

**Nuclear Strategy and Politics  
PSCI / IS-3194**

**Department of Political Science  
Virginia Tech  
Spring 2020**

**Paul Avey**

**Course Information**

Course Time: MW 4:00 - 5:15pm  
Course Room: Architecture Annex 7

**Contact Information**

Office: 513 Major Williams Hall  
Telephone: (540) 231-6814  
Email: pcavey@vt.edu  
Office Hours: MW 1:30 – 3:00pm (I am also available by appointment)

**Course Description**

This course explores the role that nuclear weapons play in world politics. The course is divided into four sections. Part One examines the basics of nuclear energy, weapons, delivery platforms, and targeting. Part Two discusses theoretical models and historical cases to explain past nuclear proliferation and nonproliferation. Part Three turns to claims that nuclear weapons constitute a revolution in international politics and the role of strategy and ethics. Finally, in the last section, we examine specific historical cases and nuclear force postures around the world.

**Grading**

There are 200 total points in the class. Grades are based on class attendance, blog posts and comments, homework assignments, a film questionnaire, tabletop exercise, and a midterm and final exam. Any late assignments will automatically lose 10% of the grade for each day that it is late. There are no extensions for any assignments except in the case of documented health or family emergencies. If you are not able to come to class the day an assignment is due for any other reason that you knew of in advance, including excused absences for athletics, religious holidays, etc., you must turn that assignment in *prior* to that class period.

**Class Attendance** (10 points)

I will take attendance each class. Students earn ½ point for each class they attend up to 10 points for the course. You do not lose points by missing a class, but can only earn points by attending.

**Delivery System Homework** (10 points)

This assignment will review the delivery systems of nuclear weapon states today. I will hand out the assignment in Class 3 and it will be due one week later in Class 5.

### **Targeting Homework** (25 points)

This assignment will familiarize you with the implications of nuclear modernization and the challenges of facing a nuclear adversary. Students will work in groups and hand in one homework assignment for the group. Each group member will receive the same grade. I will hand out the assignment in Class 5 and it will be due one week later in Class 7.

### **Film Questionnaire** (10 points)

There is one film that we will watch during class. I will hand out the questionnaire form at the beginning of class 19 when we begin the film. It will be due at the start of class 21.

### **Tabletop Exercise and Force Posture Homework** (15 points)

There is a nuclear crisis tabletop exercise during Classes 25-28. Students will complete a short force posture homework assignment to prepare for the exercise. It is worth ten points and due at the beginning of class 25. You will receive a participation grade during the exercise out of five points.

### **Blogs** (10 points total)

Students are required to contribute one 500-700-word blog post applying course material to contemporary nuclear news and debates. The blog post is worth five points. I will assign a due date for each student to post. You are welcome to post during additional weeks but will only receive credit for your assigned deadline. You must also comment on three blog posts, one each in Parts 2, 3, and 4 of the course on days you are not writing a blog post. The first comment is worth 2 points; the two subsequent comments are worth 1.5 points. You are encouraged to comment more but will not receive additional points. I will provide more detail on the blog criteria in class and on Canvas.

### **Midterm Exam** (50 points)

The midterm is a closed book and closed note exam that contains fill in the blank questions, short ID questions in which students identify a term and explain its significance, and one essay question. It will cover material in Parts 1 and 2 of the course.

### **Final Exam** (70 points)

The final exam is a closed book and closed note exam that contains fill in the blank questions, short ID questions in which students identify a term and explain its significance, and two essay questions. The final exam is cumulative but will be weighted towards material covered in Parts 3 and 4 of the course.

Please note that students must take the final exam at the assigned time. University policy allows two general exceptions. First: "Students with conflicting examinations or with more than two examinations in 24 hours may reschedule an examination. Arrangements must be made with the instructor and permission obtained from the student's college dean." The deadline for rescheduling is Wednesday, April 22. If you have not received permission from the dean of your college by that date, then you cannot reschedule the final for this class even if you have two

other finals within twenty-four hours. Pay attention to final times and plan ahead. Second, in the event of a documented serious illness or circumstances beyond your control such as a family emergency or government order, students may reschedule the final. Please note that I require the student to provide documentation of the illness, emergency, or order. Wanting to leave the semester early, travelling for personal reasons, holidays, weddings, graduations, etc., do not constitute an emergency. It is your responsibility to make other arrangements. If you cannot make other arrangements, then you will not be able to take the final exam. You may not be able to do everything you like and will need to prioritize accordingly, including not taking this course if you value the other activity more. Details on university finals policy and important dates are available at: <http://www.policies.vt.edu/6810.pdf>; and <https://www.registrar.vt.edu/dates-deadlines/academic-calendar/2019-2020.html>.

