

Fall 2024

IAFF 6145.10

U.S. Space Policy

Syllabus

Instructor: Prof. Scott Pace
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Office: 1957 E St., NW Suite
403, Washington, DC 20052
In-person/Virtual Meetings by
Appointment
Credits: 3

Course Details

Modality: In-person

Class Time: Thursday, 5:10-7:00 pm

Class Location: ESIA 315

Course Description & Goals

This course is an examination of the origins, evolution, current status, and future prospects of U.S. space policies and programs. It will cover the U.S. government's civilian, military, and national security space programs and the space activities of the U.S. private sector, and the interactions among these four sectors of U.S. space activity. This examination will be cast in the context of the space activities of other countries, and of international space cooperation and competition. The goal of the course is to give the student an exposure to the policy debates and decisions that have shaped U.S. efforts in space to date, and to the policy issues that must be addressed in order to determine the future goals, content, pace, and organization of U.S. space activities, both public and private.

Learning Outcomes & Objectives

- Students will be able to demonstrate that they understand and can communicate the basic concepts of U.S. space policy.
- Students will be able to discuss and assess how the U.S. scientific and technical space communities have adapted to changing national and international conditions.
- Students will acquire the background knowledge and understanding of current issues that will allow them to analyze and evaluate U.S. space policy debates against multiple national interests (e.g., military, economic, diplomatic).

Methods of Instruction

This is very much a reading and lecture course. Each week during the term, students will be expected to come to the course meeting familiar with the substantial amount of assigned readings related to that week's topic. Lecture slides will be posted on Blackboard but the readings are important to understanding the slides.

Lectures: Each class session will have a Power Point presentation on a particular topic, as listed in the syllabus. The instructor will make these presentations available to the students ahead of class. Occasional guest lectures will be scheduled (to be confirmed), and you should be prepared to engage the speakers.

Readings: The syllabus includes specific readings for the specific topic of the lecture. They are a combination of articles, book chapter extracts, official space policy documentation, and other written materials as needed for the course. Additional (optional) reading will also be available.

Writing assignments: Three ~9-12 page (4000-5000 words) papers, each addressing a particular question or issue, are assigned for this class. Each paper is worth 33.3% of the final course grade. Specific topics are described subsequently in this syllabus. Papers should show thoughtful analysis and a structured approach to answering the questions. The due dates for the papers are **September 19, October 24, and December 5**. The specific prompts for each paper are given below. Papers should be submitted electronically to space1@email.gwu.edu

The word count is the requirement with page count being just an approximation based on font size and spacing. You should proofread your work, and correct spelling errors before submitting the paper to the instructor. Common grammatical errors and usage, such as “**United States’** prestige“ rather than “**U.S.** prestige”, should be avoided. Also try to avoid passive sentence structure, such as “National prestige was a major factor for the U.S. Administration’s space policy” rather than “The U.S. Administration specifically included factors such as national prestige in its space policy.”

Journals, Blogs, and Other Public Media: You should make an effort to keep up on current space activities by reading news media and blogs such as *Space News* <https://spacenews.com/>, Space Policy Online <https://spacepolicyonline.com/>, and *The Space Review* <https://www.thespacereview.com/>

Credit Hour Policy

As a three-credit course, over 15 weeks of the semester you are expected to spend about 110 minutes in live instruction and about 360 minutes of independent work per week. There will not be a final exam; rather, the three writing assignments will count towards the final grade. While class participation is not scored, you should be prepared to engage, particularly when the class has guest speakers. Late work will receive point deductions based on the number of days the item is late. The amount of the deduction is at the instructor’s discretion.

Prerequisites

Academic: None

Technological: It is necessary to possess baseline technology skills in order to participate fully in the course. Please consult the GW Online website for further information about recommended configurations and support. If you have questions or problems with technology for this course, please consult the Technology Help link in the left navigation menu in our course in Blackboard.

You should be able to:

- Use a personal computer and its peripherals.
- Use word processing and other productivity software.
- Use the webcam and microphone on your device.
- Use your computer *to* upload recordings and images to your computer.
- Seek technology help by contacting [GW Information Technology](#) (202-994-4948).

If you have any problems with the software in this course, please reference the Technology Help link in the left navigation menu in our course on Blackboard.

Course Materials & Requirements

Readings for each class will be available on Blackboard or via a web link. There is no single textbox. The following texts are helpful references and suggested (but not required) for purchase.

- Launius, Roger D., and Howard E. McCurdy. *Spaceflight and the Myth of Presidential Leadership*. Urbana, Ill: University of Illinois Press, 1997.
- Logsdon, John M. *The Penguin Book of Outer Space Exploration: NASA and the Incredible Story of Human Spaceflight*. 2019.
- McDougall, Walter A. ... *the Heavens and the Earth A Political History of the Space Age*. Baltimore: Johns Hopkins University Press, 1997.

