

**Middle East Technical University**  
**Spring 2016**  
**STPS 512**  
**TECHNOLOGICAL CHANGE IN DEVELOPING COUNTRIES**  
**Tuesday, 9:40-12:30**  
**FEAS Building, F106**

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### **Course description**

This is one of the courses dispensed within the framework of the STPS graduate program which studies the process of technological change in Developing Countries (DCs). The analysis of the nature and sources of technological change in DCs as well as its impact on the development process in a changing environment since the 1960s constitutes the main objective of this course.

The course will start with the introduction and discussion of core concepts related to technology and technological change, especially with reference to the case of DCs. Next, the first part will be devoted to the analysis of catch up theories in an historical perspective and discussion of lessons thereof for DCs. Although history rarely repeats itself and more importantly the current international context is radically different from the one observed one century earlier, common elements as to the role of technology in economic development can be identified. The second part of the course will be based on the presentations of students about a number of topics devoted to the role of technological change and innovation in the catch up experiences –some remarkable, others less successful– of DCs in the 20<sup>th</sup> century (such as import substitution-based development strategy, role of transnational corporations in the technology transfer, recent trends in intellectual property rights regime, emergence of global value chains, and globalization of R&D activities).

### **Requirements and functioning**

Students are expected to attend the class (on time!) and read the assigned materials on a regular basis. In order to achieve active participation of students and ensure their contribution to discussions in class, the following method of organization will be adopted.

The first part of the course on catching up theories will be based on both formal lectures and class discussion for which students must read assigned material. The topics will cover mainly the role of innovation and technological change in the industrialization and catching up experiences of follower countries from the mid-19<sup>th</sup> to mid 20<sup>th</sup> century. Although the instructor will have the responsibility of underlining and laying down certain topics for

discussion, students are expected to take part actively to discussions on the basis of the assigned readings. A midterm examination will take place during the eighth week.

The second part of the course will be organized around *sessions*, each devoted to a different topic relating to the economics of technological change in developing countries. Each student will be required to lead a session on a specific topic, write a critical paper on assigned readings and present it in class. This method of organization has proved its ability to achieve active involvement of students. Further details on the organization of sessions and the list of topics will be provided later by the instructor. A final paper that integrates remarks and critics made by participants in class during the sessions will be prepared and hand out to the instructor.

## **Grading**

Midterm examination: 25 points

Session leadership (paper, presentation, leading): 25 points

Final term paper: 25 points

Class participation: 25 points

## **Schedule<sup>1</sup>**

February 17: Introduction

### PART I: CATCH UP THEORIES

Week 1: Introduction

Week 2: The Flying Geese model of technological catch up

Week 3: Catch up à la Abramowitz: from simple catch up to the potentiality and realization of catch up

Week 4: Catch up à la Soete and Perez: Any window of opportunity for DCs?

Week 5: A. Gerschenkron and prerequisites of development (1)

Week 6: A. Gerschenkron and prerequisites of development (2)

Week 7: Midterm examination

### PART II: SESSIONS ON SELECTED TOPICS (presentations by students)

Week 8-14

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<sup>1</sup> Reading list and material will be provided by the instructor.

## Selected work on DCs and technological change

- Abramowitz, M. (1989), *Thinking about Growth*, Cambridge University Press, Cambridge.
- Amsden, A.H. (1989), *Asia's Next Giant: South Korea and Late Industrialization*, Oxford University Press, New York.
- Amsden, A.H. (2002): *The Rise of "The Rest". Challenges to the West from Late-Industrializing Economies*, Oxford University Press, New York.
- Behrman J. and T.N. Srinivasan (ed.), *Handbook of Development Economics*, vol. III, Elsevier Science Publishers, Amsterdam.
- Dosi G. and Nelson, R. (2010), Technical change and industrial dynamics as evolutionary processes, in Hall, B. and Rosenberg eds., *Handbook of Economics of Innovation*, pp. 52-127.
- Evenson, R.E. and G. Ranis (eds.) (1990), *Science and Technology: Lessons for Development Policy*, Westview Press, Colorado.
- Fagerberg, J; Srholec, M., Verspagen, B. (2010), "Innovation and economic development", in Hall, B. and Rosenberg eds., *Handbook of Economics of Innovation*, pp. 834-872.
- Fagerberg, J. and Srholec, M. (2009), "Innovation systems, technology and development: Unpacking the relationships", in Lundvall, B.A., Joseph, K.J., Chaminade, C. and Vang, J. (eds.) *Handbook of innovation systems and developing countries*, Edward-Elgar: Cheltenham, pp. 337-359.
- Forbes, N. and D. Wield (2002), *From Followers to Leaders. Managing Technology and Innovation*, Routledge, London.
- Ha-Joon, C. (2002), *Kicking away the Ladder: Development Strategy in Historical Perspective*, Anthem, London.
- Ha-Joon, C. and I. Grabel (2004), *Reclaiming Development. An Alternative Economic Policy Manual*, Zed Books.
- Hobday, M. (1995), *Innovation in East Asia. The Challenge to Japan*, Edward Elgar, Cheltenham.
- Katz, J.M. (ed.) (1987), *Technology Generation in Latin American Manufacturing Industries: Theory and Case-Studies Concerning its Nature, Magnitude and Consequences*, Macmillan, London.

Kim, L. (1997), *From Imitation to Innovation. The Dynamics of Korea's Technological Learning*, Harvard Business School Press, Cambridge, Massachusetts.

Kim, L. and R.R. Nelson (2002), *Technology, Learning, and Innovation. Experiences of Newly Industrializing Economies*, Cambridge University Press, Cambridge.

Lall, S (1987), *Learning to industrialize*, Macmillan, London.

Lundvall, B.A., Joseph, K.J., Chaminade, C. and Vang, J. (eds.) (2009), *Handbook of innovation systems and developing countries*, Edward-Elgar: Cheltenham.

Radosevic, S. (2000), *International Technology Transfer and Catch-Up In Economic Development*, Edward Elgar, Cheltenham.

Shin, J-S (1996), *The economics of the latecomers: catching-up, technology transfer, and institutions in Germany, Japan, and South Korea*, Routledge, London.

Stewart, F. (1977), *Technology and Underdevelopment*, MacMillan, London.

Wade, R. (1990), *Governing the Market: Economic Theory and the Role of the Government in East Asian Industrialization*, Princeton University Press, Princeton.

World Bank (1993), *The East Asian Miracle*, World Bank, Washington D.C.

Yusuf, S. (ed.) (2003), *Innovative East Asia. The Future of Growth*, Oxford University and The World Bank.