### **Academic Integrity**

The Undergraduate Honor Code pledge that each member of the university community agrees to abide by states:

“As a Hokie, I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do.”

Students enrolled in this course are responsible for abiding by the Honor Code. A student who has doubts about how the Honor Code applies to any assignment is responsible for obtaining specific guidance from the course instructor before submitting the assignment for evaluation. Ignorance of the rules does not exclude any member of the University community from the requirements and expectations of the Honor Code.

For additional information about the Honor Code, please visit: <https://www.honorsystem.vt.edu/>

Honor Code Pledge for Assignments: The Virginia Tech honor code pledge for assignments is as follows:

“I have neither given nor received unauthorized assistance on this assignment.”

The pledge is to be written out on all graded assignments at the university and signed by the student. The honor pledge represents both an expression of the student’s support of the honor code and an unambiguous acknowledgment that the student has, on the assignment in question, abided by the obligation that the Honor Code entails. In the absence of a written honor pledge, the Honor Code still applies to an assignment.

### **Required Reading**

The following book is required and available for purchase at the university bookstore or through online distributors such as Amazon. Make sure that you get the correct edition (3<sup>rd</sup>):

- 1) Scott D. Sagan and Kenneth N. Waltz, *The Spread of Nuclear Weapons: An Enduring Debate* 3<sup>rd</sup> edition

Readings with a URL can be accessed by clicking on the link on the Canvas syllabus. Readings with an \* are available in the Files folder on the Canvas course webpage. You can access Canvas

at <https://vt.instructure.com/> or via the Resources for Current Students tab on the Virginia Tech homepage.

A note on the readings. The amount of reading varies throughout this class, with some weeks having more than 100 assigned pages and other weeks no reading. Check the syllabus and plan ahead as necessary.

### **Computer Policy**

I do not allow the use of laptops, tablets, phones, or other electronic devices during class. There is consistent evidence that electronic devices hinder learning for yourself and for those around you. First, recent research has shown that students taking longhand notes do better on conceptual questions than those taking notes on laptops. Second, not surprisingly, there is a tendency for anyone to multitask by checking email, watching videos, reading websites, etc. I'm guilty of this myself in meetings. Unfortunately, this sort of multitasking inhibits your learning. Third, and perhaps most importantly, use of a laptop or tablet can distract those around you and inhibit their learning. For discussion on these points see

<http://www.washingtonpost.com/news/national/wp/2014/08/26/ditch-the-laptop-and-pick-up-a-pen-class-researchers-say-its-better-for-note-taking/> AND  
<http://chronicle.com/blogs/linguafranca/2014/08/25/why-im-asking-you-not-to-use-laptops/>.

### **Students with Disabilities**

I am strongly committed to working with students who have any disability recognized under the Americans with Disabilities Act to ensure that they are able to fully participate in class activities. If you feel you require reasonable accommodations please follow the process outlined by the Services for Students with Disabilities office, at: <http://www.ssd.vt.edu/>.

## Course Outline

### Part 1: Basics

January 22 (W)	Class 1	Introduction
January 27 (M)	Class 2	Nuclear Energy
January 29 (W)	Class 3	Nuclear Weapons
February 3 (M)	Class 4	Delivery Systems
February 5 (W)	Class 5	Targeting

### Part 2: Proliferation

February 10 (M)	Class 6	Demand Side, I
February 12 (W)	Class 7	Demand Side, II
February 17 (M)	Class 8	Supply Side
February 19 (W)	Class 9	Nonproliferation, I
February 24 (M)	Class 10	Nonproliferation, II
February 26 (W)	Class 11	Nuclear Zero
March 2 (M)	Class 12	Nuclear Terrorism
March 4 (W)	Class 13	Midterm Exam
March 9-13	<i>No Class</i>	<i>Spring Break</i>

### Part 3: Strategy and Ethics

March 16 (M)	Class 14	A Nuclear Revolution?
March 18 (W)	Class 15	Coercion
March 23 (M)	Class 16	Optimist-Pessimist Debate
March 25 (W)	Class 17	Morality
March 30 (M)	<i>No Class</i>	<i>No Class</i>
April 1 (W)	Class 18	Nuclear Taboo
April 6 (M)	Class 19	<i>Film: Dr. Strangelove</i>
April 8 (W)	Class 20	<i>Film: Dr. Strangelove</i>

