

Political Science, Security, and Technology, B.S.

Bachelor of Science in Political Science, Security, and Technology

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Overview

The major in Political Science, Security, and Technology takes a social science (not technical) approach to studying emerging technologies that affect war and peace. There is no better place to study security and technology than Carnegie Mellon University, a thought leader in global and national security issues, policies, and strategies related to digital technologies. CMU students are uniquely poised to influence the future, with cutting-edge research happening across campus in all the relevant technological areas—e.g., machine learning, cybersecurity, robotics, big data, neuroscience, human-computer interaction, human enhancement, synthetic biology, and various types of artificial intelligence.

In this course of study, Carnegie Mellon undergraduates learn how to analyze the political, economic, social, and ethical dimensions of new technologies, equipping themselves to contribute to vital political debates and influence technological developments in the public interest.

The lesson of the past few years is that the pace of technological change will only increase, and its impact on the future of humanity will also grow.

In particular, the geopolitical implications of various forms of artificial intelligence are well along, including their impacts on work, health, environmental protection, and especially conflict. The ongoing conflicts in Ukraine, Gaza, Sudan and elsewhere reflect the role of autonomous weapons, loitering munitions, UAVs, voice-cloning tools, and open-source intelligence driven by machine learning tools.

The full effects of these technologies are some years away, but our students must be equipped to shape and adapt to them. Most serious among these effects will be the impacts on war and peace, what it means to be human, patterns of economic prosperity, the future of work, and the future of global stability.

Students in this major read, employ, and create evidence-based research that addresses and shapes the future of technology in national and international security. In choosing their electives, students have the opportunity to emphasize either the international or domestic American aspects of this topic. Challenges posed by digital technologies affect people of all political parties, in the United States and throughout the world, especially in democracies.

Our goal is to educate students who emerge knowing not only about the risks and benefits of new technologies in historical context, but are also able to frame broad questions and use political science methods, theories, and approaches to address them.

We teach a range of methodologies to prepare our students for the challenges of the 21st century, both within the United States and abroad. These include introductions not only to traditional political science approaches (such as comparative case studies, archival analysis, contextual analysis, database construction, and regression analysis), but also to newer tools such as visual geospatial mapping, sensor-driven machine learning, and the employment of large language models.

Our budding political scientists may not personally build new technological tools (as they do in other parts of Carnegie Mellon University); but they'll know how to use them effectively to forecast problems, identify potential backlash, and answer important questions. They'll design research projects that address political, ethical, and strategic questions related to security and technology, in everything from voting in democratic elections to robotic targeting during warfare, in both the United States and abroad.

Political Science, Security, and Technology is available as a primary major and additional major. The requirements are the same for both.

Curriculum

A maximum of four courses may double count between the PSST major and any other majors or minor. Unlimited double counting is permitted with General Education requirements.

Political Science Core 36 units

Students must complete all of the following core courses.

		Units
84-101	Introduction to Political Science	9
84-104	Decision Processes in American Political Institutions	9
84-226	International Relations	9
84-250	Writing for Political Science and Policy	9

Security and Technology Core 45 units

Students must complete:

84-274	An Introduction to Technology and War	9
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Students must complete 36 units from the following list of courses:

84-314	Politics, Technological Change, and Economic Growth	9
84-330	Race for the Future: US-China Tech Competition	6
84-343	Offensive Cyber: Law & Policy	6
84-345	Hackers, the Law, & Policy Responses	6
84-347	Congress & National Security	9
84-349	Digital Diplomacy: Cybersecurity Challenges and Global Governance	9
84-350	A Strategist's Introduction to Artificial Intelligence	9
84-353	US-China Strategic Stability	6
84-356	Applied Political Data Analytics	9
84-363	Click. Hack. Rule: Understanding the Power & Peril of Cyber Conflict	9
84-368	Technology Ethics	9
84-370	Nuclear Security & Arms Control	9
84-371	International Governance of Artificial Intelligence	9
84-375	Geopolitics of Innovation	9
84-383	National Cyber Policy & Strategy	6
84-387	Remote Systems and the Cyber Domain in Conflict	9
84-405	The Future of Warfare	9

Methodology Core 28 units

Students must complete all of the following courses.

