



HIGHER SCHOOL OF ECONOMICS
NATIONAL RESEARCH UNIVERSITY

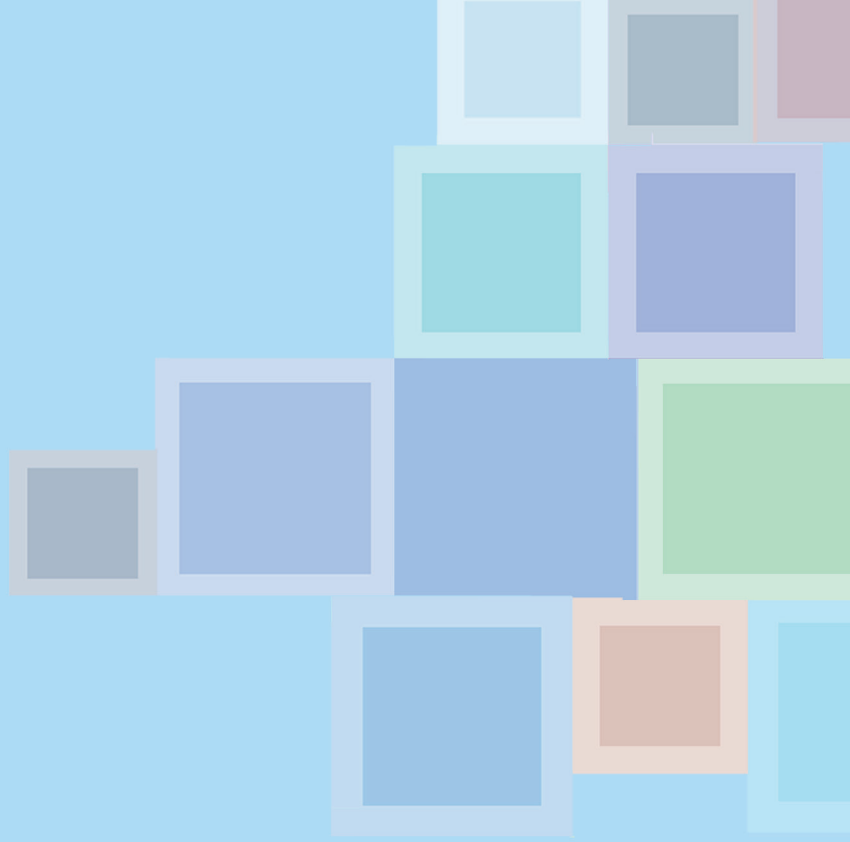


Institute for Statistical Studies
and Economics of Knowledge

Master's Programme

**GOVERNANCE OF SCIENCE,
TECHNOLOGY
AND INNOVATION**

**COURSE
CATALOGUE
2016–2017**



Overview



Introduction

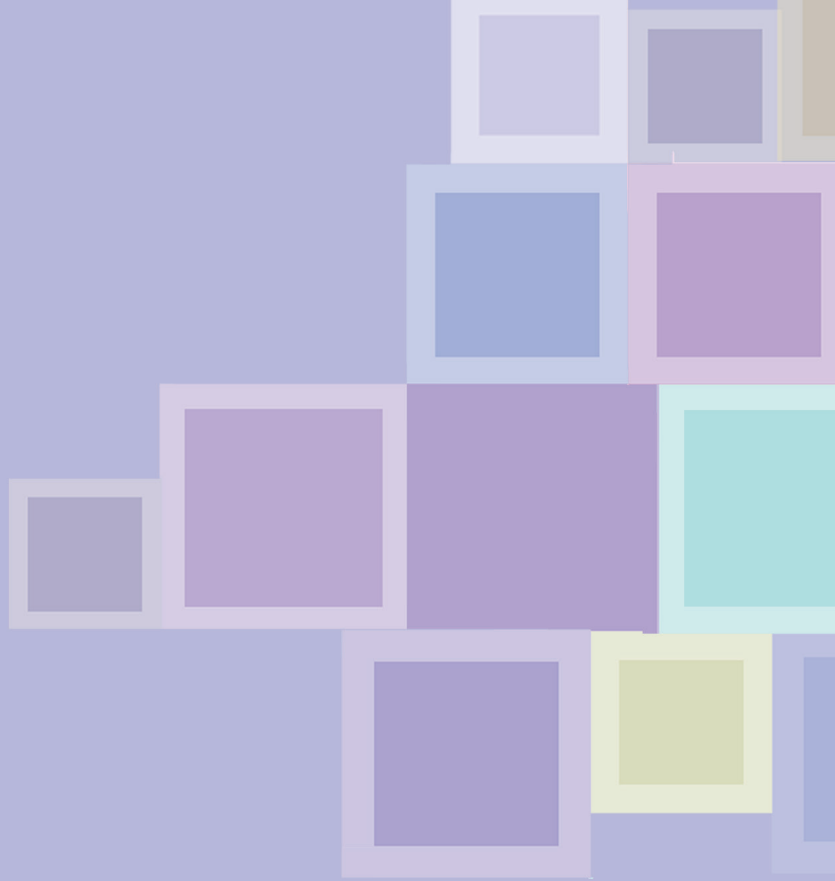
This booklet outlines the descriptions of the core and elective courses for the Master's programme "Governance of Science, Technology and Innovation". It aims to help you choose your elective courses based on your interests. More information is available on the course website: <http://www.hse.ru/ma/sti/courses>

The courses described all follow a general structure. They are split between lectures and seminars. Lectures are 80 minutes classroom hours, with a written examination at the end. Seminars involve classroom hours but also, preparation of essays or case study work and oral presentations. In most courses it is required to pass the seminar successfully before being admitted to the written examination. Details of the procedure are explained in the course outlines.

Overview

	Credits (ECTS)	Page number
Core Courses	39	4
Economics of Innovation	9	5
Strategies in STI Management	9	7
Scientific Research Methods for STI	3	9
Measurement of STI	6	11
STI Policy	6	13
Foresight and Strategic Planning	6	16
Elective Courses (at least 7 out of 14)	21	18
Social Studies of STI	3	19
Managing Creativity and Innovation	3	22

	Credits (ECTS)	Page number
Finance of Innovation	3	25
Intellectual Property Management	3	27
Public-Private Partnerships for STI	3	29
Regional STI Policy	3	32
Corporate Foresight	3	35
Mergers and Acquisitions	3	37
Risk Assessment for Science, Technology and Innovation	3	41
Business Model Innovation	3	43
Marketing Innovation	3	45
University Pool Discipline	3	47
2 Massive Open Online Courses (MOOCs)	6	50
Course Work	6	52
Research Seminar	15	52
Internship	15	55
Master's Thesis	24	55
Total	120	



CORE COURSES



Economics of Innovation

9 credits

Abstract

The course introduces the basic theories and concepts in the economics of innovation. Innovation and technical change are central to long-term economic growth, yet they have proved problematic for economic theories and models to encompass. This core course compares and contrasts the notion of technical change within the dominant theoretical approach: neoclassical economics, with endogenous growth models being used to frame innovation; and evolutionary economics, and related structural models that bear on innovation, including those that consider spatial dimensions and help explicate regional trajectories of growth. We consider systemic features of economies and innovation processes, allowing us to explore complementarities that form development blocks and drive processes of structural change, economic transformation and economic growth.