### Part 4: Cases

April 13 (M)	Class 21	Bombing Japan
April 15 (W)	Class 22	Cold War Strategy and Crises
April 20 (M)	Class 23	China
April 22 (W)	Class 24	Regional Powers
April 27 (M)	Class 25	Tabletop Exercise
April 29 (W)	Class 26	Tabletop Exercise
May 4 (M)	Class 27	Tabletop Exercise
May 6 (W)	Class 28	Tabletop Exercise
May 11 (M)	Final Exam	7:45 - 9:45 AM

## Course Reading Schedule

### PART 1: Basics

#### January 22 (W) Class 1. Introduction

- No Reading

#### January 27 (M) Class 2. Nuclear Energy

- \* Charles D. Ferguson, *Nuclear Energy: What Everyone Needs to Know* (Oxford: Oxford University Press, 2011), pages 3-52

#### January 29 (W) Class 3. Nuclear Weapons

- \* Richard L. Garwin and Georges Charpak, *Megawatts and Megatons: A Turning Point in the Nuclear Age?* (New York, NY: Alfred A. Knopf, 2001), pages 58-79

*Delivery System homework handed out in class*

#### February 3 (M) Class 4. Delivery Systems

Skim each of the following, paying special attention to tables and figures:

- \* Hans M. Kristensen and Matt Korda “Chinese Nuclear Forces, 2019,” *Bulletin of Atomic Scientists*, (2019), pages 171-178
- \* Hans M. Kristensen and Matt Korda, “French Nuclear Forces, 2019,” *Bulletin of Atomic Scientists* (2019), pages 51-55
- \* Hans M. Kristensen and Matt Korda, “Indian Nuclear Forces, 2018,” *Bulletin of Atomic Scientists* (2018), pages 361-366
- \* Hans M. Kristensen and Robert S. Norris, “Israeli Nuclear Weapons, 2014,” *Bulletin of Atomic Scientists* (2014), pages 102-111
- \* Hans M. Kristensen and Robert S. Norris, “North Korean Nuclear Capabilities, 2018,” *Bulletin of Atomic Scientists* (2018), pages 41-51
- \* Hans M. Kristensen, Robert S. Norris, and Julia Diamond, “Pakistani Nuclear Forces, 2019,” *Bulletin of Atomic Scientists*, pages 348-358
- \* Hans M. Kristensen and Matt Korda, “Russian Nuclear Forces, 2019,” *Bulletin of Atomic Scientists*, (2019), pages 73-84
- \* Hans M. Kristensen and Matt Korda, “United States Nuclear Forces, 2019” *Bulletin of Atomic Scientists*, (2019), pages 122-134

#### February 5 (W) Class 5. Targeting

- \* Keir A. Lieber and Daryl G. Press, “The End of MAD? The Nuclear Dimension of U.S. Primacy,” *International Security* Vol. 30, No. 4 (Spring 2006), pages 7-31, 41-44  
<https://muse-jhu-edu.ezproxy.lib.vt.edu/article/196921>

*Delivery System Homework due at the beginning of class*

*Targeting homework handed out in class*

## **PART 2: Proliferation**

### **February 10 (M) Class 6. Demand Side, I**

- Nuno P. Monteiro and Alexandre Debs, “The Strategic Logic of Nuclear Proliferation,” *International Security* Vol. 39, No. 2 (Fall 2014), pages 7-51 <https://muse-jhu-edu.ezproxy.lib.vt.edu/article/562548>

### **February 12 (W) Class 7. Demand Side, II**

- \* Etel Solingen, *Nuclear Logics: Contrasting Paths in East Asia and the Middle East* (Princeton: Princeton University Press, 2007), pages, 1-6, 11-14, 17-20, 23-28, 40-47

*Targeting homework due at the beginning of class*

### **February 17 (M) Class 8. Supply Side**

- Matthew Fuhrmann, “Spreading Temptation: Proliferation and Peaceful Nuclear Cooperation Agreements,” *International Security*, Vol. 34, No. 1 (Summer 2009), pages 7-41 <https://muse-jhu-edu.ezproxy.lib.vt.edu/article/269963>

### **February 19 (W) Class 9. Nonproliferation, I**

- \* Mark P. Hilborne, “The Non-Proliferation Treaty: Foundation of Disarmament Policy,” in Harsh V. Plant. *Handbook of Nuclear Proliferation* (New York: Routledge, 2012), pages 251-260
- \* Rebecca Davis Gibbons, “The Humanitarian Turn in Nuclear Disarmament and the Treaty on the Prohibition of Nuclear Weapons,” *The Nonproliferation Review* Vol. 25, No. 1-2, (2018), pages 11-36