84-266	Research Design for Political Science	9
36-202	Methods for Statistics & Data Science	9
15-110	Principles of Computing	10
or 15-112	Fundamentals of Programming and Computer Science	

Electives 45 units

Students must complete 45 units (usually five courses) in total. At least three courses (27 units) must be taken from the Carnegie Mellon Institute for Strategy and Technology (84-xxx). Most courses listed below are 9-unit courses, but some are fewer. When students choose courses offered for fewer than 9 units, they must remember that a minimum of 45 units is still required and thus plan to take one or more additional courses to fill out that minimum number. In other words, the key requirement is the number of units (45), not the number of courses. Courses taken in the Security and Technology core beyond the required number of units for the core may count as electives for the major.

Students are strongly encouraged to participate in the Carnegie Mellon University Washington Semester Program (CMU/WSP) (<https://www.cmu.edu/cmist/washington-center/washington-semester-program/>) and courses taken through the program may count toward electives for the major.

International Security

84-110	The Economics of Politics and Technology	9
84-200	Security War Game Simulation	3
84-275	Comparative Politics	9
84-304	Analysis of Current US National Security Priorities	6
84-312	Terrorism in Sub-Saharan Africa	6
84-322	Nonviolent Conflict and Revolution	9
84-323	War and Peace in the Contemporary Middle East	9
84-325	Contemporary American Foreign Policy	9
84-329	Asian Strategies	6
84-336	Implementing Public Policy: From Good Idea To Reality	12
84-339	Seminar in Public Policy Research *	12
84-341	Transnational Criminal Networks & International Security	6
84-360	CMU/WSP Internship Seminar *	24
84-362	Diplomacy and Statecraft	9
84-365	The Politics of Fake News and Misinformation	9
84-369	Decision Science for International Relations	9
84-373	International Law	9
84-386	The Privatization of Force	9
84-389	Terrorism and Insurgency	9

* Taught in Washington, DC, through CMU/WSP

Domestic American Politics

84-120	Introduction to US Constitutional Law	9
84-252	Briefing in the Policy World	6
84-280	Popcorn and Politics: American Foreign Policy at the Movies	12
84-285	Introduction to Legal Education and the Legal Profession	9
84-301	Policy & Persuasion	6
84-309	American Political Divides and Great Debates	9
84-319	Civil-Military Relations	9
84-324	The Future of Democracy	9
84-325	Contemporary American Foreign Policy	9
84-327	Who Really Runs America?: Subnational Governance and Policymaking	9
84-328	Military Strategy and Doctrine	9
84-331	Technology, Law, and Democracy	6
84-332	Contemporary US Constitutional Law Issues *	6
84-333	Law of US Democracy	9
84-336	Implementing Public Policy: From Good Idea To Reality	12
84-338	Analysis of US Presidential Powers *	6
84-339	Seminar in Public Policy Research *	12
84-352	Representation and Voting Rights	9
84-355	Democracy's Data: Analytics and Insights into American Elections	9
84-358	Money, Connections, and Power: Interests and Influence in the US	9
84-360	CMU/WSP Internship Seminar *	24
84-365	The Politics of Fake News and Misinformation	9
84-366	The 21st-Century Presidency: Expanding Powers, New Challenges	9
84-367	The Politics of Antisemitism	9
84-380	US Grand Strategy	9
84-393	The US Congress: Legislative Progress or Paralysis?	9
84-402	Judicial Politics and Behavior	9

* Taught in Washington, DC, through CMU/WSP

Additional Electives in Security and Technology

17-200	Ethics and Policy Issues in Computing	9
17-303	Cryptocurrencies, Blockchains and Applications	9
17-331	Information Security, Privacy and Policy in the Age of AI	12

17-333	Privacy Policy, Law, and Technology	9
17-334	Usable Privacy and Security	9
19-403	Policies of Wireless Systems	12
19-411	Science and Innovation Leadership for the 21st Century: Firms, Nations, and Tech	9
70-334	Ethics of Emerging Technologies	9
79-234	Technology and Society	9
79-302	Killer Robots? The Ethics, Law, and Politics of Drones and A.I. in War	9
79-370	Technology in the United States	9
80-249	AI, Society, and Humanity	9
88-270	AI and Social Upheaval	9
95-444	Cybersecurity Policy and Governance II	6

Senior Seminar**9 units**

Students must complete the following course.

84-500	Senior Seminar	9
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