



THE FLETCHER SCHOOL

TUFTS UNIVERSITY

***SCIENCE DIPLOMACY:
ENVIRONMENTAL SECURITY IN THE ARCTIC OCEAN***

SYLLABUS

Diplomacy, History and Politics: DHP-P259

Spring 2017

Thursday 08:00 – 10:30 a.m. EST / 16:00 – 18:30 Moscow

Cabot 102

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Two-Part Course Syllabus

This is an integrated two-part course that will assess the science-policy interface with global relevance to international relations and diplomacy. The first part of the course will involve lectures, materials and discussions within modules that relate to the core elements of science diplomacy. To facilitate “active learning”, the second part of the course will involve a Mock Arctic Council Ministerial Meeting where student-ministers negotiate a consensus declaration.

The Arctic Ocean will be used as a case-study where science-policy interactions are being used to balance national interests and common interests with regards to sustainable infrastructure development, involving the combination of *fixed, mobile and other built assets (including communications, research, observing and information systems) as well as regulatory, policy and other governance mechanisms (including insurance)*. Lessons of science diplomacy in the Arctic Ocean will be illustrated further in the context of environmental security, requiring *an integrated approach for assessing and responding to the risks as well as the opportunities generated by an environmental state-change*.

Core references will come from the Arctic Council, which was established in 1996 by the eight Arctic states (Canada, Denmark, Finland, Iceland, Norway, Sweden, Russian Federation and United States) with sovereign jurisdictions north of the Arctic Circle (66.5°N) and six indigenous peoples’ organizations. References will include products from the six scientific working groups of the Arctic Council that relate to emergency preparedness, sustainability, monitoring and assessment, marine ecosystem protection, contaminant action and species conservation. Focus on the Arctic Council is timely in view of the United States resuming two-year chairmanship of this high-level forum from 2015-2017 and it is anticipated that this course will involve guest contributions from officials involved with the Arctic Council.

Law of the sea will be addressed throughout this course as the legal framework for the Arctic Ocean, as agreed by the eight Arctic states. Materials also will be included from other relevant institutions and stakeholders to more-fully reveal international, interdisciplinary and inclusive perspectives about the Arctic Ocean. In addition, information-technology approaches will be used to facilitate discovery of content-in-context among selected course materials.

How does science diplomacy promote cooperation and prevent conflict among nations? How does environmental security elevate the urgency of sustainable development? How can environmental perspectives be leveraged to build common interests among nations? What are the global lessons that are emerging from international engagement in the Arctic Ocean?

The overall objective of this course is to consider scientific contributions to sustainable, stable and peaceful development in our world with a long-term view toward balancing economic prosperity, environmental protection and social equity – considering the urgencies of today and the needs of future generations.

Course textbooks:

Students should purchase:

- Berkman, P.A. and Vylegzhanin, A.N. 2012. *Environmental Security in the Arctic Ocean*. Springer, Dordrecht. 459 p. [hereinafter *Environmental Security*]

Students should download:

- Berkman, P.A. 2002. *Science into Policy: Global Lessons from Antarctica*. Academic Press, New York. 252 p. [hereinafter *Science into Policy*] – access via Tufts Trunk site.
- Berkman, P.A., Lang, M.A., Walton, D.W.H. and Young, O.R. (eds.). 2011. *Science Diplomacy: Antarctica, Science and the Governance of International Spaces*. Smithsonian Institution Scholarly Press, Washington, D.C. 357 p. [hereinafter *Science Diplomacy*] – access via www.atsummit50.org/session/book.html.

Students also should become familiar with Ministerial Declarations from the Arctic Council:

- <http://arcticcouncil.knohow.co>

Other readings will be available in the Tuft Trunk site for this course with relevant sub-folders to facilitate easy access. Trunk is accessible from any computer with an internet browser at <https://trunk.tufts.edu>. These materials will be provided as portable document format (pdf) files that you can print from Trunk and hard copies will not be provided. During the first couple weeks of class, students can access the materials on Trunk as a "guest"; however, only students formally enrolled in the course will have access to course materials after this period. You will need to use a Tufts ID number to access the course materials on Trunk. (Note: Cross-registered students can obtain their Tufts ID from the Fletcher School Registrar's office.)