Grading & Assessment

<u>Assignment</u>	<u>Point Value/Assignment</u>	<u>No. of Assignments</u>	<u>Total % of Final Grade</u>
Essays	20	3	100%

Assignments are graded on a 20 point scale. The essays will be graded for the quality of the writing (e.g., clarity, grammar), command of the subject matter (e.g., accuracy, objectivity), and strength of the arguments (e.g., logic, rhetoric). The percent grading scale below determines the final letter grade:

Excellent	Good	Needs Improvement	Low Pass	Fail
A 96%-100%	B+ 87%-89%	B- 80%-83%	C 74%-76%	F Under 70%
A- 90%-95%	B 84%-86%	C+ 77%-79%	C- 70%-73%	

Course

Calendar & Outline

August 22	Introduction: Why Go Into Space?
August 29	Origins of U.S. Space Policies and Programs
September 5	Apollo and Its Impacts
September 12	What Do You Do Next When You've Been to the Moon?
September 19	NASA – From <i>Challenger</i> to <i>Columbia</i> Assignment #1 due
September 26	Beyond LEO – the Vision for Space Exploration and Artemis
October 3	The International Context of the U.S. Space Program
October 10	No class: Fall Break
October 17	The Evolution of Commercial Space Activities
October 24	The Evolution of National Security Space Activities Assignment #2 due
October 31	Making Space Secure and Sustainable
November 7	The U.S. Congress and Space
November 14	Making National Space Policy
November 21	<i>Quo Vadis</i>
November 28	No Class: Thanksgiving Holiday
December 5	Guest Speaker Assignment #3 due

Class Readings

August 22

Introduction: Why Go Into Space?

John M. Logsdon, ed., *The Penguin Book of Outer Space Exploration* (2018), Chap. 1, pp. 15-30

“Introduction” in Roger D. Launius and Howard E. McCurdy, *Spaceflight and the Myth of Presidential Leadership* (1997)

Vernon van Dyke, *Pride and Power: The Rationale of the Space Program* (1964), pp. 3-8, 175-80

Roger D. Launius, “Compelling Rationales for Spaceflight: History and the Search for Relevance” in Steven Dick and Roger Launius, Eds. *Critical Issues in the History of Spaceflight* (2006)

European Commission, “Space: a New Frontier for an Expanding Union,” White Paper, November 11, 2003, Executive Summary

John M. Logsdon, “Which Direction in Space?” *Space Policy*, May 2005

Michael Griffin, “Space Exploration: Real Reasons and Acceptable Reasons,” January 19, 2007

National Research Council, *America’s Future in Space Aligning the Civil Space Program with National Needs* (2009)

David A. Mindell, et al, “The Future of Human Spaceflight: Objectives and Policy Implications in a Global Context,” American Academy of Arts and Sciences, 2009

The White House National Space Council, *A New Era for Deep Space Exploration and Development* (2020)

First Assignment (Due September 19)

Prepare a 4,000-5,000 word essay (indicate sources for direct quotes) discussing past and current U.S. approaches to human space exploration and how the policies of other countries might differ. The essay should address questions such as: In a time of global economic turmoil and changing threats to international security, what are the purposes of human space exploration? What could or should be the purposes of human space exploration? How should the potential benefits of human space exploration be assessed related to the resources and risks involved?

August 29

Origins of U.S. Space Policies and Programs

John M. Logsdon, ed., *The Penguin Book of Outer Space Exploration* (2018), Chap. 3, pp. 146-165

Walter J. McDougall, . . . *the Heavens and the Earth: A Political History of the Space Age* (1985), pp. 112-230

NSC 5520, "U.S. Scientific Satellite Program"

S.P. Korolev, Memo to the USSR Council of Ministers, 5 January 1957

Dwayne A. Day, "Cover Stories and Hidden Agendas: Early American Space and National Security Policy," in Roger Launius, John Logsdon, and Robert Smith, *Reconsidering Sputnik: Forty Years Since the Soviet Satellite* (2000), pp. 161-195

"Memorandum of Conference with the President, October 8, 1957, 8:30 a.m.," and "Memorandum for the President, Earth Satellite," 9 October 1957

Edwin Diamond and Stephen Bates, "Sputnik," *American Heritage*, October 1997, pp. 85-93

David Spires, *Beyond Horizons: A Half-Century of Air Force Space Leadership* (1997), Introduction and Chapters 1-2

Homer Newell, *Beyond the Atmosphere: Early Years of Space Science* (1980), Chaps. 3-5, 7-8

