
Course Manual

Outlining and Implementing Innovation Strategy

This course has been adapted to an online teaching format. This has implications for assessment methods used which might deviate from the information stated in Ocasys.

Lecturers:

**Pedro de Faria
Florian Noseleit**

1 - General Course Information

Course name	Outlining and Implementing Innovation Strategy
Course code	TBOIIS-10
Semester	Semester 1.1 (Semester 1, block 1)
Target group	BSc Industrial Engineering and Management (mandatory), BSc Chemistry & Chemical Engineering (elective)
Coordinator	Pedro de Faria, room DUI 447, tel. 050-363-4854, email: p.m.de.faria@rug.nl
Lecturers	Pedro de Faria and Florian Noseleit, room DUI 453, tel. 050-363-4839, email: f.noseleit@rug.nl
Credits	5 ECTS
Teaching method	Lectures, assignments, and student presentations
Assessment	Written exam and group assignments
Programs	BSc Industrial Engineering and Management (compulsory) BSc Courses for Exchange Students: Chemistry & Chemical Engineering (elective)

COURSE OBJECTIVES

After following this course a student should be able to:

- Describe the different types and patterns of innovation, giving special attention to the knowledge processes associated to product and process innovations.
- Relate the concepts of dominant design and network externalities with the importance of the timing of entry for innovation success.
- Understand the importance of conducting both an internal and external analysis of firms' capabilities to the formation of a technology strategy.
- Distinguish between strengths, core competencies and sustainable competitive advantages.
- Synthesize the importance to a firm of articulating a strategic intent.
- Identify the factors firms use to evaluate collaboration opportunities.
- Explain the various forms of collaboration and the tradeoffs associated with each of them.
- Synthesize the factors that are crucial to a successful collaboration.
- Distinguish the mechanisms a firm has available to protect an innovative technology, the means by which the mechanisms can be put into effect and their limitations.
- Evaluate the impact of technology, size and structure on a firm's ability to innovate.
- Predict how different dimensions of organizational resources and capabilities affect a firm's ability to innovate.
- Support the three objectives new product development projects must achieve in order to be considered a success: maximize fit with customer objectives, minimize time-to-market, and control development costs.
- Understand the strengths and weaknesses of "best practices" used in managing new product development process.

- Compare the different metrics used to evaluate new product effectiveness and innovation performance.
- Identify the key elements of deployment including timing, pricing, distribution, and marketing.
- Understand the analyses that should be conducted when deciding on a deployment strategy.
- Compare the different methods available (both quantitative and qualitative) to evaluate innovation projects.
- Recognize the importance of a balanced R&D project portfolio (i.e. advanced R&D, breakthrough, platform, and derivative).

LITERATURE

- Book: Schilling, M.A. "Strategic Management of Technological Innovation" (sixth edition), McGraw-Hill, New York, USA

2 - Course Schedule

WHEN	WHERE	WHO	CONTENT	PREPARATION
Tuesday 07-09 11.00-13.00 (Week 36)	Online	Pedro de Faria	- Types and Patterns of Innovation	Literature (see § 4)
Tuesday 14-09 11.00-13.00 (Week 37)	Online	Pedro de Faria	- Defining the Organization's Strategic Direction	Literature (see § 4)
Tuesday 21-09 11.00-13.00 (Week 38)	Online	Pedro de Faria	- Choosing Innovation Projects - Cooperation Strategies	Literature (see § 4)
Tuesday 28-09 11.00-13.00 (Week 39)	Online	Pedro de Faria	- Knowledge Protection and Appropriability	Literature (see § 4)
Tuesday 05-10 11.00-13.00 (Week 40)	Online	Florian Noseleit	- Organizing for Innovation	Literature (see § 4)
Tuesday 12-10 11.00-13.00 (Week 41)	Online	Florian Noseleit	- Managing New Product Development Processes	Literature (see § 4)
Tuesday 19-10 11.00-13.00 (Week 42)	Online	Florian Noseleit	- Crafting a Deployment Strategy	Literature (see § 4)
Tuesday 26-10 11.00-13.00 (Week 43)	Online	Pedro de Faria and Florian Noseleit	Q&A Exam	Literature (see § 4)
Thursday 11-11 14.00-18.00 (Week 45)	Online	Students	- Each team presents Assignment 2	Prepare a presentation

