

Study guide

363-0389-00L

Technology & Innovation Management HS 2019

Convenor: Prof. Dr. Stefano Brusoni

Lecturers: Prof. Dr. Stefano Brusoni, Dr. Daniella Laureiro-Martinez; Mr. Axel Zeijen

Teaching assistant: Mr. Axel Zeijen

1. Administration

All relevant information, including examination information and course readings can be found in this document or on the course's Moodle page ([link](#)). Additional information will be given in class and sent by email when required.

The course consists of 13 sessions, which include lectures, cases, simulations and assignments. Some preparation is required to fully benefit from the sessions. This course will be assessed through a written examination (see below).

Enrolment is required through myStudies. The course is open to all students, but targets mainly MSc-level students. Its contents and methods are designed for students without prior knowledge of innovation management, but with some background in management and/or economics. Work experience is not expected. If you are a post experience student (e.g. MAS MTEC), the course is open to you as well, but please consider also there is a new module being developed with your needs in mind. Most likely, it will be offered in the Spring. More info from the MAS Study Office.

For any questions not covered in the study guide, please contact the Teaching Assistant, Axel Zeijen, at azeijen@ethz.ch

2. Requirements for the course

- Read the required readings for each session **prior** to each session (e.g. read the papers for session X before session X);
- For sessions 2, 6, 10, and 12, besides the readings, please prepare the case (and case questions) before the session;
- Slides will be uploaded on Moodle **three days prior to the session** (when cases will be discussed, updated slides will be uploaded after the discussion).

3. Class planning and session overview

- The course is given throughout HS 2019 on Mondays, 13.15-15.00 in HG D1.2
- The course starts on Monday, 23th September 2019

Week	Date	Topic
1	23.09.2019	Introduction to TIM
2	30.09.2019	Innovation, Science and Technology
3	07.10.2019	Measuring Innovation and Performance
4	14.10.2019	Exploration and Exploitation
5	21.10.2019	Exploration and Exploitation in Individuals
6	28.10.2019	Socialization and Spinouts
7	04.11.2019	Guest Lecture: Dr. Alan Cabello, Founder Blockchain Business Lab @ETHZ
8	11.11.2019	Modularity & Integrality
9	18.11.2019	Platforms
10	25.11.2019	Ecosystems
11	02.12.2019	Business Models
12	09.12.2019	New Technologies and Patterns
13	16.12.2019	Summary & Mock Exam

4. Examination

The course will be evaluated with a 90-minute, closed-book, digital, individual exam during the session exam period. The language of examination is English. The date of the examination is Tuesday 14.01.2020 from 09.00 to 10.30. To take this exam, you have to register. Registration to the course does not imply registration to the exam. You can register for the exam through myStudies. To prepare for the exam, we shall administer a mock exam in the last session of the semester (session 13). There will be an option to repeat the exam on Monday 17.02.2020. The standard ETH rules for attending the repeat exam apply.

5. Further information

For exchange students: If you have questions, always contact the "Mobilitätsstelle" first. The possibility exists to take the examination at the exchange student's home university (this has to be arranged by the exchange student him/herself in collaboration with his/her home university).

6. Session details and readings overview

All readings are available on Moodle. Most readings are required (i.e. you need to prepare them for the exam), some are suggested (they are useful to deepen specific topics). Readings and tasks for each session must be completed prior to the session. There are no assigned readings for two of the sessions (Introduction and Guest Lecturer).