National Aeronautics and Space Act of 1958

September 5

Apollo and Its Impacts**Guest Speaker: John Logsdon, Professor Emeritus**

John M. Logsdon, *The Decision to Go to the Moon: Project Apollo and the National Interest* (1970), Chaps. 2-4, 6

McDougall, pp. 299-324. 361-362, 373-388, 403-407

James E. Webb and Robert McNamara, "Recommendations for Our National Space Program: Changes, Policies, Goals," May 8, 1961

Transcript of Presidential Meeting, November 21, 1962 (excerpts)
http://whitehousetapes.net/exhibits/space/clips/1962_1121_apollo/

W. Henry Lambright, *Powering Apollo: James E. Webb of NASA* (1995), pp. 1-10, 102-123, 214-220, 236-241, 253

Stephen B. Johnson, "Organizing the Manned Space Program," in *The Secret of Apollo* (2002), Chapter 5

Asif A. Siddiqi, *Challenge to Apollo: The Soviet Union and Space Race, 1945-1974* (2000), Chapters 19 and 20

Central Intelligence Agency, "The Soviet Space Program," April 4, 1968

Roger Launius, "Perceptions of Apollo: Myth, Nostalgia or All of the Above?" *Space Policy*, May 2005

John M. Logsdon, *John F. Kennedy and the Race to the Moon* (2011), Chap. 14

John M. Logsdon, ed., *The Penguin Book of Outer Space Exploration* (2018), Chap. 3, pp. 260-271

September 12

What Do You Do Next When You Have Been to the Moon?

Robert Dallek, "Johnson, Project Apollo, and the Politics of Space Program Planning" in Roger D. Launius and Howard E. McCurdy, *Spaceflight and the Myth of Presidential Leadership* (1997)
John M. Logsdon, ed., *The Penguin Book of Outer Space Exploration* (2018), Chap. 4, pp. 288-299

John M. Logsdon, "The Space Shuttle Program: A Policy Failure?" *Science*, May 30, 1986

Memorandum for the President from Caspar W. Weinberger, "Future of NASA," August 12, 1971

T.A. Heppenheimer, "The Space Shuttle Decision," NASA History Series, NASA SP-4221, pp. 331-414

Howard McCurdy, "The Decision to Build the Space Station," *Space Policy*, November 1988

John M. Logsdon, *Ronald Reagan and the Space Frontier* (2019), Chap. 24

Alex Roland, "Barnstorming in Space: The Rise and Fall of the Romantic Era of Spaceflight, 1957-1986," in Radford Byerly Jr., ed., *Space Policy Reconsidered* (1989), pp. 33-52

Peter Westwick, "From the Club of Rome to Star Wars: The Era of Limits, Space Colonization and the Origins of SDI," Chap. 12, in *Limiting Outer Space* (2018)

September 19

NASA – From Challenger to Columbia

Gary D. Brewer, “Perfect Places: NASA as an Idealized Institution,” in Radford Byerly, Jr., ed., *Space Policy Reconsidered* (1989)

E. C. Pete Aldridge, Jr., “Assured Access: ‘The Bureaucratic Space War,’” Dr. Robert H. Goddard Historical Essay, 1985

Scott Pace, “U.S. Space Transportation Policy,” *Space Policy*, November 1988

Report of the Advisory Committee on the Future of the U.S. Space Program, December 1990

John M. Logsdon, “Lost in Space?” *The GAO Journal*, Winter 1991/1992

Congressional Budget Office, *Reinventing NASA*, March 1994

W. Henry Lambright, “Leading Change at NASA: The Case of Dan Goldin,” *Space Policy*, February 2007

Report of the Columbia Accident Investigation Board, Chap. 5, 7 and 8, August 2003

John M. Logsdon, “A Failure of National Leadership: Why No Replacement for the Space Shuttle?” Chap. 9 in Steven Dick and Roger Launius, Eds. *Critical Issues in the History of Spaceflight* (2006)

Diane Vaughn, “Changing NASA: The Challenges of Organizational System Failures” Chap. 11 in Steven Dick and Roger Launius, Eds. *Critical Issues in the History of Spaceflight* (2006)

Second Assignment (Due October 24)

For over 60 years, the United States has pursued a space policy vis-à-vis the rest of the world that has mixed competitive and cooperative elements across civil, commercial, and national security sectors. While the United States has competed for prestige, commercial returns, and security advantages, it has also cooperated for scientific and foreign policy payoff. For U.S. policy makers, what balance between cooperative and competitive approaches ought to be sought and how should that balance be managed? The 2020 National Space Policy calls for international cooperation “on mutually beneficial space activities that broaden and extend the benefits of space for all humanity; further the exploration and use of space for peaceful purposes; protect the interests of the United States, its allies, and partners; advance United States interests and values; and enhance access to space-derived information and services.” What strategies are likely to be the most effective in achieving these objectives? What are the relative risks and potential benefits to the United States?

