

# TIK9024 RESEARCH, INNOVATION & IMPACT

This course description applies to the academic year 2019/2020. The course is part of the Norwegian Research School in Innovation Studies ([NORSI](#)) and it is organised by TIK Centre for Technology, Innovation and Culture and part of the activities of the Oslo Institute for Research on the Impact of Science ([OSIRIS](#)).

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## RESPONSIBLE FOR THE COURSE

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## PRACTICALITIES

The lecture part of the course is held in its entirety at the University of Oslo.

The course is free of charge and candidates will get all lunches and one dinner covered. NORSI enrolled candidates will also get their travel and accommodation costs reimbursed by NORSI. Lene Angelskår from the TIK administration will be in touch upon admission to the course to inform you of the practicalities.

## TIME AND PLACE

TIK9024 is organised by the TIK Centre for Technology, Innovation and Culture, 2-6 December 2019.

All lectures take place at Blindern Campus, the main library building Georg Sverdrups hus, 3<sup>rd</sup> floor, room "Grupperom 1".

## ECTS CREDITS

8 credits

## LANGUAGE OF INSTRUCTION

English

## ADMISSION/PREREQUISITES

Admission to a PhD programme is required for participation in this course. Other candidates such as early stage postdoc researchers and specialised final stage master students can be accepted by application to the course

coordinator. It will also be possible for practitioners from science policy agencies and similar to attend the lectures and possibly other parts of the course. Please contact the course coordinator for more details.

Applicants are to submit the application form along with a short outline of their PhD project and a letter of confirmation regarding candidacy within a PhD programme. Application form: <https://nettskjema.no/a/122780>

Deadline for application: November 1<sup>st</sup>, 2019

## INTRODUCTION

This course will look at how public research contributes to innovation and at the broader societal impacts of investment in scientific knowledge. What do we mean when we talk about public research? How and why does it matter for innovation and impact in industry and in society? How can this be studied empirically? Is there a way to resolve the many contested issues emerging at the intersection between entrepreneurship, science and innovation policy?

In the late 1970s it became apparent that new high technology firms seemed to cluster around leading research universities such as MIT and Stanford in the US and Cambridge in the UK. Research in such organisations as well as in public labs seemed to be a major force in the electronics and ICT revolutions. Since then the interest in how research organisations contribute to innovation and other forms of societal impacts has exploded. Policymakers have pushed for increased commercialisation from science and improved linkages between universities and industry, and they have called upon public research to contribute to solving society's grand challenges.

Although the interest in the utility of public science may be as old as science policy itself, the last decades represent a stronger belief in building a support structure around utility value and making this a more explicit demand to publicly funded research. Empirical investigations, particularly on academic entrepreneurship and university-industry linkages, have emerged hand in hand with the policy interests in these topics. The course aims to present and discuss literature from different conceptual traditions and with empirical data from different countries.

## LEARNING OUTCOMES

The students will become acquainted with classic and recent perspectives on the relationship between research and innovation. The course will also address academic entrepreneurship, university-industry linkages and research impact studies. We will design the course as a combination of traditional lectures, exercises, student presentations and group discussions. We do not assume that students are specialists in the area, but that their PhD topic may include an element of the link between research and innovation or have a science/innovation policy framing.

## COURSE OUTLINE

Each day will have a mixture of theoretical lectures, discussions and student presentations. We aim for linking the course to practice through exercises and discussions.

## LEARNING PROCESS AND WORKLOAD

All students will be expected to read the course literature before attending. They will also be required to make one presentation themselves and to participate actively in group discussions. 8 credit points correspond to 8 work weeks, which includes preparation, reading and writing a paper.

## EXAMINATION

A term paper of 5000-10000 words is required in addition to active participation in the lecture week. The evaluation will be based on participation and the quality of the term paper.

Grade: pass/fail. Paper will be due by the end of February 2020.

Transcript from the course is attainable through studentweb at the University of Oslo website. All candidates accepted for admission will be registered as guest students at UiO. Studentweb is then accessible with your date of birth and Norwegian ID-number and a PIN-code issued at your admission to the course. Please contact Lene Angelskår with any practical questions regarding admission and transcripts.

