Preparation MSc Innovation Sciences

Offered by: Department of Industrial Engineering & Innovation Science
Language: English
Primarily interesting for: All majors but Sustainable Innovation
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Content and composition

The Innovation Sciences Master’s Program teaches you how to analyze, manage and influence innovation processes at a strategic level. While innovation is crucial for economic growth, sustainable development and welfare, many inspiring technological ideas never become successful. Innovation Sciences focus on gaining a deeper understanding of why this is the case. You will learn to understand and manage the mechanisms and processes involved in developing and introducing new technological options in society.

This elective package is meant for students who aim at enrolling in the MSc Innovation Sciences. The package covers the key disciplines needed in this Master: it includes a course on the economic perspective on innovation (0SV30), a course on the sociological understanding of new technologies (0SV10) and a research methods course (0HV50). TU/e Bachelor College students who finish their bachelor program including this elective package can enroll without delay. In case you have questions about your particular program, please contact the FTC-IS.

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There is no preferred order within the package.
Note that 0HV50 requires prior knowledge (0HV00 Behavioral Research Methods 1: Designing Reserach or comparable) and that some courses of other majors are comparable with 0HV50. Check the Bachelor College overlap tables for details.

For further deepening their knowledge and skills, students can participate in one or more additional courses of the learning lines:

- Economics of Innovation: 0SV60 (Economic Policy), 0SV70 (Social Cost Benefit Analysis), and 0SV100 (Economics of Innovation: Advanced).
- Sustainable Technology in Society: 0SV40 (Managing Sustainable Technology), 0SV50 (Managing Sustainable Technology), and 0SV80 (Sustainable Technology in Society: Advanced).

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Course descriptions

0SV30 Economics of Innovation: Introduction

This course is an introduction to the economic understanding of innovation. It offers an overview of the basic notions and models introduced to define different types of innovation, to capture how innovations are created and how they impact economic systems. This course takes the perspective of the firm and deals with questions such as: why and how do firms innovate? We will introduce the view of the innovating firm as being the bridge between science/technology and market, translating scientific and technical advances into new products and services. Innovating involves a number of strategic challenges: why are certain firms more successful in innovation than other? How can firms use patents and other intellectual property rights to profit from innovation?

We will stress how firms do not operate in isolation, but are influenced by their external environment including suppliers, users, government, universities, and even more stakeholders. We will move from the analysis of the firm to the analysis of the sector in which it operates, and further to the national system. We will tackle questions like: how do sectors/countries differ in terms of their innovation?

Finally, we will try to understand the process through which innovations diffuse over time.

0SV10 Sustainabile Technology in society: Introduction

This course introduces students to the inter-wovenness of technology and society, the challenges this brings to sustainable innovation, and the pros and cons of open innovation as a sustainable innovation strategy. The course focuses on a set of compelling and captivating cases to create student awareness of these themes and introduces analytical perspectives for analysis.

0HV50 Behavioral Research Methods 2: Dealing with data

This second research methodology course covers the basics of dealing with quantitative research data, including the statistical knowledge that is necessary to be able to do this. Using a hands-on approach, students learn how to explore and analyze data. Topics include: coding and recoding variables, dealing with missing data and outliers, comparing groups (t-test and chi2 test), non-parametric tests, simple and multiple regression, factor analysis and principal component analysis. As a statistical background, the course also covers (calculating with) distributions, p-values and t-values, power, and sample size determination.