3 - Overview of Deadlines

WHEN	WHERE/HOW	CONTENT
Friday 17-09 16.00 (Week 37)	Group formation and topic choice for both assignments using Nestor.	Assignments – Set up
Friday 08-10 16.00 (Week 40)	Submit a soft copy via Nestor.	Assignment 1 – Mid-report
Tuesday 12-10 13.00 (Week 41)	Submit a soft copy via Nestor.	Assignment 2 – Mid-report
Friday 29-10 16.00 (Week 43)	Submit a soft copy via Nestor.	Assignment 1 – Final Version
Thursday 04-11 12.00 (Week 3)	Submit a soft copy via Nestor.	Assignment 2 – Final Version
Thursday 04-11 08:30-11:30 (Week 44)	Exam Hall 2	Written Exam (closed book)
Thursday 03-02 18:45-21:45 (Week 05)	Exam Hall 1	Written Exam (closed book)

4 - Weekly Course Overview

Lecture 1

Types and Patterns of Innovation

Pedro de Faria

In the first lecture the objectives of the course will be discussed and the evaluation method will be described. In addition the main topics of discussion will be:

- 1- Discuss the role of different knowledge sources on the innovation process.
- 2- Identify the different kinds of innovation.
- 3- Discuss the concept of technology S-curve.

Literature:

- *Course Manual.*
- *Book: Schilling, M.A. "Strategic Management of Technological Innovation" - Chapters 2 and 3.*

Lecture 2

Defining the Organization's Strategic Direction

Pedro de Faria

In this lecture, the main topics of discussion will be:

- 1- Describe how a dominant design emerges and why sometimes the most technologically superior design does not become dominant.
- 2- Internal and external (Porter's Five Forces and Stakeholder) analyses that lay the foundation for selecting a firm's strategic direction.
- 3- Core competencies that strategically differentiate a firm from its competition, transcend a single business, and/or are difficult to imitate.
- 4- Firm's strategic intent and its relationship with the ability of firms to innovate.

Literature:

- *Book: Schilling, M.A. "Strategic Management of Technological Innovation" – Chapters 4 to 6.*

Lecture 3

Choosing Innovation Projects and Cooperation Strategies

Pedro de Faria

In this lecture, the main topics of discussion will be:

- 1- Methods used to evaluate new product development projects: quantitative, qualitative and hybrid.
- 2- Role of the development budget, including capital rationing, and differences in R&D spending across industries and across firms within industries.
- 3- Factors that determine whether or not collaboration is the optimal strategy for an organization.

- 4- Types of collaboration: strategic alliances, joint ventures, licensing, outsourcing and collective research.
- 5- Monitoring and governance mechanisms of cooperation agreements (including evaluation and enforcement).

Literature:

- *Book: Schilling, M.A. "Strategic Management of Technological Innovation" – Chapter 7 and Chapter 8.*

Lecture 4
Knowledge Protection and Appropriability
Pedro de Faria

In this lecture, the main topics of discussion will be:

- 1- Formal protection mechanisms: patents, trademarks, and copyrights.
- 2- Strategic protection mechanisms: secrecy, lead time, and complex design.
- 3- Decision to protect an innovation or to disseminate it freely.

Literature:

- *Book: Schilling, M.A. "Strategic Management of Technological Innovation" – Chapter 9*

Lecture 5
Organizing for Innovation
Florian Noseleit

In this lecture, the main topics of discussion will be:

- 1- The impact of size and structure on the organization's ability to innovate and effectively implement technology.
- 2- The influence of communication, standardization and centralization on firms' ability to innovate effectively.
- 3- The impact of digital technologies on organizational size and structure, and in turn, on innovation.

