

## **International Trade and Technology ITRN: 604**

**Spring 2004 ARL Room 250**  
**Instructors: Don E. Kash and Robin Auger**  
**Office: Finley Building, Room 215**  
**Phone: 703-993-2279**  
**Class Time: Wednesday, 4:30-7:10 P.M.**

### **Introduction**

This seminar investigates the interplay between international trade and technology development with a focus on public policy. Trade and technology have traditionally been the focus of two different bodies of policy in the United States. This was the result, to a large extent, of the inability of economic theory to account for the dynamics of technology development and the interplay of trade and the growth of national innovation systems. The link between trade and technology is changing as it becomes clear that technology is the driving force behind much economic growth and international trade. The capacity to innovate technologies—specifically to produce superior performing technologies at lower cost ahead of one's competitors—is the key to success in the international marketplace. U.S. trade and research and development policies have slowly changed over time to provide more support to technology-based growth and can be expected to change even more in the future. For example, many observers report an increasing 'globalization' associated with the process of innovation, a trend that may call national policies into question. This seminar's goal is to provide insight into the interplay of trade and technology, but especially the dynamics of the connection between trade and technological innovation.

The seminar begins with an overview of the international trading system and asks whether technology trade is truly different from other kinds of trade, and if so, how and why? The seminar will investigate the role of technological innovation in creating opportunities for trade, and examines the role of government in promoting and supporting the national innovation systems that are integral to trade. The seminar then examines the forces leading to global integration in the innovation processes associated with some industries and explores whether national 'competitiveness' still matters. From there, the seminar moves to an examination of different theories about technology and trade, including complexity theory and new trade theory, and it will then examine regional trade in the context of these theories of technology trade. The course wraps up by examining whether the principle of neo-classical "free trade" can still be profitably applied to technology within the international trading system. Using a series of case studies, and having students participate in mini-seminars with experts in the thick of this controversy, this class provides a practical, hands-on inquiry into a contemporary issue.

Don Kash can be reached during the day at 703-993-2279, by email at [dkash@gmu.edu](mailto:dkash@gmu.edu). Individual meetings can be arranged by appointment. Appointments to discuss final briefings preparations are encouraged. Regular office hours will be scheduled at the first class meeting.

### **Class Participation and Assignments**

This class is a seminar. Seminar participants will be expected to have read the material assigned for each seminar session in advance of the class. Students will be expected to actively discuss and critique the readings and to participate in the case studies. Students who do not participate in class discussion and case studies will have a lower grade than active participants.

There will be two exams and a final presentation required.

### **Briefing:**

Each student will be responsible for preparing a thoroughly researched presentation (i.e., briefing) that investigates a particular case of trade controversy associated with technology. These cases may look at specific technologies such as airplanes (e.g., the Boeing Airbus competition) or standards for high definition television, or they may look at broader issues such as the protection of intellectual property or trade and antitrust. The presentations must be given in oral form plus a written version must be submitted that includes

## **International Trade and Technology ITRN: 604**

convincing documentation and a research-quality bibliography. Plagiarism, including failure to properly cite direct quotes, will result in a failing grade.

Students should have a one-page description of what they propose to do for a briefing paper by **February 12**. The description may be submitted either electronically or in paper form. A meeting with the instructor to discuss your topic is encouraged. The proposal will be returned either with the instructor's approval or with directions for modification that may range from minor suggestions for change to a requirement for a new proposal on February 19. The final presentations will be scheduled during the last two seminar sessions. Each student will have a twenty-minute period for presentation.

### **Grade**

The seminar grade will be based on the following:

- Class participation 15%
- Mid-term quiz (15%) and final exam (35%) 50 %
- Final Presentation 35%

### **Required reading**

Rycroft, Robert W. and Kash, Don E., The Complexity Challenge: Technological Innovation in the 21<sup>st</sup> Century, London: Pinter, 1999.

Tyson, Laura D'Andrea. Who's Bashing Whom? Trade Conflict in High Technology Industries. Washington, DC: Institute for International Economics, 1992.

### **Schedule**

**January 21 Introduction: Technology and the International Trading System**

**January 28 Technology Trade: Is It Different From Other Kinds Of Trade?**

Preparatory Readings:

Laura Tyson, Chapters One and Two in Who's Bashing Whom?

Robert W. Rycroft and Don E. Kash, Chapters One and Two in The Complexity Challenge.

**February 4 Introduction to Trade Theory**

Preparatory Readings:

Caves, Richard E.; Jeffrey A. Frankel; and, Ronald W. Jones, 2002, World Trade and Payments: An Introduction, 9th Edition (Boston: Addison Wesley). chapter 3.

Krugman, P. (1979). "Increasing Returns, Monopolistic Competition and International Trade," Journal of International Economics, 9 (4) (November): 469-479.

**February 11 The Role of Technological Innovation**

*( Briefing Proposal Due)*

Preparatory Readings:

Robert W. Rycroft and Don E. Kash, Chapter Three in The Complexity Challenge.

Steven Kline and Nathan Rosenberg, "An Overview of Innovation", in Ralph Landau and Nathan Rosenberg, The Positive Sum Strategy Washington: National Academy Press, 1986, pp. 275-305.

## **International Trade and Technology ITRN: 604**

### **February 18 Different Routes to Technological Innovation**

#### Preparatory Readings:

Walter Vincenti, "Technological Knowledge Without Science: The Invention of Flush Riveting in American Airplanes, circa 1930-1950," *Technology and Culture*, vol. 25, 1984, pp. 540-576.  
Stephen J. Kline, "Innovation Styles in Japan and the United States: Cultural Bases; Implications for Competitiveness" .

### **February 25 Mid Term Exam**

### **March 3 The Challenges Associated With Complexity**

#### Preparatory Readings:

Rycroft and Kash chapters 4 and 10

### **March 10 Spring Recess**

### **March 17 Cases of Technological Innovation: India and China**

#### Preparatory Readings:

TCS and Haier case studies

### **March 24 Cases of Technological Innovation: Japan and Germany**

#### Preparatory Readings:

Philips- Sony, CD, and Bosch case studies

### **March 31 Sources of Conflict in Technology Trade**

#### Preparatory Readings:

Laura Tyson, Who's Bashing Whom? Trade Conflict in High Technology Industries. Institute for International Economics, 1992, pp. 17-45, 85-133

### **April 7 Sources of Cooperation in Technology Trade**

#### Preparatory Readings:

SEMATECH, International Technology Roadmap [<http://public.itrs.net/>]

Stanley M. Besen and Joseph Farrell, "Choosing How to Compete: Strategies and Tactics in Standardization," *Journal of Economic Perspectives* 8(2):117-131 (Spring, 1994).

### **April 14 Innovation in Technology and Governance: What can Public policy do?**

#### Preparatory Readings:

Rycroft and Kash chapters 11 and 12

Stuart W. Leslie, "The Biggest 'Angel' of Them All: The Military and the Making of Silicon Valley," in Martin Kenney, ed., *Understanding Silicon Valley: The Anatomy of an Entrepreneurial Region* (Stanford: Stanford University Press, 2000), 48-67.

### **April 21, 28 Student Presentations**

### **May 5 Final exam**