## TENTATIVE COURSE OUTLINE

Each day will have a combination of lectures and other types of organised learning. There will be coffee breaks when needed (not put formally into the schedule). Schedules are tentative and flexible.

### MONDAY DECEMBER 2<sup>ND</sup>: PERSPECTIVES ON THE RELATIONSHIP BETWEEN RESEARCH AND INNOVATION

Lecturers: Magnus Gulbrandsen (MG) and Taran Thune (TT)

10.00 Welcome, round of presentations and information about the course (MG)

10.15 Lecture: framing the benefits and usefulness of public research (MG)

12.00 Lunch

13.00 Lecture: university-industry relations and collaborative research centres (TT)

15.00 Student presentations. We aim for all students to have one presentation during the course. This can be either their own research projects (this is the preferred option), a paper they are working on that is related to the topic of the course, or someone else's article/book that is relevant to the course but not on the reading list. Maximum 10 minutes presentation followed by around 10 minutes of discussion. If they want to take part here, policymakers and other externals can do a 10 minute presentation about an issue from their work that is relevant to the course.

17.30 (Approximately) End of first day

#### **Core readings:**

Bermann, Elisabeth Popp (2011). *Creating the Market University*. Princeton University Press. Read chapter one, which is available here: <https://press.princeton.edu/titles/9619.html>

Perkmann, M. et al. (2013). Academic engagement and commercialisation: a review of the literature on university-industry relations. *Research Policy* 42:423-442.

Ponomariov, B.L. & P.C. Boardman (2010). Influencing scientists' collaboration and productivity patterns through new institutions: University research centers and scientific and technical human capital. *Research Policy* 39:613-624.

Rothaermel, F.T., S.D. Agung & L. Jiang (2007), University entrepreneurship: a taxonomy of the literature, *Industrial and Corporate Change*, 16:691-791.

Salter, A.J. & B.R. Martin (2001). The economic benefits of publicly funded basic research: a critical review. *Research Policy* 30:509-532.

**Additional literature:**

Etzkowitz, H. (1998). "The Norms of Entrepreneurial Science: cognitive effects of the new university-industry linkages", *Research Policy*, 27(8): 823-833.

Etzkowitz, Henry & Loet Leydesdorff (2000), The dynamics of innovation: from national systems and 'Mode 2' to a Triple Helix of university-industry-government relations, *Research Policy*, 29:109-123.

Gibbons M, Limoges C, Nowotny H., Schwartzman, S., Scott, P. and Trow, M. (1994). *The New Production of Knowledge: The Dynamics of Science and Research in Contemporary Societies*. London: Sage. Introduction and chapter 1 and 2.

Gulbrandsen, M., Thune, T., Borlaug, S. B., & Hanson, J. (2015). Emerging hybrid practices in public-private research centres. *Public Administration*, 93(2), 363-379.

Martin, B.R. (2012). Twenty challenges for innovation studies. *Science and Public Policy*, 43:432-450.

Rosenberg, N. and Nelson, R.R. (1994). "American universities and technical advance in industry", *Research Policy*, 23:323-348.

Schot, J. & E. Steinmueller (2016). Framing innovation policy for transformative change: Innovation policy 3.0. Brighton: University of Sussex/SPRU. Discussion paper available at:

[http://www.johanschot.com/wordpress/wp-content/uploads/2016/09/SchotSteinmueller\\_FramingsWorkingPaperVersionUpdated2018.10.16-New-copy.pdf](http://www.johanschot.com/wordpress/wp-content/uploads/2016/09/SchotSteinmueller_FramingsWorkingPaperVersionUpdated2018.10.16-New-copy.pdf)

Stokes, D.E., 1997, *Pasteur's Quadrant: basic science and technological innovation*. Washington, D.C.: Brookings Institution Press.