Session	Topic	Readings
1	Introduction	No readings
2	Innovation, Science and Technology	<p>Required:</p> <ul style="list-style-type: none"> Perez, C. (2010). Technological revolutions and techno-economic paradigms. <i>Cambridge journal of economics</i>, 34(1), 185-202. Arora, A., Belenzon, S., & Patacconi, A. (2015). <i>Killing the golden goose? The decline of science in corporate R&D</i> (No. w20902). National Bureau of Economic Research. Arora, A., Belenzon, S., & Sheer, L. (2017). <i>Back to Basics: Why do Firms Invest in Research?</i> (No. w23187). National Bureau of Economic Research. (page 1-9 only) Case reading <p>Suggested:</p> <ul style="list-style-type: none"> Freeman, C., & Louça, F. (2001). <i>As time goes by: the information revolution and the industrial revolutions in historical perspective</i>. Oxford University Press. Pp. 139-151 and Chapter 6.
3	Measuring Innovation & Performance	<p>Required:</p> <ul style="list-style-type: none"> Smith, K. (2006). Measuring Innovation. In Fagerberg, J., Mowery, D.C., & Nelson, R.R. (Eds.), <i>The Oxford Handbook of Innovation</i> (pp. 148-177). Oxford University Press. Cefis, E., & Ciccarelli, M. (2005). Profit differentials and innovation. <i>Economics of Innovation and New Technology</i>, 14(1-2), 43-61. <p>Suggested:</p> <ul style="list-style-type: none"> Silvestro, R. (2016). Do You Know What Really Drives Your Business's Performance?. <i>MIT Sloan Management Review</i>, 57(4), 28. Cefis, E., & Marsili, O. (2006). Survivor: The role of innovation in firms' survival. <i>Research Policy</i>, 35(5), 626-641.
4	Exploration and Exploitation	<p>Required:</p> <ul style="list-style-type: none"> O'Reilly, C. A., & Tushman, M. L. (2004). The ambidextrous organization. <i>Harvard business review</i>, 82(4), 74-83. Birkinshaw, J. & Gibson, C. (2004) Building ambidexterity into an organization. <i>MIT Sloan Management Review</i>, 45(4), 46-55. Hargadon, A., & Sutton, R. I. (1999). Building an innovation factory. <i>Harvard business review</i>, 78(3), 157-66.
5	Exploration and exploitation in individuals	<p>Required:</p> <ul style="list-style-type: none"> Laureiro-Martínez, D., Brusoni, S., Canessa, N., & Zollo, M. (2015). Understanding the exploration–exploitation dilemma: An fMRI study of attention control and decision-making performance. <i>Strategic Management Journal</i>, 36(3), 319-338. <p>Suggested:</p> <ul style="list-style-type: none"> Christensen, C. M., & Overdorf, M. (2000). Meeting the challenge of disruptive change. <i>Harvard business review</i>, 78(2), 66-77.
6	Socialization and Spinouts	<p>Required:</p> <ul style="list-style-type: none"> Case Reading Chesbrough, H. W., & Garman, A. R. (2009). How open innovation can help you cope in lean times. <i>Harvard business review</i>, 87(12), 68-76. Cirillo, B., Brusoni, S., & Valentini, G. (2013). The Rejuvenation of Inventors Through Corporate Spinouts. <i>Organization Science</i>, 25(6), 1764-1784. <p>Suggested:</p> <ul style="list-style-type: none"> March, J. G. (1991). Exploration and exploitation in organizational learning. <i>Organization science</i>, 2(1), 71-87
7	Guest Lecture	No readings
8	Modularity & Integrality	<p>Required:</p> <ul style="list-style-type: none"> Henderson, R. M., & Clark, K. B. (1990). Architectural innovation: The reconfiguration of existing product technologies and the failure of established firms. <i>Administrative science quarterly</i>, 9-30. Baldwin, C.Y. (2017). Explaining the Vertical-to-Horizontal Transition in the Computer Industry. <i>Working Paper 17-084</i> <p>Suggested:</p> <ul style="list-style-type: none"> Sanchez, R., & Mahoney, J. T. (1996). Modularity, flexibility, and knowledge management in product and organization design. <i>Strategic management journal</i>, 17(S2), 63-76. Baldwin, C. Y., & Clark, K. B. (1997). Managing in an age of modularity. <i>Harvard Business Review</i>, 46-58.

		<ul style="list-style-type: none"> • Brusoni, S., Prencipe, A., & Pavitt, K. (2001). Knowledge specialization, organizational coupling, and the boundaries of the firm: why do firms know more than they make?. <i>Administrative science quarterly</i>, 46(4), 597-621. • Chesbrough H. and K. Kusunoki (2001) The Modularity Trap: Innovation, Technology Phases Shifts and the Resulting Limits of Virtual Organizations. In Nonaka I and D. Teece (Eds.) <i>Managing Industrial Knowledge</i>. London, Sage: 202-30.
9	Platforms	<p>Required:</p> <ul style="list-style-type: none"> • Cusumano, M. A. & Gawer, A. (2002). The elements of platform leadership. <i>MIT Sloan Management Review</i>, 43(3), 51-58. • Gawer, A. & Cusumano, M. A., (2012). How companies become platform leaders. <i>MIT Sloan Management Review</i>, 49(2), 28-35. <p>Suggested:</p> <ul style="list-style-type: none"> • Gawer, A. (2014). Bridging differing perspectives on technological platforms: Toward an integrative framework. <i>Research Policy</i>, 43(7), 1239-1249. • Zhu, F., & Furr, N. (2016). Products to platforms: Making the leap. <i>Harvard business review</i>, 94(4), 18. • Hagiu, A. (2014). Strategic decisions for multisided platforms. <i>MIT Sloan Management Review</i>, 55(2), 71.
10	Ecosystems	<p>Required:</p> <ul style="list-style-type: none"> • Case Reading • Adner, R. (2006). Match your innovation strategy to your innovation ecosystem. <i>Harvard business review</i>, 84(4), 98. • Jacobides, M. G., Cennamo, C., & Gawer, A. (2018). Towards a theory of ecosystems. <i>Strategic Management Journal</i>, 39(8), 2255-2276. <p>Suggested:</p> <ul style="list-style-type: none"> • Adner, R., & Kapoor, R. (2010). Value creation in innovation ecosystems: How the structure of technological interdependence affects firm performance in new technology generations. <i>Strategic Management Journal</i>, 31(3), 306-333.
11	Business Models	<p>Required:</p> <ul style="list-style-type: none"> • Gambardella, A., & McGahan, A. M. (2010). Business-model innovation: General purpose technologies and their implications for industry structure. <i>Long range planning</i>, 43(2), 262-271 • Ricart, J., & Casadesus-Masanell, R. (2011). How to design a winning business model. <i>Harvard business review</i>, 89, 1-2. • Zuboff, S. (2015). Big other: surveillance capitalism and the prospects of an information civilization. <i>Journal of Information Technology</i>, 30(1), 75-89. • Srnicek, N. (2017). The challenges of platform capitalism: Understanding the logic of a new business model. <i>Juncture</i>, 23(4), 254-257.
12	New Technologies and Patterns	<p>Required:</p> <ul style="list-style-type: none"> • Case reading
13	Mock Exam	Review all required readings

Many thanks for the attention you put in reading this syllabus.
 We all look forward to meeting you soon.
 Kind regards,
 Stefano, Daniella, Axel and the entire TIMGroup (www.timgroup.ethz.ch)