The course discusses different types of science, technology and innovation (STI) interaction and cooperation between diverse actors e.g. institutions of higher education, research institutes, companies of different sizes, sectors and ownership. Such linkages take various forms, including collaborative arrangements that may be formal or informal, project-based, arm's-length contracts, or long-term ongoing partnerships. We examine the specificities of various linkages and co-operations in STI. The course also considers international (multilateral) research facilities, which impose special challenges to national STI policy and management.

The course describes the approaches to measuring STI activities and their impact on social and economic development. Our approach to innovation thus includes the diffusion of innovations, and factors that influence this - including the interplay between economic and institutional change. The concept of innovation systems and the underlying theoretical approaches are a major element of the course.

Major sections / topics

- The emergence of 'innovation' as a core concept and policy goal
- Understanding R&D and other sources of knowledge
- Evolutionary economics and other theoretical approaches, concept of innovation systems
- Economics of innovation, technology, R&D and knowledge
- Innovation behavior of STI actors
- Connecting enterprises and the science base: university-industry links, Triple Helix
- Open innovation and other trends

Main references/books/readings

- Fagerberg, J., Mowery, D., and Nelson, R. (eds, 2004) The Oxford Handbook of Innovation Oxford, Oxford University Press
- Bessant, J., Tidd, J. (2009) Managing Innovation: Integrating technological, market and organizational change, Chichester: Wiley
- Freeman, C., Soete, L. (1997) The Economics of Industrial Innovation, Third Ed., London: Pinter

Supplementary readings

- Rogers, E.M. (1995) Diffusion of innovations (4th edition), The Free Press, New York
- Frascati Manual (2002) Proposed Standard Practice for Surveys on Research and Experimental Development, 2003. OECD, available at <http://www.oecd.org/bookshop?pub=922002081P1>
- Oslo Manual (2005) Guidelines for Collecting and Interpreting Innovation Data, 3rd Edition. OECD & Eurostat, available at <http://www.oecd.org/dataoecd/35/61/2367580.pdf>
- Meissner, D., Gokhberg, L., Sokolov, A. (eds.) (2013) Science, Technology and Innovation Policy for the Future - Potentials and Limits of Foresight Studies, Springer, Heidelberg/ New York/ Dordrecht/ London
- Gault, F. (2010) Innovation strategies for a global economy, Cheltenham, Elgar

Strategies in STI Management

9 credits

Abstract

The course introduces the organization, strategies, resources and overall management of the innovation process, considering the strategic dimension of these activities. Throughout history, the generation and implementation of innovations has been of outstanding importance not only for the well-being but also for the survival of individuals, entities and even entire civilizations and nations. Despite this importance, we have only recently begun to understand how innovation actually occurs. Apart from innovations – new products and processes – the word innovation refers to the process by which innovations are created and adopted. While some innovation processes are triggered by efforts to solve problems encountered in social or economic affairs, others may be more the result of seeking to find applications for scientific discoveries. In either case, and in the many cases where both processes operate, innovation typically involves combining existing knowledge, and generating new knowledge, so as to find new solutions or applications. As the "stock" of existing knowledge increases, and requires new competences, new challenges arise for managing innovation.

The nature of innovation strategies is changing, with more sharing of competences between different players along value chains. This has led to much recent attention to so-called open innovation, and more generally the operation of networks of innovators. Open innovation claims to broaden the horizon of actors to make more intensive use of a variety of information and ideas for innovation projects, outsourcing projects, and generate added value by using multiple exploitation paths. But in addition, there are questions about the interaction of technological and non-technological innovations, about service innovation as well as goods innovation, about design and other "creative activities", and about public-private interfaces. These recent developments bring new challenges to innovation strategies.

The course brings together the basics of innovation management and the most important current challenges: for example, open innovation, creativity, design and entrepreneurship and service innovation. The course provides a solid foundation of theoretical and practical knowledge of innovation management strategies. These strategies (and associated innovation skills) are important for a company's efforts to develop new business practices and renew its portfolio. Likewise, developing and implementing innovation strategies plays a role in entrepreneurial approaches to creation and expansion of start-ups. The course reflects not only the internal innovation processes of a single company, but also aims the complex interactions and interfaces of the innovation process with the surrounding actors; and the different sorts of strategy employed by different sorts of firm. Finally, the course discusses the internal and external incentive schemes, idea pipeline management, exploitation strategies, and strategy alignment across business units.

Major sections / topics

- Basic concepts and their inter-relations (technology, R&D, types of innovation, innovation process)
- Strategic innovation management
- Research and development – portfolio management
- Innovation strategy – idea pipeline management
- Outsourcing innovation activities
- Innovation management – stage gate processes
- Innovation life cycle management

Main references/books/readings

- Godin, B. (2008) Innovation: the History of a Category, Working Paper No. 1, Project on the Intellectual History of Innovation, Montreal: INRS. Online at - <http://www.csiic.ca/PDF/IntellectualNo1.pdf>
- Trott, P. (2011) Innovation Management and New Product Development, Financial Times Prent.; 5th revised edition
- Tidd, J., Bessant, J. (2009) Managing Innovation: Integrating Technological, Market and Organizational Change, John Wiley & Sons

Supplementary readings

- Chapters 1 (Fagerberg), 4 (Pavitt), 17 (Hall) in Fagerberg, J., Mowery, D., and Nelson, R. (eds, 2004) The Oxford Handbook of Innovation Oxford, Oxford University Press
- Von Hippel, E. (1975) The Dominant Role of Users in the Scientific Instrument Innovation Process, January, 1975 WP 764-75, <http://libraries.mit.edu/docs>
- Bartel, A. P., Ichniowski, C., Shaw, K. L. (2005) How Does Information Technology Really Affect Productivity? Plant-Level Comparisons of Product Innovation, Process Improvement and Worker Skills, NBER Working Paper No. 11773
- Gassmann, O. (2006) Opening up the innovation process: towards an agenda, R&D Management 36, 3, p. 223
- Rothwell, R. (1994) Towards the Fifth-generation Innovation Process. International Marketing Review, Volume: 11, Issue: 1, pp. 7–31

Scientific Research Methods for STI

3 credits

Abstract

Understanding STI, and the debates about STI issues in professional communities, policy discourse, and the mass media, requires at least basic understanding of the ways in which knowledge claims are made about STI processes. For example, is it accurate to say that the rate of innovation is increasing – indeed, what does this mean, how could we assess it? This course introduces research methodologies and instruments, in particular those used to describe and study STI-related issues. This understanding is necessary in order to evaluate knowledge claims – and to be able to generate one’s own knowledge for the management of innovation and the formulation of innovation policies and strategies. Research logic is useful for the design of analytical tools and evaluation of STI policy measures as well as for the development of STI strategies at the corporate level. For those interested in a further research career or professional consultancy, it is crucial to understand how a research project is designed, how indicators are developed, how information is collected and processed to build reliable knowledge on STI development or other issues.