Course Evaluation:

Students will be evaluated on the basis of:

- A Mock Arctic Council Ministerial Declaration (total 60%) that will be evaluated in phases: outline of key issues (10%); draft that elaborates the key issues (20%); and final declaration that will be available for negotiation in the Mock Arctic Council Ministerial Meeting (30%).
- One take-home essay (total 15%);
- Class participation (total 25%), including contributions throughout the course (10%) and interaction during the Mock Arctic Council Ministerial Meeting (15%).

Course Format and Pedagogy:

This course will be divided into interconnected modules to identify and consider the elements of science diplomacy. The modules progressively build toward the Mock Arctic Council Ministerial Meeting, which will be described separately in detailed instructions. Each module will involve various readings that will be elaborated in the lectures and class discussions. Through a process of open-ended inquiry centered around the concept of balancing diverse interests – this course is designed to facilitate holistic thinking about transboundary issues, impacts, regions and resources that require international, interdisciplinary and inclusive solutions.

Tentative course schedule:

The course starts on February 16th and ends on April 27th, and meets every Thursday at 8:00-10:30 EST / 16:00-18:30 Moscow.

February 16th - Module 1: Introduction: objectives, questions, definitions and concepts

February 23rd - Module 2: Science as an essential gauge of changes over time and space

March 2nd - Module 3: Science as an instrument for earth system monitoring & assessment

March 9th - Module 4: Science as an early warning system

March 16th - Module 5: Science as a determinant of public-policy agendas

March 30th - Module 6: Science as an element of geopolitical institutions

April 6th - Module 7: Science as a source of invention and commercial enterprise

April 13th - Module 8: Science as an element of continuity in our global society

April 20th - Module 9: Science as a tool of diplomacy

April 27th - Module 10: Mock Arctic Council ministerial meeting

An additional date (between March 28th - April 3rd) might need to be scheduled towards the end of the semester to allow for the Mock Arctic Council ministerial meeting negotiations.

COURSE MODULES

MODULE 1: INTRODUCTION: OBJECTIVES, QUESTIONS, DEFINITIONS AND CONCEPTS

Description:

This introductory module will identify the process of working from first principles. Objectives will be described to frame the course as well as provide a tool for both formative and summative assessments by all involved. The methodology of inquiry will be discussed to stimulate curiosity and address questions in a rigorous manner. Definitions will be provided to frame and guide dialogues in the course as well as among diverse stakeholders. Concepts, especially balance, will be introduced to reveal the challenges and opportunities that we face on a civilization scale.

Readings:

- Arctic Council Website (www.arctic-council.org/).
- Axworthy, T.S. 2013. Changing the Arctic paradigm from cold war to co-operation: How Canada's indigenous leaders shaped the Arctic Council. IN: Alfredson, G. and Koivurova, T. (eds.). *Yearbook of Polar Law, Volume 5*. Brill, Akureyri. Pp. 1-35.
- Berkman, P.A. 2014. Stability and Peace in the Arctic Ocean through Science Diplomacy. *Science & Diplomacy*. June 2014: 26-35. (www.sciencediplomacy.org/perspective/2014/stability-and-peace-in-arctic-ocean-through-science-diplomacy).
- Bloom, E.T. 1999. Establishment of the Arctic Council. *American Journal of international Law* 93 (3):712-732.
- DigIn. *Knowledge Bank of Arctic Council Declarations* (<http://arcticcouncil.knohow.co>).
- Environmental Security. 2012. (selected pages).
- Ottawa Declaration. 1996. Declaration on the Establishment of the Arctic Council. 19 September 1996, Ottawa.
- Science Diplomacy. 2011. (selected pages).

