

# Course Syllabus Autumn 2021

## MF2084 Managing Research and Development (6.0 credits)

### About the course

The aim of this course is to make students familiar with models and frameworks used in strategic management and organizing, and to give them in-depth understanding of how these models and frameworks can be skillfully applied in different R&D settings. A central aspect of this is to understand the inter-relationship between business strategies on the one hand and technology-, innovation- and R&D strategies on the other, in order to be able to work with, lead, and improve business-driven research and development activities. Furthermore, students should acquire substantial knowledge about the managerial challenges of organizing R&D activities in industrial firms and learn analytical frameworks, tools and methods for R&D management. The course comprises a set of lectures, exercises, and case discussion sessions. Moreover, students will perform a project in which they apply the theoretical models and frameworks that have been introduced throughout the course. The project concerns an analysis of specific R&D management issues and challenges, and to point to possibilities for improvement. More specifically, the lectures and exercises will focus on the following domains:

- Different theories and frameworks related to strategy
- Strategy on different levels in a firm, e.g. corporate, business, technology and R&D strategies
- Scenario analysis
- Organization theory and organization design
- Organizing and management of knowledge-intensive activities, R&D in particular
- Product strategies and portfolio management
- Product families, platforms and modularization

Students are expected to participate actively in class discussions, and will for some of the class sessions be asked to undertake preparatory work, in groups or individually. These preparations include the execution of a scenario analysis, and the analysis of one case study (performed in groups).

### Learning objectives

After having taken this course, students will have acquired the following knowledge and skills:

LO1: Account for basic concepts, theories and analytical frameworks related to strategic management

LO2: Apply basic concepts, theories and methods related to companies' innovation- and development strategies

LO3: Analyze the interaction between R&D and different corporate and business strategies

LO4: Account for basic concepts, theories and analytical frameworks related to the organising of knowledge-intensive activities

LO5: Use relevant methods and working methods to evaluate and manage R&D activities

LO6: Explain how sustainability aspects are handled in different strategic management theories

## Examination

Examination is based upon results on the written exam and on the project assignment (see separate PM for the project assignment, which will be distributed at its introduction). In addition to this, students can receive additional points on the exam by performing class preparations in a satisfactory manner.

The grading is made as follows:

- Written exam, max 50 points
- Project assignment, max 25 points
- Bonus points for undertaken preparatory work, max 6 points (3+2+1)
- Grading scale for both written exam and project assignment is: A, B, C, D, E, FX, F.

The final overall grade on the course is derived by summarizing the total points received on the written exam and the project assignment. A score of at least 20 points at the written exam is required to pass the course. To pass the entire course, the project assignment must also have been approved.

The resulting levels for final course grades are as follows:

Sum of points	Grade
66p and above	A
57p to 65,5p	B
48p to 56,5p	C
39p to 47,5p	D
30p to 38,5p	E
Less than 30p	F

## Examiner

Professor Mats Magnusson, [matsmag@kth.se](mailto:matsmag@kth.se).

## Lecturers

- MM: Mats Magnusson, KTH
- JA: Johan Arekrans, KTH
- JH: Jens Hemphälä, KTH
- LE: Liselotte Engstam, Digoshen
- JW: Johan Widman, Getinge
- ÅS: Åke Sundelin, Ericsson

**Schedule (OBS! May be subject to minor changes – pay attention to messages from the course responsible via CANVAS)**

<b>Date</b>	<b>Time</b>	<b>Location</b>	<b>Lecture content</b>	<b>Lecturer</b>	<b>Literature</b>
Mon 01/11	13:00- 17:00	V32	Introduction Strategic Management Fundamentals  Industry analysis	MM	Grant ch. 1-2  Grant ch. 3-4, 7
Thu 4/11	13:00- 17:00	U1	Industry analysis, cont. Segmentation  <i>Project Assignment Introduction</i>	MM  JA	Grant ch. 3-4, 7
Mon 8/11	13:00- 17:00	Q36	Resource-Based View Knowledge-Based View	MM	Grant ch. 5 Leonard-Barton
Thu 11/11	14:00- 18:00	U1	Resource-Based View Knowledge-Based View Dynamic Capabilities  <i>Presentation of Project Assignment Proposal Discussion of Project Assignment</i>	MM  JH/JA	Grant ch. 5, 13, 15 Leonard-Barton Teece Doz and Kosonen
Mon 15/11	13:00- 17:00	FB52	Scenario analysis Workshop  <i>Introduction of Scenario Analysis Assignment</i>	MM	Grant ch. 6
Wed 17/11	13:00- 17:00	L51	R&D- and technology strategies R&D Collaborations Digitalization, Technology Platforms and Ecosystems	MM	Grant ch. 3-4, 9-13, 15 Nobelius Von Zedtwitz and Gassmann
Tue 23/11	13:00- 17:00	U1	Organizing R&D Corporate Entrepreneurship Ambidextrous organizations  <i>Presentation of Scenario Analysis Assignment</i>	MM	Grant ch. 6, 9, 12-14 Bhidé Burgelman Benner and Tushman O'Reilly and Tushman
Thu 25/11	13:00- 17:00	U1	Agile and project-based organizations Knowledge Management Organizational learning R&D performance management  Guest lecture: Strategic board work	MM  LE	Grant ch. 13-15 Nonaka Chiesa et al.  Åberg and Torchia
Mon 29/11	13:00- 17:00	U21	Guest lecture: Lean R&D	JW	Reinertsen and Schaeffer

