

Science, Technology, and Innovation for Sustainable Prosperity
STP-502Y

John F. Kennedy School of Government
Spring Semester
v. May 3, 2005

Course Meetings: Tuesdays, 10:10-11:30 AM, alternating between the BCSIA Library (3rd floor of Littauer) and Perkins Room (Rubenstein [Eliot] 415).

Instructors: Bill Clark (L360, x53981), John Holdren (L370, x51464), Calestous Juma (L362, x68127) and Kelly Sims Gallagher (L333, x51960)

Conveners: Science, Technology, and Public Policy Program, Belfer Center for Science and International Affairs, and Science, Environment, and Development (SED) project, Center for International Development.

Course Objectives and Overview: This seminar will address the role of science, technology, and innovation in economic development in general, and with respect to the particular problems related to sustainable development. There are three primary aims of the seminar:

- (1) Conduct a critical survey of the classic research literature and development of theory in the field of science, technology, innovation, and public policy in order to provide all participants with a common intellectual foundation.
- (2) Identify and discuss the big unresolved questions in the field, the gaps in our collective understanding, the new controversies that are emerging, and the methods that can be productively employed to contribute to the field.
- (3) Allow participants to present research proposals and work in progress so that everyone practices shaping proposals, critiquing ongoing research, and how to give and receive constructive peer review.

Format: Outside speakers or instructors will lecture for 25 minutes, followed by commentary from a discussant for 10 min., followed by general discussion. Fellows will present for 35 min., with a 5 min. discussant commentary, and then general discussion.

Requirements: Students taking the class for credit are required to submit a **full research proposal by February 15, 2005**, based on their one-page research plan submitted and reviewed in the fall. **The final paper will be due April 19, 2005.** In addition to the research proposal and paper, students will be expected to do all the reading, attend all seminars, and to contribute to discussions, occasionally as a formal discussant. Participants not taking the course for credit are asked to attend regularly, to do the reading, and to contribute to discussions, occasionally as a formal discussant.

Web Page: Contact Rob Stowe for access: robert_stowe@harvard.edu ; x64265.

February 8, 2005; Location: BCSIA Library

Chair: Holdren

Speaker: Calestous Juma

Topic: Innovation: Applying Knowledge in Development, report of the *United Nations Millennium Project's Task Force on Science, Technology and Innovation*

Readings: Executive Summary and Chapter 3 (“Innovation and Economic Advance”) of the report. Report available at

http://bcsia.ksg.harvard.edu/BCSIA_content_stage/documents/TF-Advance2.pdf

Archibugi, D. and C. Pietrobelli, "The Globalisation of Technology and Its Implications for Developing Countries", *Technological Forecasting and Social Change*, 70(9), (Orlando: Elsevier Science, Inc., C 2003), pp. 861-883.

Archibugi, D. and Coco, A. 2004. "A New Indicator of Technological Capabilities for Developed and Developing Countries," *World Development*, Vol. 32, No. 4, pp. 629-654.

Freeman, C. 2002. "Continental, National and Sub-national Innovation Systems- Complementarity and Economic Growth," *Research Policy*, Vol. 31, No. 2, pp. 191-211.

February 15, 2005; Location: Perkins Room

Speakers: John Holdren and Kelly Gallagher

Topic: National Commission on Energy Policy: Research Inputs and Development Implications

Discussant: Jørgen Henningsen, Principal Adviser, Directorate-General Energy & Transport, European Commission,

Readings: Report of the National Commission on Energy Policy; Introduction; Executive Summary; Chapters 2 & 6. Recommended: entire report

<http://www.energycommission.org/ewebeditpro/items/O82F4682.pdf>

Background paper to the Report: J. Holdren and K.S. Gallagher, U.S. Government Policies Relating to International Cooperation on Energy

<http://www.energycommission.org/ewebeditpro/items/O82F4896.pdf>

February 22, 2005

Location: BCSIA Library

Speaker: Bill Clark

Topic: A Framework for Analysis of Knowledge Systems for Sustainable Development

Readings: Clark, William and Nancy Dickson. 2004. Internal Knowledge Systems for Sustainable Development Project memo, "Knowledge Systems for Sustainable Development Outline for Writing Case Studies", December 15, 2004.

Cash, David W., William C. Clark, Frank Alcock, Nancy Dickson, Noelle Eckley, David H. Guston, Jill Jager, and Ronald B. Mitchell. 2003. "Knowledge Systems for Sustainable Development." *Proceedings of the National Academy of Sciences* 100(14) 8 July: 8086-8091. Available at:

<http://ksgnotes1.harvard.edu/BCSIA/sust.nsf/pubs/pub81>

March 1, 2005

Location: Perkins Room; **Chair:** Clark

Speaker: Richard K. Lester, Professor of Nuclear Engineering, MIT, and founding Director, MIT Industrial Performance Center

Topic: Innovation—the Missing Dimension

Readings: Lester, Richard K. and Michael Piore, Innovation—the Missing Dimension, (Cambridge: Harvard University Press, 2004), Chapters 1-3.

March 8, 2005

Location: Perkins Room

Chair: Clark

Speaker: Carolyn Kousky, Fellow in the Science, Environment, and Development Group

Topic: Institutional Design Lessons for the Production of National Level Indicators on the State of the Nation’s Environment

Readings: Kousky, Carolyn and William Clark, “Institutional Design Lessons for the Production of National Level Indicators on the State of the Nation’s Environment,” prepared for the H. John Heinz II Center for Science, Economics, and the Environment, Feb. 2005.

March 15, 2005

Location: Perkins Room

Chair: Clark

Speakers: Student presentation: Nina Dudnik

Topic: Connecting scientists and farmers through participatory plant breeding

No reading

March 22, 2005

Location: BCSIA Library

Chair: Clark

Speaker: Student presentation: Elta Smith

Topic: Re-presenting rice: genomics, intellectual property, and sustainable development

No reading

March 29, 2005 – Spring Break

April 5, 2005

Location: Perkins Room

Chair: Juma

Speakers: Jeff Bielicki

Carbon Sequestration and the Energy System Transition: An Embryonic Framework

No reading.

April 12, 2005

Location: BCSIA Library

Chair: Holdren

Speaker: Hongyan He Oliver, ETIP Fellow, and Kelly Sims Gallagher, ETIP Director

Topic: Research Proposal on In-Use Vehicle Emissions in China

Discussant: Ambuj Sagar

No reading

April 19, 2005

Location: Perkins Room

Chair: Clark

Speakers: Nicole Szlezák, Ph.D. student, and Lorrae Van Kerkhoff, SED Fellow

Topic: Knowledge flows and cash flows: investigating how the Global Fund to fight AIDS, Tuberculosis and Malaria connects research and practice

NOTE: Research papers due

April 26, 2005

Location: BCSIA Library

Chair: Juma

Speaker: Apiwat Ratanawaraha, STG Fellow

Topic: Late Standardization: From Catching Up to Forging Ahead

No reading.

May 3, 2005

Location: Perkins Room

Speaker: All instructors

Topic: Science, Technology, and Innovation for Sustainable Prosperity: What Have We Learned?

Discussant: Class Discussion