MODULE 2: SCIENCE AS AN ESSENTIAL GAUGE OF CHANGES OVER TIME AND SPACE

Description:

Science offers a process of discovery based on a method of hypothesis testing to assess the dynamics of systems: natural and social, small and large, young and old. At the heart of this process is investigation of changes over time and space. Science provides a framework to look backward and forward in time to characterize rates and durations of phenomena as well as their feedbacks. Science places events in context, such as regional weather patterns operating within our global climate system. Importantly, for the benefit of our global society, science reveals interactions between natural and anthropogenic processes at multiple scales. The concept of time is central to international policy development in our civilization, recognizing that socio-economic and biophysical phenomena often operate over decades and centuries, well beyond election cycles. Without balancing urgent and long-term plans, extending across the twenty-first century and beyond, it is likely that a patchwork of institutions and infrastructures will emerge with the limited horizon of political expediency.

Readings:

- Havebase. 2015. Ship Position Analysis and Visualization from Automatic Identification System Data in the Arctic Ocean. Norwegian Coastal Administration. (<http://havbase.no/>)
- IASC. 2011. International Arctic Science Committee website. (www.arcticportal.org/ias/).
- NSIDC. 2015. *Arctic Sea Ice News & Analysis*. National Snow and Ice Data Center, Boulder. (<http://nsidc.org/arcticseaicenews/>).
- Science Diplomacy. 2011. (selected pages).
- Science into Policy. 2002. (selected pages).
- Young, O.R. 1986. The Age of the Arctic. *Foreign Policy* 61: 160-179.

MODULE 3: SCIENCE AS AN INSTRUMENT FOR EARTH SYSTEM MONITORING AND ASSESSMENT

Description:

Recognizing that science extends across a continuum from basic to applied research, science diplomacy is strongly influenced by discoveries and insights that have practical benefits for society. Such applied research is commonly seen in terms of monitoring and assessing natural as well as anthropogenic impacts that influence human populations and their associated ecosystems. For example, with increasing Arctic marine traffic, accurate meteorological and oceanographic monitoring and forecasting systems will be needed to complement the Navigational and Meteorological Areas that have been established for the Arctic Ocean by the International Maritime

Organization, International Hydrographic Organization and World Meteorological Organization as part of the World-Wide Navigational Warning System. There also will be increasing urgency for high-resolution bathymetric charts in all navigable coastal areas. Moreover, objective data about pan-Arctic ship traffic will need to be collected consistently and processed real-time for operational decision-making throughout the year.

Readings:

- AMSA. 2009. *Arctic Marine Shipping Assessment (AMSA)*. Protecting the Arctic Marine Environment Working Group of the Arctic Council, Akureyri. (www.pame.is/amsa/amsa-2009-report).
- Arctic SAR. 2011. *Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic*. Nuuk, 12 May 2011. (<http://library.arcticportal.org/1474/>).
- Environmental Security. 2012. (selected pages).
- Rasmussen, R.). 2011. *Megatrends*. Nordic Council of Ministers. (selected pages).
- Science Diplomacy. 2011. (selected pages).
- Science into Policy. 2002. (selected pages).

Module 4: SCIENCE AS AN EARLY WARNING SYSTEM

Description:

Scientific research often yields insights about impending abrupt and irreversible changes in the dynamics of natural systems. In fact, the pace of global changes seems often to be more rapid in the polar regions than elsewhere in the Earth system. The ozone story at once reveals unequivocal anthropogenic impacts to the Earth system on a global scale, while highlighting the central roles and responsibilities of the international scientific community in providing early warnings about impending threats that can be translated into adaptation or mitigation policies. With direct relevance to the Arctic Ocean, initial “*common arctic issues*” have been established as “*sustainable development and environmental protection*.” As a component of sustainable development, environmental security provides a framework to address risks of economic, cultural and political instabilities arising from the environmental state-change in the Arctic Ocean with urgency.

Readings:

- ACIA. 2004. *Arctic Climate Impact Assessment*. Cambridge University Press, Cambridge. (selected pages).
- AEPS. 1991. *Arctic Environmental Protection Strategy*. Roveimi, 14 June 1991. (selected pages).