The course will familiarize students with the principal approaches to formulating research questions, developing a methodology and indicators and interpreting them, in addition to introduce the fundamentals of empirical work and presenting results. This includes questionnaire design for large-scale surveys and interview guidelines, preparing and conducting expert work, qualitative and quantitative methods of data analysis, as well as the most common and frequently used indicators for STI.

Major sections / topics

- From research question to research programme
- Design of data collection tools
- Quantitative and qualitative methods for data analysis
- Assessment and evaluation of science, technology and innovation
- Approaches to interpreting data
- Presenting results

Main references/books/readings

- Krishnaswami, O.R. Satyaprasad, B.G. (2010) Business Research Methods, Himalaya Pub. House
- Gillham, B. (2010) Case Study Research Methods, Bloomsbury Academic
- Leburn, J. (2007) Scientific writing: a reader and writer's guide, World Scientific Publishing, London
- Williams, M. (1999) Science and Social Science: An Introduction, Boulder, CO: Westview
- Peat, J. E., Baur, E. (2002) Scientific Writing : Easy When You Know How, Louise Publisher: BMJ Books
- Halliday, M.A.K. Martin, J.R. (1996) Writing Science : Literacy and Discursive Power, Falmer Press
- Lakatos, I. (1975) Falsification and the methodology of scientific research programmes – Can Theories be Refuted?, Springer

Supplementary readings

- Berry R. (2004) The Research Project: How to Write It, Routledge
- Mowd, Glanzel, Shmoch, (2005) Handbook of Quantitative Science and Technology Research, New York: Kluwer

Measurement of STI

6 credits

Abstract

Business strategists need to know how fast and in which directions technologies are developing, where the hot areas for research are, what the patterns of patenting are. Evidence-based policymaking requires using various indicators of key STI development issues, in order to understand how policy decisions and actions help regulate and facilitate scientific advance, technological development, and innovation for economic development, social welfare, and sustainable development. Evidence is generated through the analysis of STI indicators at different levels. It informs decision makers and can be background information for policy advice on STI development. The course considers the challenges for analyzing and measuring STI.

The course introduces the basic approaches and methodologies to construct indicators and collect the underlying data and information including historical aspects of the evolution of measurement paradigms. It introduces the design of measurement concepts, indicators, approaches to data collection, and finally interpreting and analyzing the results. A strong focus of the course is on international standards and 'better national practices' of STI measurement as well as alternative indicators and data sources. These include indicators related to technological and non-technological innovation, innovation inputs and outputs, approaches to social and economic analysis of STI, empirical studies of innovation statistics such as infometrics (scientometrics, technometrics, etc.), integrated indicators etc. Moreover, the course also reviews recent initiatives in indicator development and visions for the future development of STI studies.

Major sections / topics

- History of STI measurement
- Methodologies of STI measurement: statistics and beyond
- International standards of STI statistics: R&D, Innovation, IP, etc.
- Scientometrics, technometrics and other methods
- New measures and data sources: specialized surveys, bigdata, webindicators
- Constructing complex indicators: issues for data aggregation and comparisons
- Use of STI indicators
- 'Blue sky' indicators and the future of STI studies

Main references/books/readings

- OECD (2003) Frascati Manual Proposed Standard Practice for Surveys on Research and Experimental Development. 2003. OECD, available at <http://www.oecd.org/bookshop?pub=922002081P1>
- OECD (2005) Oslo Manual (2005) Guidelines for Collecting and Interpreting Innovation Data, 3rd Edition. OECD & Eurostat, available at <http://www.oecd.org/dataoecd/35/61/2367580.pdf>

Supplementary readings

- Gault, F. (Ed.) (2013) Handbook of innovation indicators and measurement, Edward Elgar Publishing
- Meissner, D., Gokhberg, L., Sokolov, A. (eds.) (2013) Science, Technology and Innovation Policy for the Future — Potentials and Limits of Foresight Studies, Springer, Heidelberg/ New York/ Dordrecht/ London
- OECD Main Science and Technology Indicators (2014) <http://www.oecd.org/sti/msti.htm>
- Pavitt, K. (1982) R&D, patenting and innovative activities: a statistical exploration, Research Policy, Volume 11 (1): pp. 33–51
- Tijssen, R.J.W. (2001) Global and domestic utilization of industrial relevant science: patent citation analysis of science-technology interactions and knowledge flows. Research Policy, Volume 30 (1): pp. 35–54
- Smith, K.H (2005) Measuring innovation. In: The Oxford Handbook of Innovation, Oxford University Press, New York, US, pp. 148–177. ISBN 0 19 926455 4

STI Policy

6 credits

Abstract

Science, Technology and Innovation (STI) is a key pillar of governments' and companies' strategies to promote and sustain development. STI policy decisions can have an important and long-lasting impact on the future competitiveness and prosperity of nations. Research and development (R&D) policy, and science policy more generally, have come to be seen as parts of broader innovation policy. But these are often the main focus of policy discussion because elements of the STI infrastructure like public research institutions, universities, and public research support programs, are relatively easy points at which governments can act. Fostering an innovative culture more generally is somewhat more problematic, and policymakers find that they have to take into account to implications of many policy areas – e.g. education, IPR (intellectual property rights), trade, migration – for innovation. The course will introduce the major recent policy approaches that different countries use and implement; discuss the impacts of R&D and science policy measures and the linkages of such policies with other policy areas (considering the scope for designing consistent and coherent innovation policies). Major elements of the course are the design of research strategies and policy at national (federal) and regional levels, the monitoring and steering of policy and the implementation of respective measures by means of continuous evaluation of policy measures. It also includes the basic framework conditions of research policy such as institutional set-ups, the roles and functioning of funding agencies, labour and IPR laws and regulation, the design of “efficient contracts” in public research institutes, research assessment, knowledge transfer networks, and international research co-operation.

The past, current and prospective place of STI policy within an overall economic development policy agenda will be introduced. It will be complemented by explication of the basic concepts, including that of a national innovation system as an integrative analytical framework. It then reviews in detail how the main objectives of STI policy are defined and specific STI measures to achieve them are designed and implemented in different national contexts and through international co-operation. Next, it reviews the general approaches and specific methodologies that are used to evaluate the efficiency and impact of individual policy measures, as well as of the overall STI policy. It considers financing of STI and the policy measures and instruments required to meet these challenges. The course concludes with a review of the tools and instruments introduced and their applicability to the Russian context.