September 26

Beyond LEO – the Vision for Space Exploration and Artemis

NASA, “Briefing for the President: Future U.S. Space Exploration,” December 19, 2003

NASA, *The Vision for Space Exploration*, February 2004

Space Studies Board, National Research Council, *The Scientific Context for Exploration of the Moon – Final Report*, Executive Summary (2007)

NASA Exploration Systems Mission Directorate, *Lunar Architecture Update*, AIAA Space 2007, Long Beach, CA, September 27, 2007

Michael Griffin, “Remarks to the Space Transportation Association on the Constellation Architecture,” January 22, 2008

John Marburger, “Keynote Address to 46th Robert H. Goddard Memorial Symposium,” Greenbelt, MD, March 6, 2008

John Marburger, “Remarks on the Background for the Vision for Space Exploration,” Washington, D.C., August 5, 2009

Summary Report of the Review of U.S. Human Space Flight Plans Committee, September 2009

Vice President Mike Pence, “Remarks at the Fifth Meeting of the National Space Council,” Huntsville, AL, March 26, 2019

Ken Bowersox, *Artemis Architecture & HEOMD Status*, Aeronautics and Space Engineering Board, Washington, D.C., June 9, 2020

NASA, *NASA’s Lunar Exploration Program Overview*, September 2020

October 3

The International Context of the U.S. Space Program

“International Space Cooperation,” Memorandum for the President from the Secretary of State, March 14, 1969

Lynn F.H. Cline and Graham Gibbs, “Re-Negotiation of the International Space Station Agreements—1993-1997” *Acta Astronautica* 53, no. 11: 917-925. (2003)

David Lengyel and Steven Newman, ed., “International Space Station Lessons Learned for Space Exploration,” NASA, Washington, D.C., September 2014

Kent Bress, “International Cooperation at NASA,” presentation to the Space Policy Institute, Washington, D.C., May 2017

“Global Exploration Strategy: The Framework for Coordination,” May 31, 2007

United Nations, “Review of international mechanisms for cooperation in the peaceful exploration and use of outer space: information received from Member States,” Committee on the Peaceful Uses of Outer Space, Legal Subcommittee, A/AC.105/C.2/2013/CRP.17, 8 April 2013

European Space Policy Institute, “European Space Strategy in a Global Context,” ESPI Public Report 75, Vienna, November 2020

Report of the High-Level Advisory Group on Human and Robotics Space Exploration for Europe, “Revolution Space,” 23 March 2023

Andrew Aldrin, “Russian Space Policy,” presentation to the International Space University, June 8, 2010

Florian Vidal, “Russia’s Space Policy: the Path of Decline,” *Notes de l’Ifri*, Institut français des relations internationales (Ifri), January 2021.

India, “India Space Policy,” New Delhi, April 2023

Japan, “Outline of the Basic Plan on Space Policy,” Presentation by the National Space Policy Secretariat, Cabinet Office, Tokyo, June 30, 2020

Japan, “Space Security Initiative,” Strategic Headquarters for Space Policy, Tokyo, June 13, 2023

People’s Republic of China, “China’s Space Program: A 2021 Perspective,” White Paper from the Information Office of the State Council, Beijing, January 28, 2021

U.S.-China Economic and Security Review Commission, “China’s Ambitions in Space,” Chap 4, Sec 3, *Annual Report to Congress*, Washington, D.C., 2019

October 10 No class: Fall Break

October 17 The Evolution of Commercial Space Activities

Guest Speaker: Kevin O’Connell, Former Office of Space Commerce

Ralph J. Cordiner, “Competitive Private Enterprise in Space,” in Simon Ramo, Ed. *Peacetime Uses of Outer Space*, New York: McGraw-Hill (1961)

Scott Pace, “Merchants and Guardians: Balancing U.S. Interests in Space Commerce,” in John M. Logsdon and Russell Acker, Eds. *Merchants and Guardians* (1999)

Steve Bouchinger, “Space Industries of Emerging Space Nations,” Euroconsult presentation to the United Nations Office for Outer Space Affairs 2008 Industry Symposium, Vienna, February 12, 2008

James Vedda, “Planes, Trains, Automobiles, and Spaceships,” in *Becoming Spacefarers* (2012)

Bhavya Lal, Emily Sylak-Glassman, and Nayanee Gupta, “Global Trends in Civil and Commercial Space,” Science and Technology Policy Institute, Institute for Defense Analysis, 28 October 2015

Bhavya Lal, Rachel Wei, “What is Commercial Space? And Why Does it Matter?,” paper presented at the Seventieth International Astronautical Congress, Washington D.C., October 2019

