POLS 3450

War and Technological Change

Mondays 4-6:30pm in SHH 117

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Location: Oak Hall #409A

Course Description

Technology and national security are intertwined. Developments in offensive, defensive, and information systems profoundly impact how belligerents fight, how armies organize, and how states plan for their short and long-term security. This course focuses on the nexus of technology and security through the lens of major causes and effects: specifically, the drivers of innovation, and the effects of technological change on the international system. We approach this question theoretically at first, examining how technological developments interact with theories of war and peace. From here, we move on to case studies of past and present innovations (gun powder, rifling, mass mobilization, air power, nuclear weapons) and conflicts where technological developments were critical (World War I, World War II, the Gulf War). Finally, the course ends by exploring current debates over drones, cyber warfare, insurgency, and counterinsurgency, and which – if any – of these developments can truly be considered revolutions in military affairs.

By the end of this semester, students will understand the factors that shape and compel innovation, how technological developments have influenced inter- and intra-state war, and finally, how the conflict landscape is changing in the modern era. Students will also learn to think critically about technological advances and their impacts on society, and why some developments are more influential than others.

Readings

Students are not required to purchase any books or textbooks for this course. Instead, readings are either available on Husky CT or online. Those available on Husky CT are marked with an asterisk (*). Students are expected to complete each week's reading prior to attending class. Lectures will not reiterate the reading material but will instead build upon it, and classes will tend to be heavily discussion-based. It is therefore imperative to come to class prepared and with questions.

Course Assignments

There are five grading components to this course:

1. Midterm Exam, Part I – 20%. *In class on February 26th.*

2. Midterm Exam, Part II – 20%. *In class on April 1st.*

3. Policy Memo – 20%. Students will submit a 3-5 page policy memo that proposes specific policy recommendations to address a pressing challenge to international security and stability. *Topics for the policy memo will be distributed on Monday, April 1st and memos are due on Friday, April 12th, by midnight.*

4. Final Exam – 30%. *The final exam will be administered on the date and time assigned by the registrar.*

5. Participation – 10%

Participation is critical both to the success of this course and to your individual learning. Students are expected to come to class prepared, having completed the readings for that day, and ready to engage with the material. Students may meet with me throughout the course to assess their participation grade.

Classroom Policies

Technology: Students cannot use laptops, tablets, and other devices during lectures. The research on this is clear: without laptops students take better notes, learn more, get better grades, and pose fewer distractions to those sitting around them (as measured by their neighbors' grades). Evidence also suggests that students enjoy classes more when laptops are disallowed, and in hindsight they overwhelmingly support these policies. Sometimes devices will be necessary for group projects and in-class assignments, and these dates are indicated on the syllabus. Exceptions are also available for students with legitimate needs.

Deadlines: Students should be prepared to take exams when they are scheduled and to submit assignments when they are due. Exceptions to these deadlines must be approved in advance. Failing to do so may result in grade deductions.

Grade Disputes: In the event that a student wishes to dispute their grade on an assignment, the following procedure may be used. First, students must wait at least 48 hours after the assignment has been handed back. Second, students must email me a typed summary of why they believe the grade is unfair. After meeting to discuss the assignment, I will then reevaluate the grade. However, revised grades may be higher or lower than the original, and this new grade will be final. Grade disputes submitted more than ten days after the

assignment is handed back will not be considered.

Students with Disabilities: The University of Connecticut is committed to protecting the rights of individuals with disabilities and assuring that the learning environment is accessible. If you anticipate or experience physical or academic barriers based on disability or pregnancy, please let me know immediately so that we can discuss options. Students who require accommodations should contact the Center for Students with Disabilities, Wilbur Cross Building Room 204, (860) 486-2020, or http://csd.uconn.edu.

Communication: The best way to contact me is via email. I will try to respond to all emails within 24 hours, but do not expect a reply within 12 hours or outside of normal business hours. Therefore, if you have questions leading up to an exam or assignment deadline, make sure to reach out to me well in advance. If you have questions that require a lengthy or detailed response, please talk to me after class or during office hours to save us both time.

