Bocconi University – Ph.D. School

ECONOMICS OF INNOVATION AND TECHNOLOGICAL CHANGE

Fall 2019-20

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The course will introduce the students to main theories, models and empirical evidence on innovation and industrial dynamics, with the goal to provide a broad overview of the field, to identify the main research questions and to understand the dynamic relationship between technology, innovation, firms, competition and the context. The topics of the course will range from the sources, characteristics and impact of technological change and innovation, to innovation and the dynamics of firms and industries, interpreting and modeling industrial dynamics and transformation, the relevance of technology in the catch-up and competitiveness of firms, industries and countries, to the role of institutions in fostering innovation and technological change. The program consists of 12 major topics, one for each class.

- TECHNOLOGICAL CHANGE AND EVOLUTIONARY THEORY
- SCHUMPETERIAN FIRMS AND THE TECHNOLOGICAL CONTEXT
- INCUMBENTS AND NEW TECHNOLOGIES
- START-UPS, SPINOUTS AND INNOVATION
- TECHNOLOGY, MARKET STRUCTURE AND INDUSTRY DYNAMICS
- INNOVATION AND THE EVOLUTION OF INDUSTRIES
- MODELLING INNOVATION AND INDUSTRY EVOLUTION
- DEMAND AND INNOVATION
- DIFFUSION AND COMPETING TECHNOLOGIES
- INNOVATION SYSTEMS, INSTITUTIONS AND PUBLIC POLICY
- CATCH-UP, NEW EMERGING LEADERS AND TECHNOLOGY
- PATENTS, IPR AND INNOVATION

Each class will look at classic contributions on innovation, technological change and industrial dynamics as well as recent developments. Each class will be structured in the following way. In the first part of the class, FM will introduce the topics by addressing and framing the main issues in a broad way. In the second part of the class, open discussion of the required readings will follow. Finally, students’ presentations will take place.

In each class, a student will present a specific paper related to the topics in no more than 20 minutes. The presentation will include a short summary of the paper, the main research questions, the way they have been addressed and answered and some critical comments regarding strengths and weaknesses, theory development, research design, methodological approach and key findings. After the
presentations of each paper by a student, open discussion will take place. Students who will present and discuss a paper will send FM their PPT slides 24 h. in advance of their presentation.

All students are required to read the assigned readings (**). This is very important for class learning and for following the lesson in an effective way. These readings will be at the base of each lesson and will be discussed in the class.

For some of the required readings (**OP), before each class all students have to send FM one single-space page (OP) per paper in which the core points are very briefly summarized and a critical analysis of the strength and weaknesses of the paper in terms of theory, or research design, or methodological approach or findings are presented. Students that present in class a specific paper, do not have to send the single-space page (OP) for that paper.

This structure does not hold for Class 1.

In the last class of the course, the presentations of students’ proposals of their papers for the course will be discussed.

Evaluation:

- Discussion in class and 1-page of written comments per required paper: ¼ of final grade
- Presentations of specific papers: ¼ of final grade
- Term paper: ½ of final grade

The term paper will be a short paper (max 12 pages) which can be: a) a review and critique of papers regarding a specific topic of the course; b) a proposal concerning original research in one of the topics examined in the course.

** PROGRAM OF THE COURSE AND READING LIST **

Each class will have mandatory readings (** are mandatory): some mandatory readings are broad surveys and introductory discussion of the topic, others concern specific aspects recent developments. For each topic, additional readings are provided for the students interested in that specific topic either for the paper-review or the paper-proposal.

For Lessons 1 TECHNOLOGICAL CHANGE AND EVOLUTIONARY THEORY you do not have to write any OP paper.

1. TECHNOLOGICAL CHANGE AND EVOLUTIONARY THEORY

** Dosi G., Nelson R. (2009) Technological change and industrial dynamics as evolutionary processes LEM Pisa 2009/April, also in Hall B. Rosenberg N. Handbook of the Economics of Innovation Elsevier 2010

Useful books containing several relevant articles is:


Malerba F. Brusoni S. *Perspectives on innovation* Cambridge University Press Cambridge 2007

**Useful handbooks:**


Hall B. Rosenberg N. *Handbook of the Economics of Innovation* Elsevier 2010

**Classic works are:**


Nelson R., Recent evolutionary theorizing about economic change, *JEL*, 1995


2. **SCHUMPETERIAN FIRMS AND THE TECHNOLOGICAL CONTEXT**


**OP Castellacci F. and Zheng (2010) Technological regimes, Schumpeterian patterns of innovation and firm level productivity growth Industrial and Corporate Change 19, 1829-1865

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3. **INCUMBENTS AND NEW TECHNOLOGIES**


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Dosi G. Nelson R. Winter S. *The nature and dynamics of organizational capabilities* Oxford University Press 2001 Chapter 1


4. START-UPS, SPINOUTS AND INNOVATION


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5. TECHNOLOGY, MARKET STRUCTURE AND INDUSTRIAL DYNAMICS


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6. INNOVATION AND THE EVOLUTION OF INDUSTRIES


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7. MODELLING INNOVATION AND INDUSTRY EVOLUTION


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8. DEMAND AND INNOVATION


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9. DIFFUSION AND COMPETING TECHNOLOGIES


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10. INNOVATION SYSTEMS, INSTITUTIONS AND PUBLIC POLICY


**OP Murmann P. (2013) The coevolution of industries and important features of their environments Organization Science n.1 58-78


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Bleda M. Del Rio P. the market failure and the system failure rationale in technological innovation systems Research Policy 2013 42, 1035-1052

Colombo M. Giannangeli S. and Grilli L. Public subsidies and the employment growth of high-tech start-ups: assessing the impact of selective and automatic support schemes Industrial and Corporate Change 2012 n. 5 pp. 1273-1314
11. CATCH-UP, NEW EMERGING LEADERS AND TECHNOLOGY


**OP Landini F, Lee K., Malerba F. (2017) A history-friendly model of the successive changes in industrial leadership and the catch-up by latecomers Research Policy, 41, 2, pp.431-446


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Lee K. Schumpeterian analyses of economic catch up (2013) Cambridge University Press Ch. 3 pp. 45-71 and Ch.5 101-123


12. PATENTS, IPRS AND INNOVATION


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Winter S. (2006) the Logic of appropriability: from Schumpeter to Arrow to Teece Research policy 35: 1100-1106