Tina Highfill, Patrick Georgi, and Dominique Dubria, “Measuring the Value of the U.S. Space Economy,” *Survey of Current Business*, December 2019

Tina Highfill, Chris Surfield, “New and Revised Statistics for the U.S. Space Economy, 2012–2021,” *Survey of Current Business*, 27 June, 2023

OECD, *OECD Handbook on Measuring the Space Economy, 2nd Ed.*, OECD Publishing, Paris, 2022

Bryce Space and Technology, “Start-Up Space,” September 27, 2023

October 24

The Evolution of National Security Space Activities

AU-18 Space Primer, Air University Press, Maxwell AFB, AL, 2023

Bruce Berkowitz, *The NRO at 50 - A Brief History, 2nd Ed.*, National Reconnaissance Office, Chantilly, VA, July 2018

Peter Marquez, “Space Deterrence: The Prêt-à-Porter Suit for the Naked Emperor,” in *Returning to Fundamentals: Deterrence and U.S. National Security in the 21st Century*, The Marshall Institute, Washington, D.C., August 2011

Dana Johnson, Scott Pace, C. Bryan Gabbard, *Space: Emerging Options for National Power* (1998), Santa Monica: RAND MR-517, Chap. 2

John Collins, “U.S. Military Spacepower: Conceptual Underpinnings and Practices,” in *Toward a Theory of Spacepower*, National Defense University Press, Washington, D.C., 2011

Peter Garretson, "What War in Space Might Look Like Circa 2030-2040?" Nonproliferation Policy Education Center, Washington, D.C., August 28, 2020

Scott Pace, "Deterrence and Geopolitics in Space," *Space Policy*, July 2023

U.S. Department of Defense, "Space Policy," DOD Directive 3100.10, Washington, D.C., 22 August 2023

CSIS Aerospace Security Project, "U.S. Space Force Primer," Center for Strategic and International Studies, Washington, D.C. 22 December 2022

October 31

Making Space Secure and Sustainable

Guest Speaker: Richard Buenneke, U.S. Department of State

Robert Preston, et. al., Space Weapons Earth Wars (2002), Santa Monica, CA: RAND MR-1209-AF, Summary

Todd Harrison, "International Perspectives on Space Weapons," Center for Strategic and International Studies, Washington, D.C., May 2020

Bruce McClintock, et al, Responsible Space Behavior for the New Space Era (2021), Santa Monica, CA: RAND PE-A887-2

Everett Dolman, "Space Power and U.S. Hegemony: Maintaining a Liberal World Order in the 21st Century," in John M. Logsdon and Gordon Adams, Eds. Space Weapons: Are They Needed? (2003)

Jessica West and Lauren Vyse, "Arms Control in Outer Space," Ploughshares Report, March 2022

James Clay Moltz, "Alternative Futures for Space Security," in The Politics of Space Security (2008)

Werner R. Balogh, "Programmes and Activities of the United Nations Office for Outer Space Affairs," IAC-09-E3.2.2, International Astronautical Congress, October 2009

United Nations Committee on the Peaceful Uses of Outer Space, "Guidelines for the long-term sustainability of outer space activities," A/AC.105/2018/CRP.20, 27 June 2018

General Accounting Office, "Large Satellite Constellation," GAO-22-105166, September 2022

U.S. Department of State, "A Strategic Framework for Space Diplomacy," Washington, D.C., 25 May 2023

Third Assignment (Due December 5)

In a February 2, 2023 commentary in China Military Online, the English language outlet for the People's Liberation Army, the PLA stated that "Since taking office as head of NASA, Bill Nelson has repeatedly accused China of peaceful space exploration activities, falsely claiming that China's space program is a military program and groundlessly accusing China's aerospace industry of stealing technology and ideas from other countries. Arguments like this are not uncommon in American political and military sectors. The U.S. has spared no effort to distort the facts and label other countries as 'space competitors' and 'space threats', aiming to create excuses to seek space superiority. This reflects the hegemonic thinking and Cold War thinking of the U.S." Is this criticism valid in whole or parts? Why might the PLA say this? How should the United States respond to this narrative? Who are the most important messages and audiences for a U.S. response?