Major sections / topics

- Institutions, communication and relationships in innovation systems
- The performance of innovation systems – comparative analysis, approaches to measurement
- Stakeholders, ethics and social assessment of STI
- Public funding of STI - R&D programmes, demand-driven and procurement policies
- From science policy to innovation policy
- Regulatory science and the governance of innovation
- STI program assessment and evaluation; policy evaluation and evidence-based policy

Main references/books/readings

- Lundvall, B-Å. (ed.) (1992) National Innovation Systems: Towards a Theory of Innovation and Interactive Learning, Pinter, London
- Nelson, R. (ed.) (1993) National Innovation Systems. A Comparative Analysis, Oxford University Press, New York/Oxford
- OECD, (1997) National Innovation Systems, OECD Publications, Paris
- Fagerberg, J., Mowery, D. and Nelson R. (eds, 2004) The Oxford Handbook of Innovation, Oxford University Press, Oxford

Supplementary readings

- Rogers, E.M. (1995) Diffusion of innovations (4th edition) The Free Press, New York
- Freeman, C. and Soete, L. (1997) The Economics of Industrial Innovation, Third Ed., London: Pinter
- Bessant, J., Tidd, J. (2009) Managing Innovation: Integrating technological, market and organizational change, Chichester: Wiley
- Mazzucato, M. (2013) The Entrepreneurial State: debunking public vs. private sector myths, Anthem
- Meissner, D., Gokhberg, L., Sokolov, A. (eds.,2013) Science, Technology and Innovation Policy for the Future – Potentials and Limits of Foresight Studies, Springer, Heidelberg/ New York/ Dordrecht/ London
- OECD (2012) OECD Science, Technology and Industry Outlook 2012, OECD Publishing. http://dx.doi.org/10.1787/sti_outlook-2012-en
- OECD Reviews of Innovation Policy at <http://www.oecd.org/sti/inno/oecdreviewsofinnovationpolicy.htm>
- World Bank (2005) Innovation Policy: A Guide for Developing Countries, World Bank Publications

Foresight and Strategic Planning

6 credits

Abstract

Strategic long-term planning is an activity for preparing organizations for future development and sustainable operations and performance. It requires horizon-scanning – detecting factors which might appear in the future and impact on organizations or countries’ activities – alongside other approaches. Strategic long-term planning is not about predicting the future, and one major approach involves developing scenarios which represent alternative futures that might become real in the future, and deriving the responses that these might require. Hence, the focus is on identifying practical measures to prepare for potential developments in various directions. In this respect, strategic long-term planning requires not only compiling the results of forecasting exercises, but also formulating possible actions and examining how to implement these.

The course introduces a conceptual framework for designing and implementing strategic long-term planning activities. This recognizes the complexities in both real world systems and the models we have of them; there are multifaceted interplays between the social, technological, economic, ecological, and political contexts. The course describes the forecasting tools, planning models and related methodologies, which are used for mapping and understanding problems and systems, and building shared appraisals of desirable options. In this respect, we identify the relationships between the context, content and process of strategy making and planning exercises and look at how these shape a customized approach. Reflecting on practical experiences, the course will highlight pitfalls to avoid when managing long-term strategic planning projects. During the course, we introduce innovative ways of decision making and formulating measures, innovation strategy- and priority setting for innovation projects. The construction and management of innovation project portfolios is introduced as an important element of long-term strategic management. Students will learn how to define innovation projects and how to generate portfolios. Finally, students will also gain practical experience in strategic planning and in using the methodologies for public and private organizations.

Major sections / topics

- Introduction to strategic planning and portfolio management: concepts and approaches
- Strategic planning processes and methodologies
- Portfolio definition and construction
- Strategic planning process
- Resources allocation
- Scenario development
- Roadmaps for implementing long-term plans

Main references/books/readings

- Ackoff, R.L. (1974) *Redesigning the Future: A Systems Approach to Societal Problems*, John Wiley and Sons, New York
- Checkland, P. (1981) *Systems Thinking, Systems Practice*, Wiley, Chichester
- Nolan, T.N., Goodstein, L.D., and Goodstein, J. (2008) *Applied Strategic Planning: An Introduction*, Pfeiffer; 2nd edition
- John Pearce and Richard Robinson (2012) *Strategic Management*, McGraw-Hill/Irwin; 13th edition
- Aubrey Malphurs (2013) *Advanced Strategic Planning: A 21st-Century Model for Church and Ministry Leaders*, Baker Books; 3rd edition

Supplementary readings

- Churchman, C.W. (1968) *The Systems Approach*, Dell Publishing, New York
- Martin, B.R. (2010) *Origins of the concept of 'foresight' in science and technology: An insider's perspective*, *Technological Forecasting and Social Change*, vol.77, pp. 1438–1447
- Porter, A.L., and Cunningham, S.W. (2005) *Tech Mining: Exploiting New Technologies for Competitive Advantage*, New York: Wiley

Social Studies of STI

3 credits

Abstract

The course provides an overview of the state-of-the-art knowledge on pioneering and modern understandings of science, technology and innovation. We thus cover both innovation studies and the area of STS (Science and Technology Studies) Students will learn about the philosophical background, historical and institutional contexts of research into STI, including the analysis of classical theoretical works and attention to particular cases that demonstrate methodology and ‘better practices’ of empirical work. Special attention is given to the evolution and development of approaches to analyse the phenomena of technoscience and STI and society interactions. The course should interest all those curious about the sociology of science and scientific knowledge, history and philosophy of science and technology, science and technology studies, and the economics of innovation.

Lectures aim to clarify the major concepts and categories used in social sciences to describe STI development processes. The course examines philosophical, sociological and economic views on the growth of knowledge, technology development and diffusion of innovations. This allows us to employ different lenses when analysing STI phenomenon and related field-based problems. Discussions organized in workshops aim to share participants’ reflections on the approaches introduced in the literature and various practical research questions and hypotheses in existing studies.

Major sections / topics

- Philosophical foundations of STI studies
- Historical and institutional context of STI development
- From Sociology of Science to Science and Technology Studies – and back again
- Theories of knowledge development and scientific change
- Economic perceptions of STI development: measurement aspects
- Understanding R&D performance with the use of scientometric tools
- Science and society dialogue: the rise of expert knowledge
- Public perceptions of science, technology and innovation

Main references/books/readings

- Bellis, Nicola De. (2009) *Bibliometrics and Citation Analysis: From the Science Citation Index to Cybermetrics*, Scarecrow Press
- Ben-David, Joseph (1971) *Centers of Learning: Britain, France, Germany, United States*, London, Transaction Publishers. Chapters, 1–4, pp. 1–129
- Bourdieu, Pierre (2004) *Science of Science and Reflexivity*, Polity
- Coser, Lewis (1965) *Men of Ideas: A Sociologist's View*, NYC: Free Press
- Godin, Benoit (2005) *Measurement and Statistics on Science and Technology: 1920 to the Present*, London: New York: Routledge
- Knorr-Cetina, K. (1999) *Epistemic Cultures: How the Sciences Make Knowledge*, Cambridge, Mass.: Harvard University Press
- Lamont, Michèle (2009) *How Professors Think: Inside the Curious World of Academic Judgment*, Cambridge, Mass.: Harvard University Press
- Price, Derek J. de Solla (1963) *Little Science, Big Science*, New York: Columbia Univ. Press.

