# Economics of Innovation and Innovation Policy

## Prof. Daniela Bragoli; Prof. Maria Chiara Cattaneo

***COURSE AIMS AND INTENDED LEARNING OUTCOMES***

The course aims to examine the types, characteristics, potentialities, causes and effects of innovation and its dissemination across the economic system; the economic entities and institutions involved in innovative dynamics; the processes of learning and knowledge generation; the consequences of the innovative process on employment and growth; the role of public institutions and policies in innovation.

In addition, the course explores the economic and policy aspects of innovation processes, as well as their impact, from a systemic and business-related perspective, in both a European and an international context. The course includes the acquisition of theoretical tools and the in-depth study of the most applicable specific case studies.

**Intended learning outcomes**

*Knowledge and understanding*. At the end of the course, students will be able to know and understand the mechanisms at the basis of innovation processes, both from a macroeconomic and a company perspective. In particular, they will be able to: define the term “innovation” and understand its importance for economic growth and development; identify the evolution of this term in the different economic theories; understand how to measure innovation in Italy and in other countries; recognise the main components of the economic policies linked to innovation in the local-global dynamic in the scenario that constitutes the ecosystem for innovation in a multi-level perspective; know the main innovation mechanisms and financing tools at community level, and analyse the business models adopted by innovative companies, considering the changing environment and the constant effort to combine innovation and sustainability.

*Ability to apply knowledge and understanding*. At the end of the course, students will be able to carry out a critical analysis of different topics, and explain them, adapting their speech to the audience. Students will have the opportunity to put this in practice during the exam and in the group works proposed during the course.

*Independent judgement, Communication and Learning skills*. At the end of the course, students will be able to study and interpret, from a personal perspective, the topics explained in class, also using an interdisciplinary approach; in addition, they will be able to analyse specific topics in depth, and present them using the methodologies learned during the course.

***COURSE CONTENT***

The course is divided into two sections, of equal importance and duration, and complementary to each other:

***Part 1***

* Introduction to the Course. Definitions.
* Neoclassical and evolutionary approach to innovation
* Relationship models between Science, Technology and Innovation
* Innovation and innovative enterprise
* Innovative performance in Italy and around the world
* Innovation, employment and economic development

***Part 2***

* Innovation and economic policy: national and local innovation systems, patterns of innovation
* EU policies for development: paradigms and perspectives (research, innovation, industry)
* Ecosystem of innovation and the role of various players
* Innovation and entrepreneurship
* Geography of technological innovations, from districts to clusters
* Innovation:
  + competitiveness and local development
  + green economy and local assets
  + automation and new scenarios

***READING LIST***

Regardless of class attendance, students will have to study the notes taken during the lectures and the material made available by the lecturer in class and on Blackboard. In addition, they will have to study the following texts:

Module 1:

Fariselli P., *Economia dell'Innovazione*, Giappichelli Editore, (last edition). From chapter 1 to 8.

J.Fagerberg, DC Mowery, RR Nelson, *Innovazione, imprese, industrie, economie*, Italian edition by Malerba, Pianta, Zanfei, Carocci editore (last edition). Chapters 1, 2, 7, 8, and 9.

Mankiw NG. [*Macroeconomics*, 7th Edition](https://scholar.harvard.edu/mankiw/publications/macroeconomics-7th-edition). Worth Publishers; (last edition). Chapters 7 and 8.

Module 2:

Fariselli P. *“Economia dell’Innovazione*” Giappichelli Editore (last edition). 3rd, 4th, and 5th part;

Malerba, F. “*Regimi tecnologici e pattern settoriali di innovazione”; “Dinamica industriale e relazioni fra imprese*” (chapters 8 and 9 in F. Malerba *“Economia dell'innovazione*”- Carocci editore - 2000)

In addition:

Swann, G.M.P. “*The Economics of innovation”,* 2009 Edward Elgar Publishing  (particularly useful for the chapters 8-13-21-22)

Topic 1: National and local innovation systems:

Nelson R.R. (1993) (edited by) “*National Innovation Systems: A Comparative Analysis”* (chapters: 1-7-16)

Topic 2: Green economy and local assets:

Sala, S.; Castellani, V. - *Atlante dell'ecoinnovazione. Metodi, strumenti ed esperienze per l'innovazione, la competitività ambientale d'impresa e lo sviluppo sostenibile* (2011) - Chapters 1-2-3

Topic 3: Innovation geography, districts, and clusters:

Porter, M.E. “*Location, Competition, and Economic Development: Local Clusters in a Global Economy*” in Economic Development Quarterly (2000)

Foray D., David P.A. and Hall B.H., *Smart specialisation:From academic idea to political instrument, the surprising career of a concept and the difficulties involved in its implementation,* working paper EPFL, 2011

Topic 4: Automation and new scenarios:

Schwab, K.; “*La quarta rivoluzione industriale”* - F. Angeli 2016; (chapters 1-2-3 – except the appendix)

***TEACHING METHOD***

Lectures, testimonies, group work, case studies.

***ASSESSMENT METHOD AND CRITERIA***

An oral exam covering the whole course; what is done at lectures forms an integral part of the study material together with the reading list references that will be indicated; regular attendance (where possible) is, therefore, recommended.

During each module, students are allowed to write an assignment based on the analysis of a topic of their choice that must be previously approved by the lecturers. The analysis can be carried out individually or in group, and then presented in class. This will give them the possibility to increase the final mark of 1 or 2 extra points.

The exam is carried out in two ways:

**OPTION 1 (standard)**

The exam will be one single oral test including two questions on the first part and two questions on the second part of equal weight. The mark of each of the two parts will be out of thirty and the final mark will be the arithmetic average between the first and the second part, integrated with any additional score awarded for the in-depth study carried out during the course and its presentation in class. Students must obtain a passing mark (greater than or equal to 18) in both parts of the course. Overall, students will be assessed on the relevance of the answers, their understanding and mastery of topics studied in class as well as their ability to synthesize and discuss specific cases, the appropriate use of specific terminology, the identification of conceptual links between the various topics, their ability to critically discuss and debate issues related to course topics.

**OPTION 2 (interim tests)**

The exam consists of two compulsory oral interim tests.

i) The first interim test (which will take place only once a year on the second exam date of the winter session) focuses on the course content relating to the first part of the course and is equivalent to the exam option 1 both in structure and assessment method.

ii) The second interim test (which will take place only once a year on the first exam date of the summer session) focuses on the course content relating to the second part of the course and is equivalent to the exam option 1 both in structure and assessment method.

The final mark is obtained by the arithmetic average of the marks of the two tests. Only students who passed the first test will be admitted to the second oral test.

***NOTES AND PREREQUISITES***

There are no prerequisites for attending the course. It is open to anyone interested in the study of the fundamental elements of the economic models, the policies, and the features of the different actors of the innovation ecosystem. However, a basic knowledge of micro and macroeconomics could be very useful.

Further information can be found on the lecturer's webpage at http://docenti.unicatt.it/web/searchByName.do?language=ENG or on the Faculty notice board.