UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Service Economics

2425-1-F6302N060-F6302N005M

Learning objectives

This 6-credit teaching module aims to provide a solid foundation of knowledge on innovation processes and their application in the context of industrial economics. The various types of innovation (strategic, organizational, product and process) and their impact on markets, firms and economic systems will be explored, with particular attention to the competitive dynamics of firms in the service sector.
The theoretical and practical knowledge acquired will allow the student to:

- Critically analyze competition models (perfect, monopolistic and oligopolistic) and innovation dynamics in complex markets.
- Evaluate the impact of innovation strategies, such as product differentiation and the use of branding, on markets and competition.
- Examine the role of research and development (R&D), patents, and artificial intelligence in companies.
- Apply economic principles to formulate innovation strategies in advanced technological sectors, identifying efficient and sustainable solutions.

Contents

The module delves into the dynamics of innovation within industrial organization, analyzing how it originates and develops in various forms: strategic, organizational, process, and product innovation. Initially, the fundamentals of microeconomics will be revisited to understand the basics of perfect, monopolistic, and oligopolistic competition. Innovation strategies in oligopolistic markets will be examined, with a focus on competition models (Bertrand and Cournot) and product differentiation, both horizontal and vertical, using the characteristics approach and the Hotelling model.

Particular attention will be given to the role of research and development (R&D) and technology trade, examining the differences between incremental and radical innovation in both static and dynamic analysis. Issues related to patents, including dormant patents and licensing, will be discussed.

The module will also explore how artificial intelligence is influencing product, process, and organizational innovation, and how algorithmic pricing is used in highly technological markets to optimize pricing strategies and enhance the competitiveness of firms in the service sector.

Detailed program

Introduction • How innovation arises • Strategic, organizational, process, and product innovation • Incremental, adjacent, and radical innovation • Innovation in industrial economics • Microeconomics review

Microeconomics Review • Monopoly • Perfect competition • Monopolistic competition

Strategic and Product Innovation in Oligopolistic Competition • Review of oligopolistic competition models (Bertrand, Cournot) • Escaping the Bertrand paradox • Capacity constraints • Horizontal and vertical product differentiation

Strategic and Product Innovation in Oligopolistic Competition • Characteristics approach • Hotelling model • Advertising: the role of branding in product differentiation

Collusion • Incentives to collude • Collusion models • Antitrust

Research and Development • The role of R&D • Technology trade • Radical vs. incremental innovation: static analysis • Radical vs. incremental innovation: dynamic analysis

Patents • What is a patent? • Optimal patent duration • Dormant patents • Licensed patents

Artificial Intelligence and the Labor Market • The role of AI in firms • AI applications in product, process, and organizational innovation

Algorithmic Pricing • The role of pricing in highly technological markets

Prerequisites

A basic training in Microeconomics and a more than sufficient understanding of competition theory, equilibrium, and efficiency are required.
Recommended textbooks to review the fundamental topics:

- (F) Frank R.H. e Cartwright E., Microeconomia, McGraw?Hill, Milano, 2017, settima edizione italiana.
- (V) Varian H.R. Microeconomia, Cafoscarina, Venezia, 1998, quarta edizione italiana (copertina verde).

Teaching methods

Lectures complemented by online recorded sessions in synchronous format. Discussion groups (up to 2 bonus points in the exam) and interactive quizzes in class for attending students. Preparation of teaching materials (texts and various types of files) available on the course's e-learning page.

Assessment methods

Final written exam at the end of the course (2 questions; each question is divided into multiple parts). The final score will be the sum of the written exam and any bonus points from the discussion group (Bonus available only for attending students, up to 2 points). It will be possible to achieve 30 points even without the bonus. The exam is the same for both attending and non-attending students.

Textbooks and Reading Materials

- Cabral, L. (2018). Economia Industriale. Roma: Carocci.

Semester

First Term

Teaching language

Italian

Sustainable Development Goals

DECENT WORK AND ECONOMIC GROWTH | INDUSTRY, INNOVATION AND INFRASTRUCTURE