Literature:

- *Book: Schilling, M.A. "Strategic Management of Technological Innovation" – Chapter 10*

Lecture 6
Managing New Product Development Processes
Florian Noseleit

In this lecture, the main topics of discussion will be:

- 1- Factors that influence the success of new product development processes.
- 2- Practices and tools for improving the effectiveness and efficiency of new product development process.

- 3- Involving consumers in new product development process on the digital platforms.

Literature:

- *Book: Schilling, M.A. "Strategic Management of Technological Innovation" – Chapter 11 and 12*

Lecture 7

Crafting a Deployment Strategy

Florian Noseleit

In this lecture, the main topics of discussion will be:

- 1- A deployment strategy as a way to accelerate diffusion of new products.
- 2- Decision making for innovation launch.
- 3- Licensing and pricing strategies.
- 4- Distribution and marketing strategies.
- 5- Digital technology for deployment strategy.

Literature:

- *Book: Schilling, M.A. "Strategic Management of Technological Innovation" – Chapter 13*

Lecture 8

Q&A Exam

In this class, the exam will be discussed and the students will have the opportunity to ask questions about its content and structure.

Lecture 9

Student Presentations

Students will present Assignment 2: more detailed information will be given along the course.

5 - Role of Attendance

(1) Although we do not grade attendance, the course is designed for students who BOTH attend and actively participate/learn. The exam will also include additional topics that are discussed in lectures, even though they may not be in the course book.

(2) For each lecture, you should read the material and think about how the reading material is related to your current life and future career so that you can make valuable comments in the class discussions.

6 - Assignments

Besides the final exam, the evaluation of this course includes two assignments. Until the end of the first week of lectures, students have to constitute groups (5 members) using the Nestor website (**NOTE:** Students that already completed the assignment last year with a passing grade do not need to be part of a group and to deliver new assignments).

Assignment 1: Technological Innovation (in the context of the IEM Learning Communities)

Each group has to choose a technology related to one of the IEM technical courses and explain how the technology (invention) can be developed into an innovation (product or process). The report should position the technology relatively to competing technologies used in the existing market and indicate and justify what kind of company is best suited to develop and commercialize the innovation.

Assignment 2: Innovation Strategies and New Product Development

Each group has to choose an existing company and describe its innovation strategy making use of the concepts discussed during the lectures (more detailed information about the assignment will be provided during the first lecture). The outcome should be a brief, innovation strategic report. Each team will present their project during the last lecture.

7 - Rules of Conduct

- 1) You should prepare each lecture by reading and studying the book *prior* to the lecture.
- 2) The **deadlines are not negotiable** (see section 3 for an overview of the deadline dates).
- 3) There will be a supporting website on Nestor. This website contains the Course Manual, presentation slides of the course, last minute changes, etc. You are obliged to check this website each time before the start of the lecture/workshop.
- 4) **PLAGIARISM WILL NOT BE TAKEN LIGHTLY WHEN GRADING.** Be sure to pay tribute when tribute is due. Phrase the arguments made in the literature in your own words. If you quote authors, use quotation marks and refer to the page of the respective document. Be sure that your bibliography is complete and alphabetically sorted.

5) This course will require students to engage in an individually written, closed-book examination. The exam will consist of a series of open-ended essay questions that will deal with the lectures and the book

(depending on the pandemic situation at the date of the exam, the exam might become on-line and open-book).

6) In order to pass the course, **both Assignments and the Written Exam have to be graded as sufficient or more** (≥ 5.5). In other words, you cannot compensate an insufficient grade in one evaluation component with sufficient grades in the other evaluation components. Your final grade will be determined as follows:

Component	Weight	Specifics
Written exam	60%	Grade of ≥ 5.5 required to pass the course
Assignment 1	20%	Grade of ≥ 5.5 required to pass the course
Assignment 2 including presentation	20%	Grade of ≥ 5.5 required to pass the course
Total	100%	

7) Please fill in the evaluation form that will be emailed to you by the end of the course; we are grateful for your feedback. If you want to email your comments about the course, just send an email to the coordinator, Pedro de Faria (p.m.m.de.faria@rug.nl).