### **February 24 (M) Class 10. Nonproliferation, II**

- Sarah E. Kreps and Matthew Fuhrmann, “Attacking the Atom: Does Bombing Nuclear Facilities Affect Proliferation?” *Journal of Strategic Studies* Vol. 34, No. 2 (2011) pages 161-187 <https://doi-org.ezproxy.lib.vt.edu/10.1080/01402390.2011.559021>

### **February 26 (W) Class 11. Nuclear Zero**

- \* David Cortright and Raimo Vayrynen, “Towards Nuclear Zero,” *Adelphi Papers*, Vol. 49, No. 410 (2009), pages 13-32
- Scott D. Sagan and Kenneth N. Waltz, *The Spread of Nuclear Weapons: An Enduring Debate*, pages 213-228

### **March 2 (M) Class 12. Nuclear Terrorism**

- \* John Mueller, *Atomic Obsession: Nuclear Alarmism from Hiroshima to Al-Qaeda* (Oxford: Oxford University Press, 2010), pages 161-198

### **March 4 (W) Class 13. Midterm Exam**

- No Reading

*Midterm exam during class*

### **PART 3: Strategy and Ethics**

#### **March 16 (M) Class 14. A Nuclear Revolution?**

- \* Robert Jervis, *Theory of the Nuclear Revolution* (Ithaca: Cornell University Press, 1989), pages 1-45

#### **March 18 (W) Class 15. Coercion**

- Tami Davis Biddle, “Coercion Theory: A Basic Introduction for Practitioners,” *Texas National Security Review*, Vol. 3, No. 2 (Spring 2020), <https://tnsr.org/2020/02/coercion-theory-a-basic-introduction-for-practitioners/>

#### **March 23 (M) Class 16. Optimist-Pessimist Debate**

- Scott D. Sagan and Kenneth N. Waltz, *The Spread of Nuclear Weapons: An Enduring Debate*, pages 3-81

#### **March 25 (W) Class 17. Morality**

- \* Michael Walzer, *Just and Unjust Wars: A Moral Argument with Historical Illustrations*, 3<sup>rd</sup> ed. (New York: Basic Books, 2000[1977]), pages 269-283

**March 30 (M) No Class.**

#### **April 1 (W) Class 18. The Nuclear Taboo**

- Nina Tannenwald, “The Nuclear Taboo: The United States and the Normative Basis of Nuclear Non-Use,” *International Organization*, Vol. 53, No. 3 (Summer 1999), pages 433-468 <https://www-jstor-org.ezproxy.lib.vt.edu/stable/2601286>

#### **April 6 (M) Class 19. *Dr. Strangelove***

- No reading. Begin film in class.

*Film questionnaire handed out at beginning of class*

#### **April 8 (W) Class 20. *Dr. Strangelove***

- No reading. Finish film in class.

### **PART 4: Cases**

#### **April 13 (M) Class 21. Bombing Japan**

- Ward Wilson, “The Winning Weapon? Rethinking Nuclear Weapons in Light of Hiroshima,” *International Security*, Vol. 31, No. 4 (Spring 2007), pages 167-179 <https://muse-jhu-edu.ezproxy.lib.vt.edu/article/213651>



*Film questionnaire due at the beginning of class*

**April 15 (W) Class 22. Cold War Strategy and Crises**

- \* Francis J. Gavin, *Nuclear Statecraft: History and Strategy in America's Atomic Age* (Ithaca: Cornell University Press, 2012), pages 57-74

**April 20 (M) Class 23. China**

- Fiona S. Cunningham and M. Taylor Fravel, "Assuring Assured Retaliation: China's Nuclear Posture and U.S.-China Strategic Stability," *International Security*, Vol. 40, No. 2 (Fall 2015), pages 7-50 <https://muse-jhu-edu.ezproxy.lib.vt.edu/article/601981>

*Force posture homework materials handed out at end of class*

**April 22 (W) Class 24. Regional Powers**

- Vipin Narang, "What Does It Take to Deter? Regional Nuclear Postures and International Conflict," *Journal of Conflict Resolution* Vol. 57, No. 3 (2013), pages 478-508 <https://www-jstor-org.ezproxy.lib.vt.edu/stable/23414723>

*Tabletop exercise materials handed out at end of class*

**April 27 (M) Class 25. Tabletop Exercise**

- Read exercise materials prior to class

*Force posture homework due at beginning of class*

**April 29 (W) Class 26. Tabletop Exercise**

- No reading

**May 4 (M) Class 27. Tabletop Exercise**

- No reading

**May 6 (W) Class 28. Tabletop Exercise**

- No reading

**May 11 (M) Final Exam 7:45 – 9:45 AM**