

Science, Technology, and National Security

INTA 6122

Spring 2025 Topic: Automation

Course Overview

Professor: Jon R. Lindsay

Email: jlindsay30@gatech.edu

Office Location: CODA E1011 (10th Floor)

Office hour: Tuesday 1500 on weeks with a class meeting, or online Monday 1830 when not.

TA: *TBD*

TA Office Hour: *TBD*

Class Meetings: *Monday 6:30p-9:15p – Meeting biweekly in person: see schedule below. On off-weeks there will be an optional online office hour or scheduled online presentations.*

Class Location: *Habersham G17*

Course Description

This course explores special topics in science, technology, and national security. The focus is on comparing relevant historical developments with emerging problems in global security. We will examine the interaction of politics and economics with technological development in an effort to understand the broader context of technologies of military significance. This is a reading seminar that delves into a selection of scholarly books, ranging from classic texts to recent publications. Students should expect to read and engage with a large amount of material.

The specific reading list and seminar topic will vary each offering. The topic for this term will be **automation**, broadly construed. We will start in the Bronze Age to set a baseline of expectations about the human experience of war in an era long before digital technology. Then we will explore the increasing complexity of technology and automation in the twentieth century. We next move into the political economy and grand strategy of advanced technologies, before delving into the battlefield impacts of artificial intelligence (AI). The final session will consider ethical issues.

Pre-Requisites

This class has no formal prerequisites. However, prior exposure to international relations theory will be valuable. Students should have taken an introductory course in international relations or public policy such as INTA 3044 (Global Politics of Technology), INTA 2040 (Science, Technology, and International Affairs), PUBP 3502 (Information and Communications Technology Policy).

Course Texts

Please procure the following books. Each student will additionally read at least one additional book for the book review assignment discussed below. Additional material will be available online or through Canvas.

- Homer. *The Iliad*. Translated by Emily Wilson. New York: W. W. Norton & Company, 2023. [Other translations are acceptable.]
- Winner, Langdon. *Autonomous Technology: Technics-out-of-Control as a Theme in Political Thought*. Cambridge, MA: MIT Press, 1977.
- Mindell, David A. *Between Human and Machine: Feedback, Control, and Computing before Cybernetics*. Baltimore: Johns Hopkins University Press, 2002.
- Stewart, Andrew J. *A Vulnerable System: The History of Information Security in the Computer Age*. Cornell University Press, 2021.
- Ding, Jeffrey. *Technology and the Rise of Great Powers: How Diffusion Shapes Economic Competition*. Princeton: Princeton University Press, 2024.
- Cunningham, Fiona S. *Under the Nuclear Shadow: China's Information-Age Weapons in International Security*. Princeton University Press, 2025.
- Payne, Kenneth. *I, Warbot: The Dawn of Artificially Intelligent Conflict*. New York: Oxford University Press, 2021.
- Schwarz, Elke. *Death Machines: The Ethics of Violent Technologies*. Manchester: Manchester University Press, 2019.

Assignments

- 10% Participation
- 40% Biweekly reflections (8 sessions * 5% each)
- 10% Book review
- 40% Term paper

Participation

Students are expected to come to course sessions prepared to discuss required readings for the week. I expect you to actively engage with the course readings, and I expect you to have thought about the lesson questions listed in the syllabus for each week. Evidence of active engagement includes asking and answering questions in class or office hours, to include clarifying, critiquing, applying, or extending arguments. Note, if you are uncomfortable speaking in group settings, then you can see me during office hours asking informed questions and demonstrating engagement with the material.

Biweekly reflections

Our discussions in class will be driven by your engagement with the readings. Each Friday before class (upload to Canvas by 11:59pm), students will submit a 2-to-3-page paper (no more than 1,000 words). Students are highly encouraged but not required to read the responses from other students; this will enrich discussion in class. Note that there are eight course sessions after the introduction, so there are eight papers.

In your paper you are welcome to comment on anything in the readings that interested, inspired, confused, or frustrated you. I am looking for evidence that you have wrestled with ideas in the readings. Evidence can include but is not limited to summaries or critiques of key arguments, evaluation of evidence, and applications of concepts. No outside research is required, although you are welcome to use supplementary sources. This is a reflection paper, not a research paper, but you should still strive to have an overall theme and coherent organization.