## TUESDAY DECEMBER 3<sup>RD</sup>: UNIVERSITY-INDUSTRY RELATIONS

Lecturers: Pablo D'Este (PDE) and MG

10.00 Lecture: University-industry relations and individual level factors that influence individual scientists' engagement in such relations (PDE)

12.00 Lunch

13.00 Lecture: Scientific research networks and innovation (PDE)

15.00 Group work/discussion: Different methods for investigating cross-sector partnerships and engagement (PDE/MG)

17.00 Formal end of day 2

18.00 Dinner for all faculty and students. Place to be decided later.

**Core readings:**

These represent different ways of studying university-industry relations empirically

D'Este, P., & Patel, P. (2007). University–industry linkages in the UK: What are the factors underlying the variety of interactions with industry? *Research Policy*, 36(9), 1295–1313.

Gulbrandsen, M. & Smeby, J.-C. (2005). Industry funding and university professors' research performance. *Research Policy*, 34:932-950.

Laursen, K. & Salter, A. (2004): Searching high and low: what types of firms use universities as a source of information? *Research Policy*, Vol. 33, pp. 1201-1215

Perkmann, M. & K. Walsh (2007). University–industry relationships and open innovation: Towards a research agenda. *International Journal of Management Reviews* 9:259-280.

Shane, S. (2000). Prior knowledge and the discovery of entrepreneurial opportunities. *Organization Science*, Vol. 11 (4), pp. 448-469.

**Additional readings:**

Most of the literature from Day 1 will be relevant this day (and later days) as well.

Abreu, M. & Grinevich, V. 2013. The nature of academic entrepreneurship in the UK: widening the focus on entrepreneurial activities. *Research Policy*, 42: 408-422.

Bekkers, R., & Freitas, I. M. (2008). Analyzing knowledge transfer channels between universities and industry: To what degree do sectors also matter? *Research Policy*, 37(10), 1837–1853.

Bozeman, B. Fay, D. & Slade, C. 2013. Research collaboration in universities and academic entrepreneurship: the state of the art. *Journal of technology transfer*, 18:1-67

Gulbrandsen, M. & T. Thune (2017). The effects of non-academic work experience on external interaction and research performance *Journal of technology transfer*, 42:795-813.

## WEDNESDAY DECEMBER 4<sup>TH</sup>: IMPACT OF RESEARCH

Lecturer: Magnus Gulbrandsen (MG) and Ismael Rafols (IR)

09.30 Lecture and discussion: Impact – introduction to a new concept in science and innovation policy (MG)

11.00 Lecture: Values and uncertainty in impact (IR)

12.00 Lunch

13.00 Lecture and discussion: Indicators in ex-post assessments (IR)

14.30 Lecture: Research portfolios. Assessing societal impact ex-ante (IR)

- 16.00 Plenary discussion about impact
- 16.30 More student presentations
- 17.30 End of Day 4

**Core readings:**

Lepori, B., Barré, R., & Filliatreau, G. (2008). New perspectives and challenges for the design and production of S&T indicators. *Research Evaluation*, 17(1), 33-44.

Ràfols, I. (2017). There's no silver bullet for measuring societal impact. *Research Europe*, 12 October 2017.

Sarewitz, D., & Pielke, R. A. (2007). The neglected heart of science policy: reconciling supply of and demand for science. *Environmental science & policy*, 10(1), 5-16.

Stirling, A. (2010). Keep it complex. *Nature*, 468(7327), 1029-1031.

**Additional literature:**

Joly, P. B., Gaunand, A., Colinet, L., Larédo, P., Lemarié, S., & Matt, M. (2015). ASIRPA: A comprehensive theory-based approach to assessing the societal impacts of a research organization. *Research Evaluation*, 24(4), 440-453.

Ràfols, I. (2018). S&T indicators in the wild: Contextualization and participation for responsible metrics. *Research Evaluation*, 28(1), 7-22.

Spaapen, J., & Van Drooge, L. (2011). Introducing 'productive interactions' in social impact assessment. *Research Evaluation*, 20(3), 211-218.