November 7 The U.S. Congress and Space

Guest Speakers: Jared Stout, Meeks, Axiom Space

Joan Hoff, "The Presidency, Congress, and the Deceleration of the U.S. Space Program in the 1970s" in Launius and McCurdy

"Epilogue: Beyond NASA Exceptionalism" in Launius and McCurdy

H.R. 3237, "National and Commercial Space Programs," referred to the House Committee on the Judiciary, July 16, 2009

Marcia Smith, "What's A Markup? Answers to That and Other Mysteries of the Legislative Process," September 2019

Marcia Smith, "Legislative Checklist 118th Congress," May 17, 2024

Daniel Morgan, "NASA Appropriations and Authorizations: A Fact Sheet," Congressional Research Service, Washington, D.C., July 14, 2023

American League of Lobbyists, "Effective Corporate Lobbying," Lobbyists.info, presentation, July 2015

U.S. Space Foundation, "Congressional Leadership Changes and Implications for the Space Industry," Colorado Springs, CO., October 2022

November 14 Making National Space Policy

The White House, "National Space Policy Fact Sheet," September 19, 1996

The White House, "U.S. National Space Policy," October 6, 2006

The White House “National Space Policy of the United States of America,” June 28, 2010

Jeff Kueter, “Evaluating the Obama National Space Policy: Continuity and New Priorities,” Marshall Institute, July 2010

The White House, “National Space Transportation Policy,” November 21, 2013

Donald J. Trump, “Space Policy Directive-1, Reinvigorating America’s Human Space Exploration Program,” Federal Register, Vol. 82, No. 239, December 14, 2017

Donald J. Trump, “Encouraging International Support for the Recovery and Use of Space Resources,” Executive Order 13914, April 6, 2020

The White House, “National Space Policy of the United States of America,” December 9, 2020

Laura Brady and Charles Ellsey, “Comparing the 2010 and 2020 National Space Policies,” *The Space Review*, January 18, 2021. Accessed at <https://www.thespacereview.com/article/4107/1>

The White House National Space Council, “Renewing America’s Proud Legacy of Leadership in Space,” January 2021

The White House National Space Council, “United States Space Priorities Framework,” December 2021

November 21

Quo Vadis

Roger Launius, “The historical dimension of space exploration: reflections and possibilities,” *Space Policy*, February 2000

Scott Pace, “Challenges to U.S. Space Sustainability,” *Space Policy*, June 2009

James Vedda, Chapter 7 in *Choice, Not Fate: Shaping a Sustainable Future in the Space Age* (2009)

Brent Sherwood, “Mars: On the Path or in the Way?” presentation to the Global Exploration Conference (GLEX-12), Washington, D.C., May 2012

Scott Pace, “Strengthening Space Security: Advancing US Interests in Outer Space,” *Harvard International Review*, Spring 2012, pp. 54-59

Jim Keravala, Dale Tietz, and Bill Stone. “Shackleton Energy Company’s Propellant Depot and Space Transportation Architecture,” *New Space Journal*, Vol. 1, No. 2, 2013, pp. 91-100

National Research Council, *Pathways to Exploration: Rationales and Approaches for a U.S. Program of Human Space Exploration*, 2014. Final presentation slides

Elon Musk, “Making Life Multiplanetary,” abridged transcript of presentation to the 68th International Astronautical Congress, Adelaide, Australia, 28 September, 2017

Rand Simberg, “The Return of the Space Visionaries,” *The New Atlantis*, Number 56, Summer/Fall 2018, pp. 48-68

November 28 Thanksgiving Holiday – No Class

December 5 **A Conversation with NASA Guest Speaker**

W. Henry Lambright, “Leading in Space: 50 Years of NASA Administrators,” in *NASA’s First 50 Years – Historical Perspectives*, Steven J. Dick, Ed. (2010)

W. Henry Lambright, “Reflections on Leadership and Its Politics: Charles Bolden, NASA Administrator, 2009-17” *Public Administration Review*, 2017, Vol. 77, no. 4, pp. 616-620

W. Henry Lambright, “Maintaining Momentum: Robert Lightfoot As NASA's Acting Administrator, 2017-2018,” *Space Policy*, Number 48, 2019, pp. 87-90

Marcia Smith, “NASA Administrators and Their Professional Backgrounds,” Space Policy Online, September 7, 2017. Accessed at <https://spacepolicyonline.com/wp-content/uploads/2017/09/NASA-Administrators1.pdf>

Senate Commerce Committee, Transcript of Nomination Hearing for NASA Administrator Nominee Sen. Bill Nelson, April 21, 2021

NASA Office of the Inspector General, “2023 Report on NASA’s Top Management and Performance Challenges,” November 2023

NASA Aerospace Safety Advisory Panel, “Annual Report for 2023,” January 21, 2024

Policies

Incomplete Grades

At the option of the instructor, an Incomplete may be given for a course if a student, for reasons beyond the student’s control, is unable to complete the work of the course, and if the instructor is informed of, and approves, such reasons before the date when grades must be reported. An Incomplete can only be granted if the student’s prior performance and class attendance in the course have been satisfactory. Any failure to complete the work of a course that is not satisfactorily explained to the instructor before the date when grades must be turned in will be graded F, Failure.