- AHDR. 2004. *Arctic Human Development Report*. Arctic Sustainable Development Working Group of the Arctic Council, Akureyri. (selected pages).
- Environmental Security. 2012. (selected pages).
- Le Mière, C. And Mazo, J. 2013. *Arctic Opening: Insecurity and Opportunity*. Institute for Strategic Studies. (selected pages).
- Science Diplomacy. 2011. (selected pages).
- Science into Policy. 2002. (selected pages).
- STAR. 2011. *4th Symposium on the Impacts of an Ice-Diminishing Arctic on Naval and Maritime Operations*. Center for Satellite Applications and Research Washington, D.C. (selected pages)
- World Commission on Environment and Development. 2009. *Our Common Future*. Oxford University Press. (selected pages)

MODULE 5: SCIENCE AS A DETERMINANT OF PUBLIC-POLICY AGENDAS

Description:

Science has become topical, essential, and strategic. It may be expensive, but evidence from the last fifty years is that we need more not less research if we are to predict the future state of the world accurately enough to plan for our survival. Scientific advances often give rise to policy issues where they did not exist before, especially in relation to natural phenomena and technological innovations. In some cases, the policy process itself exposes solutions or challenges that can be generalized, as with the 'ecosystem approach' in the *Convention on the Conservation of Antarctic Marine Living Resources* that integrates the management of "harvested, dependent and related populations." Similarly, the concept of environmental security is aligned directly with "sustainable development and environmental protection," which the Arctic states and indigenous peoples have established as "common arctic issues." However, like sustainable development, "environmental security can only be dealt with by joint management and multilateral procedures and mechanisms" that extend beyond the Arctic states.

Readings:

- ArcticNet. 2015. The Emerging Arctic Security Environment: List of Refereed Publications Website (www.arcticnet.ulaval.ca/research/publications.php?project_id=74)
- Borgerson, S.G. 2008. Arctic Meltdown: The Economic and Security Implications of Global Warming. *Foreign Affairs* March/April 2008.
- DigIn. 2015a. *Knowledge Bank of Arctic Council Declarations* (<http://arcticcouncil.knowhow.co>).
- Environmental Security. 2012. (selected pages).

- Holtsmark, S.G. and Smith-Windsor, B.A. (eds.). 2009. *Security Prospects in the High North: Geostrategic Thaw or Freeze?* NATO Defense College, Rome. (selected pages)
- Kraska, J. (ed.). *Arctic Security in an Age of Climate Change*. Cambridge University Press. (selected pages)
- Perry, C.M. and Anderson, B. 2012. *New Strategic Dynamics of the Arctic Region: Implications for National Security and International Collaboration*. Institute for Foreign Policy Analysis. (selected pages)
- Rosamond, A., B. 2011. *Perspectives on Security in the Arctic Area*. Danish Institute for International Studies. (selected pages)
- Science Diplomacy. 2011. (selected pages).
- Science into Policy. 2002. (selected pages).
- Stoltenberg, T. 2009. *Nordic Cooperation on Foreign and Security Policy*. Proposals Presented to the Extraordinary Meeting of Nordic Foreign Ministers. Oslo: 9 February 2009.

MODULE 6: SCIENCE AS AN ELEMENT OF GEOPOLITICAL INSTITUTIONS

Description:

Science contributes fundamentally to the implementation of sustainable development strategies that seek to balance environmental protection, economic prosperity, and social justice into the future. When regions or resources, natural phenomena, or technologies are the policy focus, science is built into the institution, as in the *United Nations Convention on the Law of the Sea*, which includes “scientific” in 51 of 320 Articles among Parts 1-XVII of this global institution. Importantly, the Arctic states “remain committed” to the law of the sea as the legal framework for the Arctic Ocean. More than an umbrella legal framework to cover governance gaps, the law of the sea establishes zones within and beyond sovereign jurisdictions, offering a paradigm to balance national interests and common interests in the Arctic Ocean.