Stirling, A., Leach, M., Mehta, L., Scoones, I., Smith, A., Stagl, S., & Thompson, J. (2007). Empowering Designs: towards more progressive appraisal of sustainability. Available at: <http://www.ids.ac.uk/go/idspublication/empowering-designs-steps-towards-more-progressive-social-appraisal-of-sustainability>

Van Drooge, L. & Spaapen, J. (2017). Evaluation and monitoring of transdisciplinary collaborations. *Journal of Technology Transfer*. Doi 10.1007/s10961-017-9607-7.

**THURSDAY DECEMBER 5<sup>TH</sup>: RESEARCH AND ITS USE**

Lecturers: Magnus Gulbrandsen (MG), Silje Tellmann (ST) and Ellen-Marie Forsberg

- 09.30 Lecture: Diverging perspectives on research organisations (MG)
- 11.00 Lecture: Experts and expertise in research (ST)
- 12.00 Lunch
- 13.00 Discussion: What will be the use of your research and your competence?

- 14.30 Lecture and discussion: Responsible research and innovation (RRI)
- 16.30 More student presentations.
- 17.30 End of day 3

**Core literature (not updated):**

Gulbrandsen, M., 2011, Research institutes as hybrid organisations: central challenges to their legitimacy. *Policy sciences*, 44:215-230.

**Supporting literature:**

Clark, B., 1998. *Creating Entrepreneurial Universities*. Introduction chapter.

Jacob, M. et al. 2003. Entrepreneurial transformations in the Swedish University system: the case of Chalmers University of Technology. *Research Policy*, 32:1555-1568.

Popp Berman, E. (2013). *Creating the Market University. How academic science became an economic engine*. Introduction chapter.

Slaughter, S. & L.L. Leslie 1999. *Academic Capitalism*. Introduction chapter.

**FRIDAY DECEMBER 1<sup>ST</sup>: SCIENCE POLICY AND INNOVATION POLICY**

Lecturers: Liv Langfeldt (LL) and MG

- 10.00 Lecture: Science policy and innovation policy – origins and intersection (MG)
- 11.30 Lecture: The policies and diversity of excellence (LL)
- 12.30 Lunch
- 13.30 Final discussion: The future of science and innovation policy – and our own possible contributions to it (MG)
- 14.30 End of Day 5

**Core readings:**

Gläser, J. & G. Laudel (2016). Governing science. How science policy shapes research content. *European Journal of Sociology*, 57:117-168.

Lamont, M. (2009). Recognising various kinds of excellence. Chapter 5 in *How Professors Think*. Cambridge, MA: Harvard University Press.

Langfeldt L., M. Benner, G. Sivertsen, E. H. Kristiansen, D. W. Aksnes, S. B. Borlaug, H. Foss Hansen, E. Kallerud, A. Pelkonen (2015). Excellence and growth dynamics - a comparative study of the Matthew effect. *Science and Public Policy* 42(5): 661-675.

Langfeldt, L.; M. Nedeva; S. Sörlin; D. Thomas (2019). Co-existing Notions of Research Quality: A Framework to Study Context-specific Understandings of Good Research. *Minerva*, DOI: 10.1007/s11024-019-09385-2.

Ruivo, B. (1994). 'Phases' or 'paradigms' of science policy? *Science and Public Policy*, 21:157-164.

**Additional literature:**

Gulbrandsen, M. & H. Etzkowitz (1999), Convergence between Europe and America: the transition from industrial to innovation policy, *Journal of Technology Transfer*, 24:223-233.

Edler, J. & J. Fagerberg (2017), Innovation policy: what, why, and how. *Oxford Review of Economic Policy*, 33:2-23.

Lundvall,. B-A. & S. Borrás (2005), Science, technology, and innovation policy. In Fagerberg et al. (Eds), *Oxford Handbook of Innovation*, 599-631.

Pielke, R. (2007). *The Honest Broker. Making Sense of Science in Policy and Politics*. Cambridge: Cambridge University Press.

Sarewitz, D. (2016). Saving science. *The New Atlantis*. Available here:  
<http://www.thenewatlantis.com/publications/saving-science>