Academic Integrity and Personal Conduct: Students are expected to act in accordance with the Guidelines for Academic and Personal Integrity at UConn. Regarding AI, submitting ChatGPT-generated text as your own work would be an act of plagiarism insofar as it would involve passing off the work of others as your own. For these reasons, you are not allowed to use this ChatGPT or other similar tools to produce essays or other academic work for this class, unless otherwise explicitly permitted to do so. The university has AI detection software that distinguishes between AI generated content and human generated content.

Missed Classes: When absent, it is the student's responsibility to review lecture slides and to get notes from their peers. While I am happy to answer questions about the week's material in office hours, it would be infeasible for me to fully recount the lectures on a personal basis.

Grades

The following grading scheme will be used throughout the course:

Letter Grade	*Lower Bound*	*Upper Bound*
A	94	100
A-	90	93
B+	87	89
B	84	86
B-	80	83
C+	77	79
C	74	76
C-	70	73
D+	67	69
D	64	66
D-	60	63

Part I: Theoretical Perspectives

Class 1, January 22

Introduction

Class 2, January 29

I. War and Politics

- *Carl von Clausewitz, *On War*, Michael Howard and Peter Paret, ed. and trans. (Princeton: Princeton University Press, 1984), pages 75-89, 113-123.
- *Schelling, Thomas C. *Arms and Influence.* Yale University Press, 2008. Pages 1-43.

II. Technology, War, and International Relations I

- *Snyder, Jack. "One world, rival theories." *Foreign Policy*, 2004.
- *Levy, Jack S. "The causes of war and the conditions of peace." *Annual Review of Political Science* 1.1 (1998): 139-165. *Only pages 143-162.*
- *Lynn-Jones, Sean M. "Offense-Defense Theory and its Critics." *Security Studies* 4.4 (1995): 660-691.

Class 3, February 5

I. Technology, War, and International Relations II

- *Kier, Elizabeth. "Culture and military doctrine: France between the wars." *International Security* 19.4 (1995): 65-93.
- *Russet, Bruce. "Security Dilemma," in Krieger, Joel, and Margaret E. Crahan. *The Oxford Companion to Politics of the World.* New York: Oxford University Press, 2001.

II. The Drivers and Inhibitors of Innovation I

- *Rosen, Stephen Peter. "New ways of war: understanding military innovation." *International Security* 13.1 (1988): 134-168.
- *Krepinevich, Andrew F. "Cavalry to computer: The pattern of military revolutions." *The National Interest* 37 (1994): 30-42.

Class 4, February 12

No class

Class 5, February 19

I. The Drivers and Inhibitors of Innovation II

- *Allison, Graham and Philip Zelikow, *Essence of Decision: Explaining the Cuban Missile Crisis, Second Edition. Introduction only.*
- *Hymans, Jacques EC. "Veto players, nuclear energy, and nonproliferation: domestic institutional barriers to a Japanese bomb." *International Security* 36.2 (2011): 154-189.

II. Arms Races and Diffusion

- *Glaser, Charles L. "The causes and consequences of arms races." *Annual Review of Political Science* 3.1 (2000): 251-276.
- *Horowitz, Michael C. *The diffusion of military power: Causes and consequences for international politics.* Princeton University Press, 2010. *Introduction only.*

Class 6, February 26

I. Midterm I (in class)

II. Lecture: writing a policy memo

Part II: Past Innovations

Class 7, March 4

I. Gun Powder and Rifling

- *Brodie, Bernard, and Fawn M. Brodie. *From Crossbow to H-Bomb: The evolution of the weapons and tactics of warfare.* (1973). *Chapter 3 ("The Impact of Gunpowder"), pages 41-73.*
- *Keir Lieber, *War and the Engineers: The Primacy of Politics Over Technology. Chapter 3, pages 99-122 ("The Small Arms and Artillery Revolution").*

II. Mass Mobilization and Trains

- *Barry R. Posen, "Nationalism, the Mass Army, and Military Power," *International Security*, 18.2 (Fall 1993): 80-124. Only pages 80-95, and 120-122.

- *Wolmar, Christian. *Engines of War: How Wars Were Won and Lost on the Railways.* Public Affairs, 2010. Chapter One.
- *Lieutenant General, USMC (Ret.) John E. Wissler, "Logistics: The Lifeblood of Military Power." Pages 1-8.

March 10th - March 16th: Spring Break

If you have time, please watch the film *Zero Days* on Husky CT.

