



BALSILLIE SCHOOL OF INTERNATIONAL AFFAIRS

67 Erb Street West, Waterloo, Ontario Canada N2L 6C2

TECHNOLOGY GOVERNANCE SUMMER SCHOOL

12-22 August 2024

Location: Balsillie School of International Affairs, room 142

Course Directors: Professors Jatin Nathwani and Ann Fitz-Gerald

Course description:

This course provides graduate students with an in-depth understanding of the technology-policy nexus – an interface which has become a critical requirement for effective policy analysis and implementation.

Registered students from various faculties will learn about the relevant domains and discourse supporting technology innovation, as well as the issues, datasets, and trends underpinning this emerging and increasingly policy relevant area.

Learning outcome:

Students will gain knowledge of the key concepts underlying data science, data sets, data analytics, artificial intelligence, algorithms, large language models, the ‘Internet of Things’, sensors and devices, and the use and application of these approaches in key policy areas.

Formative assessment:

The course will feature presentations from leading technology science and policy experts and practitioners. Upon completion of the course and following the submission of a short “reflective course journal”, participants will be awarded with a certificate.

Course sessions:

Week 1

Day 01 (Monday, August 12)		
Time	Topic	Instructor(s)
9-10:30am	Introduction to Week 1 / Introduction to Technology Governance	Ann Fitz-Gerald
10:30-10:45am	Break	-
10:45am-12:30pm	Intro to Data Science and Data Engineering	M Tamer Özsu
12:30-1pm	Lunch	-



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1-2:30pm	Big Data	M Tamer Özsu
2:30-2:45pm	Break	-
2:45-4pm	Introduction to Quantum Computing	Michele Mosca

Day 02 (Tuesday, August 13)		
Time	Topic	Instructor(s)
9-10:30am	Introduction to AI	Mark Humphries
10:30-10:45am	Break	-
10:45am-12:30pm	AI Challenges and opportunities: a STEM perspective	Dmytro Chumachenko
12:30-1pm	Lunch	-
1-2:45pm	AI and Social Impacts/Policy	Raymond Ng
2:45-3pm	Break	-
3-4pm	Plenary Discussion: Challenges of AI	Ann Fitz-Gerald and Jatin Nathwani (<i>moderators</i>)

Day 03 (Wednesday, August 14)		
Time	Topic	Instructor(s)
9-10:30am	Ethics on AI	Maura Grossman
10:30-10:45am	Break	-
10:45am-12:30pm	Algorithms and Algorithms Optimization	Azam Asilian Bidgoli
12:30-1pm	Lunch	-
1-2:30pm	Nanotechnology	Denis Wong
2:30-2:45pm	Break	-
2:45-4pm	Large Language Models	Pascal Poupart

Day 04 (Thursday, August 15)		
Time	Topic	Instructor(s)
9-10:30am	Sensors, Microprocessor Chips and Devices - The ICT Ecosystem	Hamid Alemohammad



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10:30-10:45am	Break	-
10:45am-12:30pm	Data Security and Privacy	Xi He
12:30-1pm	Lunch	-
1-2:30pm	Evaluation and reporting of intangibles	Bruce McConomy and Sarin John
2:30-2:40pm	Break	-
2:40-4pm	Case Study	Bruce McConomy and Sarin John (<i>moderators</i>)

Week 2

Day 05 (Monday, August 19)		
Time	Topic	Instructor(s)
9-9:10am	Introduction to Week 2	Ann Fitz-Gerald and Jatin Nathwani
9:10-10:30am	The Internet of Things (IoT)	Natasha Tusikov and Blayne Haggart
10:30-10:45am	Break	-
10:45-12:30pm	Exercise	Natasha Tusikov and Blayne Haggart (<i>moderators</i>)
12:30-1pm	Lunch	-
1-2:30pm	Adding 'Value' to a Global 'Value Chain': The Importance of Intellectual Property on Emerging Technologies	Jim Hinton
2:30-2:45pm	Break	-
2:45-4pm	Case Study on Intellectual Property	Jim Hinton (<i>moderator</i>)

Day 06 (Tuesday, August 20)		
Time	Topic	Instructor(s)
9-10:30am	Energy Security - Emerging Energy and Power Technologies and Policy Implications	Jatin Nathwani
10:30-10:45am	Break	-
10:45-12pm	Environmental Policy and Emerging Transformative Technology	Neil Craik



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12:30-1pm	Lunch	-
1-2:30pm	Novel Water Systems: Policy Implications	Dustin Garrick
2:30-2:45pm	Break	-
2:45-4pm	Case Study on the Economics of Sustainability Applications	Dustin Garrick (<i>moderator</i>)

Day 07 (Wednesday, August 21)

Time	Topic	Instructor(s)
9-10:30am	National Security and Technology: autonomous weapons systems	Branka Marijan
10:30-10:45am	Break	-
10:45-12pm	National Security and Technology	Alexander Lanoszka
12:30-1pm	Lunch	-
1-2:30pm	Strategic Planning for National Security Governance in a Data-Driven and Digital Age	Ann Fitz-Gerald
2:30-2:45pm	Break	-
2:45-4pm	Case Study on National Security Technology	Ann Fitz-Gerald (<i>moderator</i>)

Day 08 (Thursday, August 22)

Time	Topic	Instructor(s)
9-10am	Emerging Technologies and Their Impact on Global Health Policy	Stephanie DeWitte-Orr
10-10:15am	Break	-
10:15-12:30pm	Case Study - Smart Phone Apps, Preventative Screening, and the Issue Of 'Consent	Karen Yeates (<i>moderator</i>)
12:30-1pm	Lunch	-
1-3pm	Final Panel Discussion and Plenary Session - "The Impact of Technology on Geopolitics"	Paul Samson, Bob Fay and Dan Monafu
3-3:15pm	Break	-
3:15-4pm	Summary and Closing Remarks	Ann Fitz-Gerald and Jatin Nathwani