Book Review

You will write a book review (~1,200 words) during the course. Being able to write a book review is an important skill in many analytic communities. A book review helps your busy colleagues to get the feel for a book and decide whether they should invest in reading it themselves. Anticipating writing a review also helps you to read in a more focused way and retain what you've read more effectively. Elements of a good review include:

- Context of the book: what are the debates or issues that motivate this book or make it relevant today, and for which audiences?
- Overview of concepts and themes: what is the key argument of the book, how is it organized, and what is the methodological approach?
- Evaluation of strengths and weaknesses: are you enthusiastically convinced by the argument and evidence, or do you come away sceptical, confused, or disappointed?
- Use quotes or examples from the book to make your points.

Term Paper

Your final paper should be **no more than 20 pages or 5,000 words**. Papers are due via Canvas no later than **11:59pm on 30 April**. The specific topic is up to you. I highly recommend you talk to me in advance about it. I am looking for evidence that you have wrestled with ideas in the readings and discussions. You should discuss some of the required readings, from different weeks. You do not have to discuss them all; that would result in scattered focus. No outside research is required, although you are welcome to use supplementary sources. The amount of outside sourcing or research will depend on your topic. A good paper will make and sustain an argument and evaluate counterarguments.

Grades

Detailed assignment guidance will be distributed separately in class throughout the semester. Below is the grading scale for this course (no plus or minus grades will be given). A grade of C or higher is required to PASS (for P/F students).

Letter Grade	Score
A	90-100
B	80-89
C	70-79
D	60-69
F	59 and below

Course Logistics

Course Expectations, Attendance & Participation:

This course will be conducted with biweekly meetings in person during the course meeting time. Please check the detailed schedule below! On weeks when we are not meeting in person, there will either be an optional online discussion session with the instructor or an online special presentation.

You are expected to attend all classes unless you have a compelling reason. Students are expected to actively engage with the course readings, and to have thought about the lesson questions listed in the syllabus for each week. There may be occasional virtual lectures in lieu of in-person classes interspersed throughout the semester. Class announcements and information will be posted to email and Canvas. Lecture slides will be uploaded to Canvas; however, lectures will not be recorded.

Deliberate and active engagement with course material, and with current national security debates, will prime you for discussion in class. Learning how to get through a lot of information in a smart and efficient way will serve you well in your education, and in your future career.

All people deserve to be treated with dignity and respect. In this class we expect—and hope—to have arguments and disagreements. We should expect to discuss uncomfortable topics, and we will encounter controversial points of view. But we should also strive to be cooperative in our study of conflict. Please make constructive comments and behave courteously. We all enjoy the right to free speech and assembly, and we also have a responsibility to maintain a safe, orderly, and healthy learning environment. Students and faculty should hold one another accountable in this regard.

Technology Requirement:

You are REQUIRED to have and maintain access to Canvas, and Zoom, via your Georgia Tech sign-on information. Our general course materials and grades will be available on Canvas throughout the semester. We will be conducting periodic scheduled virtual class sessions using the Zoom platform throughout the semester. If you have problems with registration (due to non-payment, etc.) you may be dropped from Canvas. It is imperative that you be proactive to avoid this situation. If you are in need of technical support, there are several new online tutorials and live technical Q&A opportunities available through Georgia Tech and Canvas. Please see me if you need additional technical support, so that I can help you find the appropriate resource through Georgia Tech.

Academic Integrity:

All students are assumed to have read the Code of Student Conduct and consented to be bound by it. Violations of these rules of conduct are taken extremely seriously, will be reported per applicable Georgia Tech policies, and will result in a failing grade for the course. Specific violations include (but are not limited to):

- Use or provision of prohibited assistance during quizzes or exams
- Sharing of outside assignments such as research reports or papers
- Plagiarism- this includes both the use of the words and ideas without attribution (e.g., by presenting online materials as if they were your own work)

For more information on the Honor Code and ethics at Georgia Tech, please visit: Office of Student Integrity: <http://osi.gatech.edu/>

Georgia Tech Policy Library: <https://policylibrary.gatech.edu/student-affairs/academic-honor-code>

Students are welcome to use LLMs like ChatGPT for their papers, but you must report back on whether and how you did so --- this is mandatory. Include a statement on Generative AI usage on your title page. You can use GAI to suggest ideas, turns of phrase, and sometimes even some organization, but it will work best as a learning tool if you run it several times, adjusting and focusing your prompts. Each iteration, you are learning something about what you are looking for, what you want to say. You are tuning your judgment. You are ultimately going to have integrate your GAI runs in a coherent paper, which makes a clear argument, acknowledges counterarguments, evaluates the evidence, etc. You are also going to need to support your argument with citations to literature and sources, which GAI typically cannot help you with given problems with hallucination.

