ADVANCED PRODUCT INNOVATION FOR IE elective package

ADVANCED PRODUCT INNOVATION FOR IE (This flyer will be updated soon)			
Offered by	Department of Industrial Engineering and Innovation Science		
Language	English		
Primarily interesting for	All students, but most relevant for students with background in Major Industrial Engineering		
Prerequisites	Required courses:		
	Recommended courses:		
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Content and composition

As an Industrial Engineer, you are trained to redesign business processes in high-tech firms. The innovation process is an especially important one, as innovation is the key to long-term sustainable growth. Therefore, the innovation process is future-oriented: What should an organization do now to stay competitive in the future – in the next months, years, or even decades?

Advanced Product Innovation for IE is an exciting elective package for motivated IE students with an aptitude in quantitative modeling and curiosity about technological innovation. You will learn how to enable, organize, and manage innovation, and how to deal with the inherent uncertainty and risks in high-tech markets. While the first course, "Designing Business Processes," focusses on the process design itself, the next two courses provide a deep dive into specialized topics that are key to achieve long-term sustainable growth through innovation. In the second course, you will learn how to make forecasts in high-tech markets while managing the uncertainty and risks surrounding quickly evolving technologies. The third course focusses specifically on the sustainability aspects of innovation from an ecological, social, and economic perspective.

The package is highly recommended for students who intend to follow the Master Innovation Management.

Course code	Course name	Level classification
1JZK40	Designing Business Processes	1.
1ZK10	Technology Forecasting	2.
1ZK20 Sustainability Perspectives on Product Innovation		3.

Course description

Designing Business Processes (1JZK40)

How can you make sure that an organization is innovative enough, that people can enjoy their work, fulfill their ambitions, and perform well? The answers to questions such as these reside in good design of business processes. This elective is about the design of business processes from an industrial-engineering point of view. This course ADVANCED PRODUCT INNOVATION FOR IE ELECTIVE PACKAGEADVANCED PRODUCT INNOVATION FOR IE ELECTIVE PACKAGE WWW.TUE.NL focuses on business processes before the product launch (innovation, e.g. new product development) as well as after the product launch (e.g., production, service).

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Assignments focus on the (re)design of an organizational structure (e.g., sociotechnical redesign of an operational process in a production department), and the (re)design of a system (e.g. designing a performance measurement and feedback system for teams, or a decision support system for management). Ultimately, students are empowered to (re)design an innovation process and measure its effectiveness.

Technology Forecasting (12K10)

The development of a new technology is a process that typically requires a long time and depends on a multitude of technical and social factors. Firms who want to invest in an emerging technology need to evaluate the potential costs and benefits of such investments. If the firm invests early, it may have the option to profit from first-mover advantages, but it may also face the prospect of very long and costly research and development periods. If the firm invests late, the costs of adopting the technology are typically much lower, but the firm risks losing its competitive advantage to competitors. Technology forecasts therefore help the different stakeholders in an innovation system to assess whether, when, and how they should invest in a technology. The course covers the main analytical tools used to create these forecasts and the advantages and limitations of each type of tool.

Sustainability Perspectives on Product Innovation (1ZK20)

New products increasingly have to present solutions to societal challenges such as climate change, environmental pollution, shortage of resources and excessive inequality, as the social and ecological sustainability of new products has become a new means for achieving competitive advantage for organizations. In addition, many (individuals in) organizations start recognizing their share of responsibility for the present societal challenges. They are thus in search of possible actions they can take to achieve more socially and ecologically sustainable and simultaneously profitable product innovations. In this course, you will learn which possibilities within and beyond the traditional product innovation process exist to increase the social, ecological and economic sustainability of the resulting new products and which actions they can take to make best use of these possibilities.