https://www.theatlantic.com/magazine/archive/2017/12/what-happens-if-china-makes-first-contact/544131/

Matt Stieb. 2023. What UFO Whistleblower David Grusch Told Congress," *New York Magazine*, July 28, 2023: https://nymag.com/intelligencer/2023/07/ufo-whistleblower-david-grusch-house-testimony-live-updates.html

Daniel Oberhaus. 2019. A Crashed Israeli Lunar Lander Spilled Tardigrades on the Moon. *Wired.Com*. 5 August: https://www.wired.com/story/a-crashed-israeli-lunar-lander-spilled-tardigrades-on-the-moon/

Week 9: Midterm, Space Debris Removal

October 17th Midterm

No reading, study for midterm.

October 19th: Space Debris Removal

SWF Space Sustainability Introductory Video. *Secure World Foundation*: https://www.youtube.com/watch?v=blQbFKtrjYI

The Persistent Problem of Orbital Debris. *Secure World Foundation*: https://swfound.org/space-sustainability-101/the-persistent-problem-of-orbital-debris/

Micrometeoroids and Orbital Debris (MMOD). *NASA*: https://www.nasa.gov/centers/wstf/site_tour/remote_hypervelocity_test_laboratory/micrometeoroid_and_orbital_debris.html

Ramin Skibba. 2021. The US Space Force Wants to Clean Up Junk in Orbit," *Wired*, 17 November: https://www.wired.com/story/the-us-space-force-wants-to-clean-up-junk-in-orbit/

Vijay Iyer. 2023. How Do You Clean Up 170 Million Pieces of Space Junk? *Federation of American Scientists*. 24 May: https://fas.org/publication/how-do-you-clean-up-170-million-pieces-of-space-junk/

Shi En Kim. 2021. Can the World's First Space Sweeper Make a Dent in Orbiting Debris. *Smithsonian Magazine*. 25 August: https://www.smithsonianmag.com/science-nature/can-worlds-first-space-sweeper-make-dent-orbiting-debris-180978515/

Week 10: Mega-constellations & Space Traffic Management; Space Security

October 24th: Mega-constellations

Jonathan O'Callaghan. 2022. Satellite Constellations Could Harm the Environment, New Watchdog Says. *Scientific American*. 24 November: https://www.scientificamerican.com/article/satellite-constellations-could-harm-the-environment-new-watchdog-report-says/

Debra Wernher. 2018. Will Megaconstellations Cause a Dangerous Spike in Orbital Debris. *SpaceNews*. 15 November: https://spacenews.com/will-megaconstellations-cause-a-dangerous-spike-in-orbital-debris/

Eric Berger. 2023. US Military Leans Into Megaconstellations After Their 'resiliency' in Ukraine. *ArsTechnic*a. 19 July: https://arstechnica.com/space/2023/07/us-space-commander-touts-powerful-role-of-megaconstellations-in-ukraine/

Nicholas Eftimiades. 2022. Small Satellites: The Implications for National Security. *The Atlantic Council*. 5 May: https://www.atlanticcouncil.org/in-depth-research-reports/report/small-satellites-the-implications-for-national-security/

Theresa Hitchens. 2023. Exclusive: Commerce Draft Space Traffic. 25 January: https://breakingdefense.com/2023/01/exclusive-commerces-draft-space-traffic-management-service-goes-beyond-dods-baseline/

October 26th: Space Security

Todd Harrison, Kaitlyn Johnson, Makena Young. 2021. Defense Against the Dark Arts in Space: Protecting Space Systems from Counterspace Weapons. *CSIS Aerospace Security Project*. February: https://csis-website-prod.s3.amazonaws.com/s3fs-public/publication/210225_Harrison_Defense_Space.pdf?VersionId=wAqLQjDIzXK84wzzWPNbU1WRYs5dnFfU

2020. Physics of War in Space: How Orbital Dynamics Constrain Space-to-Space Engagements. *Aerospace Corporation*. 16 October: https://csps.aerospace.org/sites/default/files/2021-08/Reesman_PhysicsWarSpace_20201001.pdf

Henry Sokolski. 2022. A China-US War in Space: The After-Action Report. *Bulletin of the Atomic Scientists*. 17 January: https://thebulletin.org/premium/2022-01/a-china-us-war-in-space-the-after-action-report/

Sandra Erwin. 2021. US Generals Planning for a Space War They See as All But Inevitable. *Spacenews*. 17 September: https://spacenews.com/u-s-generals-planning-for-a-space-war-they-see-as-all-but-inevitable/