Readings:

- Berkman, P.A. and Young, O.R. 2009. Governance and Environmental Change in the Arctic Ocean. *Science* 324: 339-340.
- Bull, H., Kingsbury, B. and Roberts, A. (eds.). 1990. *Hugo Grotius and International Relations*. Oxford University Press, Oxford. (selected pages)
- DigIn. 2015b. *Knowledge Bank of Policy Documents that Relate to the Bering Strait Region*. (<http://beringstrait-governance.knohow.co>).
- Environmental Security. 2012. (selected pages).

- Ilulissat Declaration. 2008. *Declaration from the Arctic Ocean Conference*. 28 May 2008, Ilulissat.
- Norway, 2006. Report No. 8 to the Storting (2005–2006). *Integrated Management of the Marine Environment of the Barents Sea and the Sea Areas off the Lofoten Islands*. Oslo: Norwegian Ministry of Foreign Affairs
- Norway. 2011. Meld. St. 0 (2010–2011) Report to the Storting (white paper). First update of the Integrated Management Plan for the Marine Environment of the Barents Sea–Lofoten Area. Oslo: Norwegian Ministry of Foreign Affairs
- Oberthür, S. and Stokke, O.S (eds.). 2011. *Managing Institutional Complexity: Regime Interplay and Global Environmental Change*. Cambridge, MA: MIT Press. (selected pages)
- Science Diplomacy. 2011. (selected pages).
- Science into Policy. 2002. (selected pages).
- UNCLOS. 1982. *United Nations Convention on the Law of the Sea*. Montego Bay, 10 December 1982. (www.un.org/Depts/los/convention_agreements/texts/unclos/closindx.htm).
- Young, O.R. 1998. *Creating Regimes: Arctic Accords and International Governance*. Cornell University Press, Ithaca.

MODULE 7: SCIENCE AS A SOURCE OF INVENTION AND COMMERCIAL ENTERPRISE

Description:

Although scientific activities may be initiated with national funding for basic research purposes, discoveries also can reveal opportunities for potential or actual commercial gain. In addition to identifying potential resources, science plays a role in developing the technologies needed to exploit these resources. However, there is a key difference between commercial and scientific activities, which is demonstrated by the issue of access to information. Commercial activities restrict information access. In contrast, scientific activities facilitate information access and transparency in such a way as to extend cooperation and prevent conflict. For example, as revealed by satellites, there already is open water during the summer and first-year sea ice during the winter from the Bering Strait to the Barents Sea, creating potential year-round opportunities for ice-strengthened vessels to transit with icebreaker escorts across the Northern Sea Route. Similarly, seismic surveys reveal vast potential energy reserves in the Arctic Ocean, accounting for up to 30% of global gas and 13% of global oil. While diminished sea ice may enhance the opportunities for trade, tourism or fisheries in the Arctic Ocean – among all of the commercial activities, “*energy is the crucial factor in the planet’s economic development.*”

Readings:

- Gautier D.L., Bird K.J., Charpentier R.R., Grantz A., Houseknecht D.W., Klett T.R., Moore T.E., Pitman J.K., Schenk C.J., Schuenemeyer J.H., Sørensen K., Tennyson M.E., Valin Z.C., Wandrey C.J. 2009. Assessment of undiscovered oil and gas in the Arctic. *Science* 324:1175–1179
- Environmental Security. 2012. (selected pages).
- Science Diplomacy. 2011. (selected pages).
- Science into Policy. 2002. (selected pages).

MODULE 8: SCIENCE AS AN ELEMENT OF CONTINUITY IN OUR GLOBAL SOCIETY

Description:

Science as an element of continuity in our world, from the past into the distant future, based on an evolving foundation of prior knowledge. Science is an open-ended process, which is iterative and responsive to changing circumstances, which is realistic and practical, considering that the Earth system and our associated communities are inherently dynamic. In this sense, spatial planning for the high north is like the early twentieth century when nations recognized that they would need to accommodate automobile traffic across continents; projecting vast grids of paved roads and highways that would take the next fifty years to construct within and between nations. With this century perspective, environmental security issues in the Arctic Ocean are both urgent and protracted, requiring sustained advances with coordinated infrastructures that fundamentally involve Arctic coastal states, non-coastal states and indigenous peoples along with non-Arctic states and global civil society.