Supplementary readings

- Ben-David, Joseph, and Randall Collins (1966) *Social Factors in the Origins of a New Science: The Case of Psychology*, *American Journal of Sociology*, 31(4): pp. 451–465
- Cole, Stephan (1983) *A Hierarchy of Sciences*, *The American Journal of Sociology*, 89(1): pp. 111–139
- Crane, Diana (1969) *Social Structure of a Group of Scientists: An Invisible College Hypothesis*, *American Sociological Review*, 34(3): pp. 335–352
- Crane, Diana (1970) *The Academic Marketplace Revisited: A Study of Faculty Mobility Using Carter Ratings*, *The American Journal of Sociology*, 75(6): pp. 953–964
- Frickel, Scott and Neil Gross (2005) *A General Theory of Scientific/Intellectual Movements*, *American Sociological Review*, 70(2): pp. 204–232
- Fuchs, Stephan (1993) *A Sociological Theory of Scientific Change*, *Social Forces*, 71(4): pp. 933–953
- Garfield, Eugene (1979) *Is Citation Analysis a Legitimate Evaluation Tool?*, *Scientometrics*, 1(4): pp. 359–375
- Kuhn, Thomas S. (2012), *The Structure of Scientific Revolutions: 50th Anniversary Edition*, University of Chicago Press

- Merton, Robert King, Elinor, G. Barber (2004) *The Travels and Adventures of Serendipity: A Study in Sociological Semantics and the Sociology of Science*, Princeton University Press
- Merton, Robert King (1973) *The Sociology of Science: Theoretical and Empirical Investigations*, University of Chicago Press
- Merton, Robert (1938) Science, Technology, and Society in Seventeenth Century England, *Osiris*, 4: pp. 362–630
- Price, Derek de Sola (1965) Network of Scientific Papers, *Science*, 149: pp. 510–515
- Sismondo, Sergio (2010) *An Introduction to Science and Technology Studies*, Chichester, West Sussex, U.K.; Malden, MA: Wiley-Blackwell
- Travis, G.D.L., and Collins, H.M. (1991) New Light on Old Boys: Cognitive and Institutional Particularism in the Peer-Review System, *Science, Technology, and Human Values*, 16(3): pp. 322–341
- vanRaan, Anthony (2005) Fatal Attraction: Conceptual and Methodological Problems in the Ranking of Universities by Bibliometric Methods, *Scientometrics*, 62(10): pp. 133–143
- Whitley, Richard & Jochen, Glaser (eds., 2007) *Governance of the Sciences. The Advent of Research Evaluation Systems*, Springer, Chapter 1: pp. 3–30
- Whitley, Richard (2000) *The Intellectual and Social Organization of the Sciences* Oxford University Press.

Managing Creativity and Innovation

3 credits

Abstract

In today's knowledge economy, creativity plays one of the most important roles. Ideas generated through creative process are subsequently turned into innovation, which lies at the heart of the endogenous growth theory. Thus creativity contributes to the economic wealth of nations as well as to their cultural and social development.

Creativity as a broad phenomenon is explained by many definitions and concepts. It is also the basis for related terms such as 'creative economy', 'creative industries', 'creative class' that have already become part of everyday vocabulary. The evolving concept of 'creative economy' has become an important topic for policy makers and researchers. An increasing number of governments in developed and developing countries are prioritizing creative industries in their national strategies. The number of people representing the creative class (those working in science and engineering, architecture and design, education, arts, music and entertainment) is also growing globally. The ability to generate new, valuable ideas is often seen as a key competitive advantage of businesses and individuals.

Innovation management theory and examples from business practice show that creativity in firms can be managed – through changes in strategies, implementation of idea-generating techniques, and development of a unique corporate culture. With this understanding, managers are gradually changing their thinking towards creativity.

The course will be interesting to those students who wish to more deeply understand what creativity is and how to establish and organize daily processes in a creative way. From the course, you will learn how people can be taught to be creative, what particular creativity techniques exist and how to embed them into common business procedures. They will explore the world's best case studies showing how ideas turned into new products and services have been successfully brought to the market by innovative firms.

Much attention in the course will be paid to the specificities of organizing creative processes and implementing creativity techniques including the profound concept of 'TRIZ' (theory of inventive problem solving). Different approaches to gathering ideas from a company's employees and customers through specifically arranged idea management systems will be of particular interest to students. A special emphasis in the course will be put on the ways of establishing a corporate culture which supports creativity. Finally, course attendees will learn how to become more creative themselves by following certain simple rules and techniques.

On completing this course, students will be able to think and act differently from other people – the key qualities of successful innovation managers.

Major sections / topics

- The role of creativity in the knowledge economy
- Conceptions of creativity
- Myths about creativity
- Individual and group creativity
- Creative process
- Idea generation and creativity techniques
- Managing ideas in organizations
- Creativity and corporate culture
- Enriching organizations and workplaces
- Increasing your own creativity

Main references/books/readings

- Sawyer, R. Keith (2012) Explaining Creativity: The Science of Human Innovation, Oxford University Press
- Luecke, Richard (2003) Managing Creativity and Innovation (Harvard Business Essentials), Harvard Business Review Press
- Drucker, Peter F. et al. (1999) Harvard Business Review on Breakthrough Thinking, Harvard Business Review Press
- Kelley, Tom and Littman, Jonathan (2001) The Art of Innovation: Lessons in Creativity from IDEO, America's Leading Design Firm. Crown Business

Supplementary readings

- Harvard Business Review on Innovation (2001) HBS Press
- Johansson, Frans (2006) The Medici Effect: What Elephants and Epidemics Can Teach Us About Innovation, Harvard Business Review Press
- Sims, Peter (2011) Little Bets: How Breakthrough Ideas Emerge from Small Discoveries, New York, Free Press
- Howkins, John (2004) The Creative Economy: How People Make Money From Ideas, Penguin Global
- Florida, Richard (2012) The Rise of the Creative Class, Basic Books, Second Edition