Thu 2/12	13:00- 17:00	U1	Multi-project management Product Platform and Modularization  <i>Introduction of Case Study Assignment</i>	MM	Grant ch. 13 Cusumano and Nobeoka Magnusson and Pasche  Case instructions
Mon 6/12	13:00- 17:00	L51	Guest lecture: Managing Complex Product and Projects Uncertainty Management	AS	Nonaka
Thu 9/12	13:00- 17:00	U1	R&D project portfolio management  <i>Project selection workshop</i>	MM	Grant ch. 13 Gutierrez and Magnusson Martinsuo
Fri 10/12	13:00- 17:00	L52	<i>Presentation of Project Assignment</i>	JH/JA	
Mon 13/12	13:00- 17:00	V22	<i>Presentation of Case Study Assignment</i>  Summary of course, information regarding written exam	MM	All material
Mon 10/1	14:00- 18:00			Exam	
				Re-exam	

## Literature

### Course book

Grant, R.M. (2018), *Contemporary strategy analysis*, Wiley and Sons Ltd, Hoboken, NJ.

Please note that any edition from the 5<sup>th</sup> will work well. However, if you use an earlier edition, please observe that the numbers of the chapters may have changed.

### Book excerpts (copies of selected parts will be distributed)

Bhidé, A. (2000). *The Origin and Evolution of New Businesses*, New York, Oxford University Press.

Cusumano, M. and K. Nobeoka (1998). *Thinking Beyond Lean: How Multi-Project Management is Transforming Toyota and Other Companies*, The Free Press, New York.

### Articles (available on course homepage and/or via KTH library)

- Åberg, C. and Torchia, M. (2020), Do boards of directors foster strategic change? A dynamic managerial capabilities perspective?, *Journal of Management and Governance*, Vol. 24, pp. 655-684.
- Benner, M. J. and Tushman, M. L. (2003), Exploitation, exploration, and process management: The productivity dilemma revisited, *Academy of Management Review*, Vol. 28, No. 2, pp. 238-256.
- Burgelman, R.A. (1983), Corporate Entrepreneurship and Strategic Management: Insights from a Process Study, *Management Science*, Vol. 29, No. 12, pp. 1349–1364.
- Chiesa, V, Frattini, F, Lazzarotti, V and Manzini, R. (2009), Performance measurement in R&D: exploring the interplay between measurement objectives, dimensions of performance and contextual factors, *R & D Management*, 39, 488-518.
- Doz, Y. L. and Kosonen, M. (2010), Embedding Strategic Agility – A Leadership Agenda for Accelerating Business Model Renewal, *Long Range Planning*, Vol. 43, pp. 370-382.
- Gutiérrez, E. and Magnusson, M. (2014), Dealing with legitimacy: A key challenge for Project Portfolio Management decision makers, *International Journal of Project Management*, Vol. 32, pp. 30-39.
- Leonard-Barton, D. (1992), Core capabilities and core rigidities: A paradox in managing new product development, *Strategic Management Journal*, Vol. 13, pp. 111-125.
- Magnusson, M., and Pasche, M. (2014), A contingency-based approach to the use of product modules and platforms, *Journal of Product Innovation Management*, Vol. 31, No. 3, pp. 434-450.
- Martinsuo, M. (2013), Project portfolio management in practice and in context, *International Journal of Project Management*, Vol. 31, pp. 794-803.
- Nobelius, D. (2004), Towards the sixth generation of R&D, *International Journal of Project management*, Vol. 22, No. 5, pp. 369-375.
- Nonaka, I. (1994), A dynamic theory of organizational knowledge creation, *Organization Science*, Vol. 5, No. 1, pp. 14-37.
- O'Reilly, C. A. III. and M. L. Tushman (2004), The ambidextrous organization, *Harvard Business Review*, April, pp. 74-81.
- Reinertsen, D. and Schaeffer, L. (2005), Making R&D lean, *Research Technology Management*, Vol. 48, No. 4, pp. 51-57.
- Teece, D. (2007), Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance, *Strategic Management Journal*.
- Von Zedtwitz, M. and Gassmann, O. (2002), Market versus technology drive in R&D internationalization: four different patterns of managing research and development, *Research Policy*, Vol. 31, No. 4, pp. 569-588.

***Please note that changes may be made to the literature list and that additional material may be included!***