If acceptable reasons are later presented to the instructor, the instructor may initiate a grade change to the symbol I, Incomplete. The work must be completed within the designated time period agreed upon by the instructor, student, and school, but no more than one calendar year from the end of the semester in which the course was taken. To record the exact expectations, conditions, and deadlines of the Incomplete please use the Elliott School's Incomplete Grade Contract:

[Incomplete Grade Contract for Graduate Courses](#)

The completed and signed contract is to be submitted to the Academic Affairs and Student Services Office. All students who receive an Incomplete must maintain active student status during the subsequent semester(s) in which the work of the course is being completed. If not registered in other classes during this period, the student must register for continuous enrollment status. For more information regarding Incompletes, please visit the [University Bulletin](#).

Instructor Response Time

I will respond to emails within one day (e.g., 24 hours on weekdays and on the next business day over weekends and holidays). I will return assignments within two weeks.

Statement on Inclusive Teaching

In support of inclusive excellence, the Elliott School is committed to supporting our faculty and students in exercising inclusive teaching throughout our curriculum. All faculty members are expected to practice inclusive teaching as outlined in [ESIA's inclusive teaching statement](#) and to include a stated commitment in the syllabus. For more information, please visit [ESIA's resource page for inclusive teaching](#).

Inclement Weather

Please note that online courses at the George Washington University will continue to be held even when the University is closed for inclement weather.

Late Work

Late work will receive point deductions based on the number of days the item is late. The amount of the deduction is at the instructor's discretion. If you need an exception, please clear it with me in advance or in the case of illness, death in the family, etc. as soon as practicable.

GW Acceptable Use for Computing Systems and Services

All members of the George Washington University must read and comply with the Acceptable Use Policy when accessing and using computing systems and services, including email and Blackboard. Please read [the Acceptable Use Policy](#) to familiarize yourself with how GW information systems are to be used ethically.

Netiquette

Please observe the following rules of netiquette for communicating online:

- Remain professional, respectful, and courteous at all times.
- Remember that a real human being wrote each post and will read what you write in response. It is easy to misinterpret discussion posts. Let's give the benefit of the doubt.
- If you have a strong opinion on a topic, it is acceptable to express it as long as it is not phrased as an attack. Please be gracious with differing opinions.
- When upset, wait a day or two prior to posting. Messages posted (or emailed) in anger are often regretted later.

- Proofread and use the spell check tool when you type a post. It makes the post easier to read and helps your readers understand what you are saying.

I reserve the right to delete any post that is deemed inappropriate for the discussion forum, blog, or wiki without prior notification to the student. This includes any post containing language that is offensive, rude, profane, racist, or hateful. Posts that are seriously off-topic or serve no purpose other than to vent frustration will also be removed.

Academic Integrity

Academic dishonesty is defined as cheating of any kind, including misrepresenting one's own work, taking credit for the work of others without crediting them and without appropriate authorization, and the fabrication of information. Please review [GW's Policy on Academic Integrity](#). All graded work must be completed in accordance with the George Washington University Code of Academic Integrity. For more information, see [Promoting Academic Integrity](#).

Artificial Intelligence

The wide availability of Generative Artificial Intelligence (GAI) tools, such as ChatGPT, is driving an ongoing conversation about their academic uses. GAI tools represent an exciting addition to the learning process that can be deployed in innovative ways to promote student learning. However, for all their promise, GAI tools – when misused – can interfere with learning and impair the development of students' writing, analytical, and technical skills. There are also legitimate concerns about academic ethics, accuracy, citation of sources, and cheating.

GW's Provost's Office encourages instructors to state explicitly and affirmatively their expectations regarding student use of GAI tools. Instructors should specify in writing the permitted and prohibited uses of GAI tools in their courses. Instructors might 1) generally permit the use of GAI tools; 2) generally forbid their use; or 3) permit their use for certain purposes on certain assignments, but not others. If an instructor wishes to permit certain uses of GAI tools, such uses must be set forth explicitly in the course syllabus and/or assignment instructions. Please review GW's [Guidelines for Using Artificial Intelligence](#) for sample language that can be included in your syllabus. Please review GW's [Additional Guidance Regarding Generative Artificial Intelligence](#) for more information.

Sharing of Course Content

Unauthorized downloading, distributing, or sharing of any part of a recorded lecture or course materials, as well as using provided information for purposes other than the student's own learning may be deemed a violation of GW's Student Conduct Code.

Use of Student Work (FERPA)

The professor will use academic work that you complete during this semester for educational purposes in this course during this semester. Your registration and continued enrollment constitute your consent.

Copyright Policy Statement

Materials used in connection with this course may be subject to copyright protection under Title 17 of the United States Code. Under certain Fair Use circumstances specified by law, copies may be made for private study, scholarship, or research. Electronic copies should not be shared with unauthorized users. If a user fails to comply with Fair Use restrictions, he/she may be liable for copyright infringement. For more information, including Fair Use guidelines, see [Libraries and Academic Innovations Copyright page](#).