- Kaufman, James C. and Sternberg, Robert J (2006) *The International Handbook of Creativity*, Cambridge University Press
- Altshuller, Genrich (1999) *Innovation Algorithm: TRIZ, systematic innovation and technical creativity*, Worcester, Technical Innovation Center
- Hargadon, Andrew (2003) *How Breakthroughs Happen: The Surprising Truth About How Companies Innovate*, Harvard Business Review Press
- Tucker, Robert B. (2002) *Driving Growth Through Innovation*, Berrett-Koehler Publishers
- Capodagli, Bill and Jackson, Lynn (2009) *Innovate the Pixar Way: Business Lessons from the World's Most Creative Corporate Playground*, McGraw-Hill
- Michalko, Michael (2006) *Thinkertoys*, Ten Speed Press, Berkeley, California
- Govindarajan, Vijay and Trimble, Chris (2005) *Ten Rules for Strategic Innovators: From Idea to Execution*, Harvard Business School Press

Papers and reports

- Amabile, Teresa (1996) *Creativity and Innovation in Organizations, Industry and Background Note*, Harvard Business Review Press
- Amabile, T. M., Conti, R., Coon, H., Lazenby, J., and Herron, M. (1996) *Assessing the Work Environment for Creativity*, *Academy of Management Journal* 39, no. 5 (October 1996): pp. 1154–1184
- UNCTAD (2010) *Creative Economy Report*, <http://unctad.org/en/pages/PublicationArchive.aspx?publicationid=946>
- Leonard, D., Rayport, J.(1997) *Spark Innovation Through Empathic Design*, *Harvard Business Review*, Reprint 97606, pp.105–110

Other useful links

- The creative economy website by John Howkins. <http://www.creativeeconomy.com/index.htm>
- Creativity techniques. http://www.mycoted.com/Category:Creativity_Techniques
- 845 of the best websites on the web about creativity and innovation. <http://links.aulive.com/>
- Edward de Bono website. <http://edwdebono.com/>
- Website about 'mindmapping'. <http://www.mindmapping.com/>
- McKnight Principles // 3M.com. http://solutions.3m.com/wps/portal/3M/en_WW/History/3M/Company/McKnight-principles/
- The Altshuller Institute for TRIZ studies. <http://www.aitriz.org/>

Finance of Innovation

3 credits

Abstract

This course gives a background on how companies and research organizations make their investing and financing decisions. First, it focuses on capital budgeting issues. This helps students to understand the principal factors determining companies' incentives for whether to invest or not in a project in the long-term. The expected return of a project and cost of finance are considered. Second, the costs of capital and risk leverage assessment of a company are covered. This illustrates how actors manage their financial structure and operate leverage for strategic development. It shows how managers, shareholders and investors want earnings to be distributed, and how they can resolve possible conflicts of interests based on corporate governance best practices. Finally, approaches towards assessing innovation projects with regard to the financial investment are discussed and sources of finance for innovation projects introduced. This includes the assessment of the investment budget and the approximate returns to be expected from these investments.

Major sections / topics

- Financial dimensions of defining innovation projects
- Sources of finance for innovation
- Estimation of return on investment in innovation projects
- Innovation project portfolio management – the financial perspective
- Financial valuation of innovation projects
- Risk management

Main references/books/readings

- O'Sullivan, M. (2005) Finance and innovation, The Oxford handbook of innovation
- Metrick, A., Yasuda, A. (2011) Venture capital and the finance of innovation, Wiley
- Bo, Z. (2002) On the new Development of the Theory of Finance Innovation, Nankai Economic Studies

Supplementary readings

- Cumming , D. (2007) Government policy towards entrepreneurial finance: Innovation investment funds, Journal of Business Venturing
- Schmukler, S. L. (2007) Innovative Experiences in Access to Finance: Market-Friendly Roles for the Visible Hand?, Policy Research Working Paper 4326, World Bank
- Brown, J. R., Fazzari, S. M., Petersen, B.C. (2009) Financing innovation and growth: Cash flow, external equity, and the 1990s R&D boom, The Journal of Finance
- Atanassov, J. (2005) Finance and Innovation The Case of Publicly Traded Firms <http://hdl.handle.net/2027.42/39169>

Intellectual Property Management

3 credits

Abstract

Intellectual property rights are a means of protecting the use of inventions, technologies and knowledge for the party holding such a right. The question that companies and research-based institutions like universities and public research institutions are increasingly faced with is which knowledge and inventions to protect against other parties' use, and in which geographic scope and application fields etc. In addition, the issue of which share of knowledge and technology to protect out of total knowledge and intellectual assets available becomes crucial. Furthermore, the question arises how to value intellectual property and how to determine the contribution of intellectual property to the economic value of tradable goods.

The course gives an introduction to the management of intellectual property by means of intellectual property rights. Many different types of intellectual rights are discussed in a strategic company context, for example from the view of intellectual property as 'strategic weapons' for the holder and owner of intellectual property. Special attention will be given to the valuation of intellectual property and portfolio management approaches.

Major sections / topics

- Typology of intellectual property rights
- Strategies for protecting intellectual property
- Building and managing portfolios of intellectual property
- Defending intellectual property rights
- Assessment and valuation of IP
- Auditing intellectual property right portfolios
- Exploitation and use of strategies of IP
- Invention disclosure systems and invention disclosure assessment

Main references/books/readings

- Junghans, C., Levy, A. (2006) Intellectual Property Management, Wiley
- Reitzig, M. (2004) Strategic management of intellectual property. MIT Sloan Management Review, Vol. 45 (3): pp. 35–40
- May, C. (2000) A global political economy of intellectual property rights: the new enclosures? LAVOISIER
- Bader, M. A. (2006) Intellectual property management in R&D collaborations: the case of the service industry sector, Physica

Supplementary readings

- Choi, T. Y., Budny, J., Wank, N. (2004) Intellectual property management: A knowledge supply chain perspective, Business Horizons, Vol. 47 (1): pp. 37–44

Public-Private Partnerships for STI

3 credits

Abstract

Public-private partnerships (PPPs) in research and innovation have become an important instrument of STI policy, since innovation frequently depends upon – indeed often it stems from – the activities of private firms. It has been commonly recognized that governments' objectives like commercialization of research, fostering innovation, and delivery of measurable economic and social value require structured and long-term collaboration of the public and the private sectors. PPPs offer a framework for the public and private sectors to join forces in areas of research and innovation where they have complementary interests but cannot act efficiently alone, helping to leverage private demand through public demand for the delivery of goods and services.

PPPs for research and innovation can take a variety of different forms, ranging from institutionalized partnerships such as co-operative research agreements to large infrastructure projects where partners commit to a longer-term horizon. PPPs may combine both hard and soft elements such as the creation of a joint research centre, co-operative research projects, and the provision of training. They can either be focused on specific targets or goals with a short time horizon or oriented towards long-term, blue sky research.

The course discusses modes of collaboration and partnerships, the types of actors, governance and other conditions of PPPs, publication policy, IP rules and methods of work and data sharing. We also consider which fields PPP are applicable in, what impacts are achieved by PPPs, and how we might assess and measure such impacts.