Week 11: Defense, Deterrence, and Warfare

October 31st Space Deterrence Simulation

Jim Cooper. 2021. Updating Space Doctrine: How to Avoid World War III. *War on the Rocks*. 23 July: https://warontherocks.com/2021/07/updating-space-doctrine-how-to-avoid-world-war-iii/

Todd Harrison, Kaitlyn Johnson, Zack Cooper, and Thomas G. Roberts. 2017. Escalation and Deterrence in the Second Space Age. *Center for Strategic and International Studies*. October: 19-42: https://csis-website-prod.s3.amazonaws.com/s3fs-public/publication/171109_Harrison_EscalationDeterrenceSecondSpaceAge.pdf

November 2nd Space Deterrence Simulation Continued

No Readings

Week 12: Rising Powers and Planetary Defense

November 7th: Rising Powers

Tianyu Fang. 2019. The Man Who Took China to Space. *Foreign Policy*. 28 March 28: https://foreignpolicy.com/2019/03/28/the-man-who-took-china-to-space/

Ramin Skibba. 2023. Russia's Space Program is in Big Trouble. *Wired*. 20 March: https://www.wired.com/story/russias-space-program-is-in-big-trouble/

Ramin Skibba. 2022. China is Now a Major Space Power. *Wired*. 4 November: https://www.wired.com/story/china-is-now-a-major-space-power-tiangong-space-station/

What You Need to Know About Nuclear Entanglement. *Carnegie Endowment for International Peace* (1 minute 33 seconds): https://carnegieendowment.org/programs/npp/nuclear-entanglement

November 9th: Planetary Defense

Max Zahn. 2022. NASA Planetary Defense Mission Successfully Disrupted Asteroid's Orbit," *ABC News*, 11 October: https://abcnews.go.com/Technology/nasa-planetary-defense-mission-successfully-disrupted-asteroids-orbit/story?id=91326754

Jeff Foust. 2023. Strategizing Planetary Defense. *The Space Review*. 8 May: https://www.thespacereview.com/article/4579/1

2023. National Preparedness Strategy & Action Plan for Near-Earth Object Hazard and Planetary Defense. *National Science & Technology Council*. April: https://www.whitehouse.gov/wp-content/uploads/2023/04/2023-NSTC-National-Preparedness-Strategy-and-Action-Plan-for-Near-Earth-Object-Hazards-and-Planetary-Defense.pdf

Week 13: Governance and Arms Control

November 14th

United Nations Instruments Declaration of Legal Principles Governing the Activities of States in the Exploration and Uses of Outer Space (p. 45)

- Outer Space Treaty (p. 3)
- Rescue and Return Agreement (p. 10)
- Liability Convention (p. 14)
- Registration Convention (p. 24)
- Moon Agreement (p. 30)

Bradley Bowman and Jared Thompson. 2021. Russia and China Seek to Tie America's Hands in Space. *Foreign Policy*. 31 March: https://foreignpolicy.com/2021/03/31/russia-china-space-war-treaty-demilitarization-satellites/

November 16th: Governance and Arms Control continued

Victoria Samson and Brian Weeden. 2020. Enhancing Space Security: Time for Legally Binding Measures. *Arms Control Association*. December: https://www.armscontrol.org/act/2020-12/features/enhancing-space-security-time-legally-binding-measures

Ankit Panda and Benjamin Silverstein. 2022. The U.S. Moratorium on Anti-Satellite Missile Tests Is a Welcome Shift in Space Policy. *Carnegie Endowment for International Peace*. 20 April: https://carnegieendowment.org/2022/04/20/u.s.-moratorium-on-anti-satellite-missile-tests-is-welcome-shift-in-space-policy-pub-86943

Week 14: Cislunar Space

November 21st: Cislunar Space

2022. National Cislunar Science & Technology Strategy. *National Science and Technology Council* November: https://www.whitehouse.gov/wp-content/uploads/2022/11/11-2022-NSTC-National-Cislunar-ST-Strategy.pdf

Mariel Borowitz. 2023. US Strategic Interest in the Moon: An Assessment of Economic, National Security, and Geopolitical Drivers. *Space Policy*. 13 June.

November 23rd [Thanksgiving Break – No Class Thursday]

Week 15: Cislunar Space and Crisis Simulation

November 28thth: Crisis Simulation

Prior to this class, students will be divided into groups. Please read the scenario and the background materials for your group's respective stakeholder (scenario and background will be posted on Canvas).

November 30th: Crisis Simulation continued

No readings assigned.

Week 16: Conclusions

December 5th

No readings assigned. Focus on finishing your final paper.