Readings:

- Åtland, K. 2008. Mikhail Gorbachev, the Murmansk Initiative, and the Desecuritization of Interstate Relations in the Arctic. *Cooperation and Conflict* 13(3):289-311.
- Environmental Security. 2012. (selected pages).
- Gorbachev, M. 1987. Speech in Murmansk at the Ceremonial Meeting on the Occasion of the Presentation of the Order of Lenin and the Gold Star to the City of Murmansk, 1 October 1987.” (English translation prepared by the Press Office of the USSR Embassy, Ottawa, 1988).
- Norway. 2011. Meld. St. 7 (2011–2012) Report to the Storting (white paper). The High North Visions and Strategies. Oslo: Norwegian Ministry of Foreign Affairs.
- Science Diplomacy. 2011. (selected pages).
- Science into Policy. 2002. (selected pages).

MODULE 9: SCIENCE AS A TOOL OF DIPLOMACY

Description:

Following the devastation of World War II, it was vital to promote cooperation and prevent such conflict from ever happening again on a global scale, especially with the development of ballistic missiles capable of carrying nuclear weapons over intercontinental distances. Perhaps the most far-reaching example of science as a tool of diplomacy comes from the International Geophysical Year of 1957-1958, which inspired the United States and Soviet Union to cooperate in establishing the *Antarctic Treaty* as the first nuclear arms agreement, despite their inability to negotiate on this issue elsewhere. The *Antarctic Treaty* similarly stimulated peaceful collaboration between the United States and Japan on an equal footing when such interactions were barely imaginable so soon after World War II. In the north polar region, “*the Arctic Ocean is a unique ecosystem, which the five coastal states have a stewardship role in protecting*” by virtue of their “*sovereignty, sovereign rights and jurisdiction.*” At the heart of stewardship are common interests, providing guiding principles for all involved to avoid “*tragedy of the commons*” where actors pursue their own interests to the detriment of the community. On a global scale, common interests represent an evolving body of international law across a broad suite of institutions that have come into force since World War II.

Readings:

- Berkman, P.A. 2009. International Spaces Promote Peace. *Nature* 462:412-413.
- Environmental Security. 2012. (selected pages).
- Hardin, G. 1968. Tragedy of the Commons. *Science* 162:1243-1248.
- Science Diplomacy. 2011. (selected pages).
- Science into Policy. 2002. (selected pages).

MODULE 10: MOCK ARCTIC COUNCIL MINISTERIAL MEETING

Description:

Mock declarations will be crafted in a phased manner by the student-ministers during the course. In this activity, the student-ministers will consider economic, political, environmental and social perspectives with regard to issues, impacts and resources in the Arctic Ocean. Their mock declarations will address sustainable infrastructure development in the Arctic Ocean, requiring international cooperation, coordination and consistent responses among Arctic as well as non-Arctic states (see above definitions). Moreover, for the purposes of this activity, sustainability will be considered in terms of balancing:

- environmental protection, economic prosperity, social equity;
- urgencies of today and needs of the future; and
- national interests and common interests.

As a collection, the completed draft declarations will be organized into a knowledge bank (e.g., DigIn 2015a,b) to facilitate easy access and comprehensive discovery of content-in-context across all of the contributions. The mock declarations then will be interpreted, debated and negotiated in a Mock Arctic Council Ministerial Meeting that will involve several sessions. As a final product, the student-ministers will agree by consensus on the framework, concepts and specific language of their composite declaration, which will be comparable to the ministerial declarations that emerge from each chairmanship of the Arctic Council.

Readings:

- DigIn. 2015a. *Knowledge Bank of Arctic Council Declarations* (<http://arcticcouncil.knohow.co>).
- Science into Policy. 2002. (selectd pages).