Class 8, March 18

I. World War I

- *Stephen Van Evera, "The Cult of the Offensive and the Origins of the First World War," *International Security*, 9.1 (1984): 58-107.
- *Jonathan Shimshoni, "Technology, Military Advantage, and World War I: A Case for Military Entrepreneurship,' *International Security*, 15.3 (Winter 1990/1991): 187-215. Pages 187-203, skim the rest.

II. Air Power

- Mueller, Karl P, "Air Power." RAND Corporation. https://www.rand.org/content/dam/rand/pubs/reprints/2010/RAND_RP1412.pdf
- *Werrell, Kenneth P. "The strategic bombing of Germany in World War II: Costs and accomplishments." *The Journal of American History,* 73.3 (1986): 702-713.

Class 9, March 25

I. World War II

- *Williamson Murray, "Armored Warfare: The British, French, and German Experiences," in Williamson Murray and Allan R. Millett (eds), *Military Innovation in the Interwar Period* (Cambridge: Cambridge University Press, 1988). Pages 6-49.
- *Keir Lieber, *War and the Engineers: The Primacy of Politics Over Technology.* Chapter 4, pages. 99-122 ("The Armored Revolution").

II. Nuclear Weapons & Nuclear Strategies.

- *Sagan, Scott D. "Why do states build nuclear weapons? Three models in search of a bomb." *International Security* 21.3 (1997): 54-86.
- Krepon, Michael. "The Stability-Instability Paradox." *Arms Control Wonk.* https://www.armscontrolwonk.com/archive/402911/the-stability-instability-paradox/

Class 10, April 1

I. Midterm Part II

II. Insurgency and Counterinsurgency

- *Perkoski, Evan. "Terrorist Technological Innovation." *Oxford Handbook of Terrorism.*
- *Lyall, Jason, and Isaiah Wilson. "Rage against the machines: Explaining outcomes in counterinsurgency wars." *International Organization* 63.1 (2009): 67-106.

Part III: Recent and Future Innovations

Class 11, April 8

I. US Technological Primacy in the Gulf War

- *Perry, William J. "Desert Storm and Deterrence." *Foreign Affairs* 70.4 (1991): 66-82.
- *Cohen, Eliot A. "The mystique of US air power." *Foreign Affairs* (1994): 109-124.

II. Cyber Warfare

- *Perkoski, Evan and Michael Poznansky. "Offense and Defense in Cyberspace." In *Contemporary Military Strategy and the Profession of Effects*, United States Air Force Academy.
- *Lindsay, Jon R. "Stuxnet and the limits of cyber warfare." *Security Studies* 22.3 (2013): 365-404.
- Major Nick Brunetti-Lihach, "Cyber War Requires Cyber Marines." US Naval Institute, November 2018. https://www.usni.org/magazines/proceedings/2018-11/cyber-war-requires-cyber-marines

Class 12, April 15

I. Drones and Swarms

- *Zegart, Amy. "Cheap fights, credible threats: The future of armed drones and coercion." *Journal of Strategic Studies* (2018): 1-41. *Particularly pages 1-20.*
- *Scharre, Paul. "Counter-Swarm: A Guide to Defeating Robotic Swarms." *War on the Rocks*, available here.

- *Adams, Eric. "The Navy's New Robot Boats Swarm the Enemy on their Own." *Wired*, https://www.wired.com/2017/01/navys-new-robot-boats-swarm-enemy/

II. Power Projection and Air-Sea Battle

- *Posen, Barry R. "Command of the commons: the military foundation of US hegemony." *International Security* 28.1 (2003): 5-46.
- *Rovner, Joshua. "AirSea battle and escalation risks." SITC-NWC 2012 Policy Briefs (2012).
- *Horowitz, Michael C. "The Future of War is Fast Approaching in the Pacific: Are the US Military Services Ready?" *War on the Rocks*, 2 June 2017. Available here.

Class 13, April 22

I. In-class Wargaming Simulation

II. Course Conclusions

- Work, Bob and Gen. Paul Selva, "Revitalizing Wargaming is Necessary to be Prepared for Future Wars." *War on the Rocks*, https://warontherocks.com/2015/12/revitalizing-wargaming-is-necessary-to-be-prepared-for-future-wars/
- *Review Krepinevich, Andrew F. "Cavalry to computer: The pattern of military revolutions." *The National Interest* 37 (1994): 30-42.