Major sections / topics

- Models for PPP operations
- Typology of PPPs
- Strategy development for PPPs
- Interface and stakeholder / shareholder management
- Intellectual property rights and liability management
- Finance of PPPs
- Management of conflicts of interest
- Impact generation from PPPs
- PPPs in open innovation

Main references/books/readings

- Brody, Richard J. (1996) *Effective Partnering: A Report to Congress on Federal Technology Partnerships*, U.S. Department of Commerce, Office of Technology Policy
- The Business and Industry Advisory Committee to the OECD (2003) *Promoting Better Public-Private Partnerships: Industry – University Relations*, BIAC
- Link, Albert N. (2006) *Public/Private Partnerships: Innovation Strategies and Policy Alternatives*, New York, Springer
- OECD (2005) *Public-Private Partnerships for Innovation*, Synthesis Report, Paris

Supplementary readings

- Advisory Council for Science, Technology and Innovation Ireland/ Forfàs (2007) *Promoting Enterprise-higher Education Relationships*
- Audretsch, David B., Link, Albert N., Scott, John T. (2002) *Public/Private Technology Partnerships: Evaluating SBIR-supported Research*, *Research Policy*, Vol. 31(1): pp. 145–158
- Audretsch, David B., Bozeman, Barry, Combs, Kathryn L., Feldman, Maryann, Link, Albert N., Siegel, Donald S., Stephan, Paula, Tassej, Gregory, Wessner, Charles (2002) *The Economics of Science and Technology*, *Journal of Technology Transfer*, Vol. 27: pp. 155–203
- Confederation of Danish Industries, the Danish Rectory Conference (2004) *Contacts, Contracts and Codices. Research Co-operation between Universities and Companies* http://www.rektorkollegiet.dk/typo3conf/ext/naw_securedl/secure.php?u=0&file=fileadmin/user_upload/downloads/Contacts_contrats_and_cod.pdf&t=1195921206&hash=298a68b935bb95fa3f46486ce87aefba
- EU (2005) *Responsible Partnering: Joining Forces in a world of Open Innovation. A Guide to Better Practices for Collaborative Research between Science and Industry*, European Union, Brussels

- Forfàs (2007) Review of Governance Options for Collaborative Research Ventures. The National Policy and Advisory Board for Enterprise, Trade, Science, Technology and Innovation. <http://www.forfas.com/publications/forfas070426/governance%20report%20april%202007.pdf>
- Lienhard, Andreas (2006) Public Private Partnerships (PPPs) in Switzerland: Experiences – Risks – Potentials, *International Review of Administrative Sciences*, Vol. 72(4): pp. 547–563
- Link, Albert N., Scott, John N. (2005) Universities as Partners in U.S. Research Joint Ventures. *Research Policy*, Vol. 34(3): pp. 385–393
- Link, Albert N., Scott, John N. (2001) Public/Private Partnerships: Stimulating Competition in a Dynamic Market, *International Journal of Industrial Organization*, Vol. 19: pp. 763–794

Regional STI Policy 3 credits

Abstract

STI policies aim to leverage regional, industrial and technological competences in countries, regions, or across regions. The respective policy measures are in many countries developed and designed at federal level. Governments often assume that the policy measures are implemented in a timely manner and in the sense they were designed. However, experience shows that the implementing bodies (be they for example, regional governments, local decision makers, or funding agencies) are not prepared or misunderstand the initial intention(s) of the STI policy measures. It follows that the measures can be misinterpreted and not implemented in a way which allows their optimal use: hence the expected impact of the measures may not be achieved.

Given this background, the course introduces models to enhance the intermediation of STI policy measures by showing examples of decision making and strategy development of funding agencies especially. The course highlights the overlap between different policy fields which are affected by the STI policy measures. Students will come to understand the strategic and operational responsibilities when implementing STI policy measures. This intermediation requires smooth overall co-ordination between different actors from various levels of organization (national, regional, cross-border regional, metropolitan areas, intercommunal structures, towns and neighbourhoods). Intermediation should also take into account the rationales of public and private stakeholders involved in these policies (elected officials, administrations, public services, private companies, financial institutions, non-profit organizations and interested residents) and the tools and methods they use (finance and management, quantitative methods, architecture, etc.).

Major sections / topics

- International best practices in implementing STI policy
- Meaning and role of intermediary organizations
- Adjusting national STI policy and international experiences to regional frameworks
- Practical management rules for operational STI policy implementation
- The role and importance of training of people and education for policy implementation

Main references/books/readings

- Asheim, B. and Gertler, M. (2004) *The Geography of Innovation: Regional Innovation Systems*, in Fagerberg, J., D. Mowery and R. Nelson (eds.), *The Oxford Handbook of Innovation*, Oxford University Press, Oxford
- Freeman, C. (1995) The 'National System of Innovation' in historical perspective, *Cambridge Journal of Political Economy* 19: pp. 5–24
- Granville, B. and Leonard, C.S. (2010) Do Informal Institutions Matter for Technological Change in Russia? The Impact of Communist Norms and Conventions, 1998–2004, *World Development*, Vol. 38 (2): pp.155–169
- Hollanders, H., Rivera León, L., Roman, L. (2012) *Regional Innovation Scoreboard 2012* // European Commission URL: http://ec.europa.eu/enterprise/policies/innovation/policy/regionalinnovation/index_en.htm
- Hospers, G., Sautet, F. and Desrochers, P. (2008) *Silicon Somewhere: Is There a Need for Cluster Policy?* in Karlsson, C. (ed.), *Handbook of Research on Innovation and Clusters: Cases and Policies*, Edward Elgar Publishing, Cheltenham, pp. 430–446
- OECD (2007) *Competitive Regional Clusters: National Policy Approaches*, OECD Reviews of Regional Innovation, OECD Publishing, Paris, doi: 10.1787/9789264031838-en
- OECD (2011) *Regions and Innovation Policy*. OECD Reviews of Regional Innovation, OECD Publishing
- OECD (2009) *Regions Matter: Economic Recovery, Innovation and Sustainable Growth*, OECD Publishing
- Saxenian, Annalee (2007) *New Argonauts: Regional Advantage in a Global Economy*, Harvard University Press
- Storper, M. (1995) The resurgence of regional economies ten years later: the region as a nexus for untraded interdependencies, *European Urban and Regional Studies* 2, pp. 191–221
- Weber, A. (1909/1929) *Theory of the Location of Industries* [1909], Chicago, University of Chicago Press
- Wessner, C. (ed.) (2009) *Understanding Research, Science and Technology Parks: Global Best Practices*, National Research Council, National Academies Press, Washington, DC
- Conceição, P., Gibson, D., Heitor, M., Shariq, S. (edt 2000) *Science, Technology, and Innovation Policy: Opportunities and Challenges for the Knowledge Economy*, Quorum Books, Westport