Bias-Related Reporting

At the George Washington University, we believe that diversity and inclusion are crucial to an educational institution's pursuit of excellence in learning, research, and service. Acts of bias, hate, or discrimination are anathema to the university's commitment to educating citizen leaders equipped to thrive and to serve in our increasingly diverse and global society. We strongly encourage students to report possible bias incidents. For additional information, please visit [Bias Incident Response](#).

Disability Support Services & Accessibility

If you may need disability accommodations based on the potential impact of a disability, please [register with Disability Support Services \(DSS\)](#). If you have questions about disability accommodations, contact DSS at 202-994-8250 or dss@gwu.edu or visit them in person in Rome Hall, Suite 102. For additional information, please visit [GW Disability Support Services](#).

For information about how the course technology is accessible to all learners, see the following resources:

[Blackboard accessibility](#)

[Kaltura \(video platform\) accessibility](#)

[Voicethread accessibility](#)

[Microsoft Office accessibility](#)

[Adobe accessibility](#)

Religious Observances

In accordance with University policy, students should notify faculty during the first week of the semester of their intention to be absent from class on their day(s) of religious observance. For details and policy, please see [GW's Policy on Religious Observances](#).

Counseling and Psychological Services

The University's Counseling and Psychological Services office offers 24/7 assistance and referral to address students' personal, social, career, and study skills problems. Services for students include: crisis and emergency mental health consultations confidential assessment, counseling services (individual and small group), and referrals. For additional information, call 202-994-5300 or visit [GW's Counseling and Psychological Services office](#).

Emergency Preparedness and Response Procedures

The University has asked all faculty to inform students of these procedures, prepared by the GW Office of Public Safety and Emergency Management in collaboration with the Office of the Executive Vice President for Academic Affairs.

To Report an Emergency or Suspicious Activity

Call the University Police Department at 202-994-6111 (Foggy Bottom) or 202-242-6111 (Mount Vernon).

Shelter in Place – General Guidance

Although it is unlikely that we will ever need to shelter in place, it is helpful to know what to do just in case. No matter where you are, the basic steps of shelter in place will generally remain the same.

- If you are inside, stay where you are unless the building you are in is affected. If it is affected, you should evacuate. If you are outdoors, proceed into the closest building or follow instructions from emergency personnel on the scene.

- Locate an interior room to shelter inside. If possible, it should be above ground level and have the fewest number of windows. If sheltering in a room with windows, move away from the windows. If there is a large group of people inside a particular building, several rooms may be necessary.
- Shut and lock all windows (for a tighter seal) and close exterior doors.
- Turn off air conditioners, heaters, and fans. Close vents to ventilation systems as you are able. (University staff will turn off ventilation systems as quickly as possible).
- Make a list of the people with you and ask someone to call the list in to UPD so they know where you are sheltering and who is with you. If only students are present, one of the students should call in the list.
- Await further instructions. If possible, visit [GW Campus Advisories](#) for incident updates or call the GW Information Line 202-994-5050.
- Make yourself comfortable and look after one other. You will get word as soon as it is safe to come out.

Evacuation

An evacuation will be considered if the building we are in is affected or we must move to a location of greater safety. We will always evacuate if the fire alarm sounds. In the event of an evacuation, please gather your personal belongings quickly (purse, keys, GWorld card, etc.) and proceed to the nearest exit. Every classroom has a map at the door designating both the shortest egress and an alternate egress. Anyone who is physically unable to walk down the stairs should wait in the stairwell, behind the closed doors. Firemen will check the stairwells upon entering the building.

Once you have evacuated the building, proceed to our primary rendezvous location: the court yard area between the GW Hospital and Ross Hall. In the event that this location is unavailable, we will meet on the ground level of the Visitors Parking Garage (I Street entrance, at 22nd Street). From our rendezvous location, we will await instructions to re-enter the School.

Alert DC

Alert DC provides free notification by e-mail or text message during an emergency. Visit [GW Campus Advisories](#) for a link and instructions on how to sign up for alerts pertaining to GW. If you receive an Alert DC notification during class, you are encouraged to share the information immediately.

GW Alert

GW Alert provides popup notification to desktop and laptop computers during an emergency. In the event that we receive an alert to the computer in our classroom, we will follow the instructions given. You are also encouraged to download this application to your personal computer. Visit [GW Campus Advisories](#) to learn how.

Additional Information

Additional information about emergency preparedness and response at GW or the University's operating status can be found on [GW Campus Advisories](#) or by calling the GW Information Line at 202-994-5050.