Special Accommodations, Extensions and Late Submissions:

If you require special learning/testing accommodations, please inform me at the beginning of the semester so that we can discuss and complete any necessary paperwork, and coordinate with Student Disability Services to ensure these accommodations are approved and documented officially. Georgia Tech complies with regulations of the Americans with Disabilities Act of 1990 and offers accommodations to students with disabilities. If you are in need of a classroom accommodation, please make an appointment with the Office of Disability Services to discuss the appropriate procedures. <https://disabilityservices.gatech.edu/>

Late Policy. Late assignments will be penalized half a grade per day (24 hrs from the due date). That means an A will become a B+ and a B- will become a C.

Extensions. Extensions may be granted, in advance, on a case-by-case basis for valid accommodations or extenuating circumstances.

Student Support Services:

In your time at Georgia Tech, you may find yourself in need of support. Below you will find some resources to support you both as a student and as a person. These resources may also provide specific Covid-19 related information through their website (e.g., STAMPS).

- STAMPS Health Services Tech Moving Forward: Special health guidance related to Covid-19 and campus resources. <http://health.gatech.edu/coronavirus/campus-guidelines>
- The Office of the Dean of Students: <https://studentlife.gatech.edu/>; 404-894-6367; Smithgall Student Services Building 2nd floor
Can assist with a variety of Georgia Tech policies and student needs including reviewing approved absence requests.
- Georgia Tech Counseling Center: <http://counseling.gatech.edu> ; 404-894-2575; Smithgall Student Services Building 2nd floor
Services include short-term individual counseling, group counseling, couples counseling, testing and assessment, referral services, and crisis intervention. Their website also includes links to state and national resources. Students in crisis may walk in during business hours (8am-5pm, Monday through Friday) or contact the counselor on call after hours at 404-894-2204.
- Students' Temporary Assistance and Resources (STAR): <https://studentlife.gatech.edu/content/star-services>
Can assist with interview clothing, food, and housing needs.
- Stamps Health Services: <https://health.gatech.edu> ; 404-894-1420
Primary care, pharmacy, women's health, psychiatry, immunization and allergy, health promotion, and nutrition

Schedule

Note that there is no meeting in-person on week one. Please review the syllabus and the introductory video on canvas.

Meeting	Topic	Reading (all)	Book review (one student)
None	Welcome (Video)	Syllabus	None
Jan 13	Ancient Warfare	Homer	Sun Tzu. <i>The Art of War</i> . Trans. Michael Nylan. W. W. Norton & Co., 2020.
Jan 27	Increasing Complexity	Winner	Harari, Yuval. <i>Nexus: A Brief History of Information Networks from the Stone Age to AI</i> . Random House, 2024.
Feb 10	Cybernetics	Mindell	Fino, Steven A. <i>Tiger Check: Automating the US Air Force Fighter Pilot in Air-to-Air Combat, 1950–1980</i> . JHU, 2017.
Feb 25	Cybersecurity	Stewart	Maschmeyer, Lennart. <i>Subversion: From Covert Operations to Cyber Conflict</i> . Oxford, 2024.
Mar 10	Political Economy	Ding	Miller, Chris. <i>Chip War: The Fight for the World's Most Critical Technology</i> . Simon and Schuster, 2022.
Mar 24	Grand Strategy	Cunningham	Scharre, Paul. <i>Four Battlegrounds: Power in the Age of Artificial Intelligence</i> . W. W. Norton & Company, 2023.
Apr 7	Future Warfare	Payne	González, Roberto J. <i>War Virtually: The Quest to Automate Conflict, Militarize Data, and Predict the Future</i> . University of California, 2022.
Apr 21	Ethics	Schwarz	Crawford, Kate. <i>The Atlas of AI: Power, Politics, and the Planetary Costs of Artificial Intelligence</i> . Yale, 2021.