- OECD (2012) Meeting Global Challenges through Better Governance: International Cooperation in Science, Technology and Innovation, OECD
- Meissner, D., Gokhberg, L., Sokolov, A. (eds.) (2013) Science, Technology and Innovation Policy for the Future - Potentials and Limits of Foresight Studies, Springer, Heidelberg/ New York/ Dordrecht/ London

Supplementary readings

- Uwe Blien, Gunther Maier (2008) The Economics of Regional Clusters: Networks, Technology and Policy, Edward Elgar, Cheltenham
- OECD Reviews of Innovation Policy, <http://www.oecd.org/sti/inno/oecdreviewsofinnovationpolicy.htm>

Corporate Foresight

3 credits

Abstract

The beginning of the 21st century is characterized by accelerating pace of scientific and technological progress. It becomes evident in this framework that there is an urgent need for companies in identifying vectors of concentrating resources on those areas that can become a driver for rapid but sustainable business development. As evidenced the world practice, one of the most effective long-term forecasting tools for economic and technological development of the company, providing a comprehensive view of the complex and diverse factors determining the dynamics of supply and demand in the relevant markets, coupled with technological trends, is a Strategic Foresight.

The main feature of Strategic Foresight for companies is the fact that it focuses not on the identification of the most probable future, but on the formation of a priorities system and the conditions necessary for their implementation – the system of measures in the form of roadmap and favorable institutional environment.

The course will consist of 2 basic streams – a lecture and a seminar. Lectures and seminars are based on recent academic work from different scientific perspectives; introduce case studies and state of the art approaches applied by practitioners. The combination of lectures and seminars enable participants to get much better insight into the content of innovation's black boxes. Moreover seminars consist of introduction lectures followed by student's self-study to solve a predefined task.

Major sections / topics

- Corporate Foresight for management
- Instruments for corporate Foresight
- Management of corporate Foresight

Main references/books/readings

- Ratcliffe, J.S. (2006) Challenges for corporate foresight: towards strategic prospective through scenario thinking, *Foresight* 8 (1): pp. 39–54
- Phaal, R., Farrukh, C.J.P., Probert, D.R. (2004) Technology roadmapping. A planning framework for evolution and revolution, *Technological Forecasting and Social Change* 71 (1–2): pp. 5–26
- Kappel, T.A. (2001) Perspectives on roadmaps: how organizations talk about the future, *Journal of Product Innovation Management*, 18 (1): pp.39–50

- Rohrbeck, R. (2010) Corporate Foresight: Towards a Maturity Model for the Future Orientation of a Firm, *Physica*
- Vecchiato, R., Roveda, C. (2010) Strategic foresight in corporate organizations: Handling the effect and response uncertainty of technology and social drivers of change, *Technological Forecasting and Social Change*, 77: pp.1527–1539
- Daheim, C., Uerz, G., (2008) Corporate foresight in Europe: from trend based logics to open foresight, *Technology Analysis & Strategic Management*. 20: pp. 321–336
- Ruff, F. (2006) Corporate foresight: integrating the future business environment into innovation and strategy, *International Journal of Technology Management*. 34: p. 278
- Reger, G., (2001) Technology foresight in companies: from an indicator to a network and process perspective, *Technology Analysis & Strategic Management*. 13: pp. 533–553
- Gracht, H., Vennemann, C., Darkow, I. (2010) Corporate foresight and innovation management: A portfolio-approach in evaluating organizational development, *Futures*. 42: pp. 380–393
- Rollwagen, I., Hofmann, J., Schneider, S. (2008) Improving the business impact of foresight, *Technology Analysis & Strategic Management*. 20: pp. 337–349
- Kaivo-oja, J. (2006) Towards Integration of Innovation Systems and Foresight Research in Firms and Corporations: The Classical Takeuchi-Nonaka Model
- Willyard, C.H., McClees, C.W. (1987) Motorola's Technology Roadmap Process, *Research Management*. 30: pp. 13–19
- D. Barker, D.J.H. Smith (1995) Technology foresight using roadmaps, *Long Range Planning*. 28: pp. 21–28
- Beeton, D.A., Phaal, R., Probert, D.R. (2008) Exploratory roadmapping for foresight, *International Journal of Technology Intelligence and Planning*. 4: p. 398

Supplementary readings

- Mason, R.H. (1969) Developing a planning organization: A logical sequence of phases, *Business Horizons* 12 (4): pp. 61–69
- Gracht, H.A., Vennemann, C.R., Darkow, I.-L. (2010) Corporate foresight and innovation management: A portfolio approach in evaluating organizational development, *Futures* 42(4): pp. 380–393
- Chermack, T.J. (2005) Studying scenario planning: theory, research suggestions, and hypotheses // *Technological Forecasting and Social Change*, 72(1): pp. 59–73

Mergers and Acquisitions

3 credits

Abstract

“Mergers and Acquisitions” introduces the students to the topic of M&As and links strategic with financial considerations. Mergers & Acquisitions gives first insights into the academic literature in the field, but also covers practical aspects. The elective is useful for those intending to work as strategy consultants focusing on such transactions, or those who plan to work in Corporate Strategy functions within firms. Students that are interested in Mergers and Acquisitions as a field of research are encouraged to attend.

Major sections / topics

- M&A strategies: acquirors’ and targets’ perspective
- Valuation
- The deal
- Integration

Main references/books/readings

- Weston, F.J., Mitchell, M. L. and Mulherin, H. J. (2004) Takeovers, Restructuring, and Corporate Governance, 4/e, Pearson Education
- Martynova, M., Renneboog, L. (2008) A century of corporate takeovers: What have we learned and where do we stand?, Journal of Banking and Finance, Vol. 32 (10): pp. 2148–2177
- Zollo, M., Meier, D. (2008) What is M&A Performance? Academy of Management Perspectives, August: pp. 55–76
- Sudarsanam, S. (2009) Creating Value from Mergers and Acquisitions: The Challenges, Prentice Hall.: Chapter 12: pp.351–355, 366–375
- Laamanen, T, Keil, T. (2008) Performance of Serial Acquirers: Toward an Acquisition Program Perspective. Strategic Management Journal. 29: pp. 663–672

- Eccles, R. G., Lanes, K. L., Wilson, T. C. (1999) Are you paying too much for an acquisition? *Harvard Business Review*, July-August: pp. 136–146
- Caselli, S., Gatti, S., Visconti, M. (2006) Managing M&A Risk with Collars, Earn-outs, and CVRs. *Journal of Applied Corporate Finance*. 18 (4): pp. 91–104
- Martynova, M., Renneboog, L. (2009) What Determines the Financing Decision in Corporate Takeovers: Cost of Capital, Agency Problems, or the Means of Payment?, *Journal of Corporate Finance* 15: pp. 290–315
- Rappaport, A., Sirower, M.L. (1999) Stock or Cash: The Trade-Offs for Buyers and Sellers in Mergers and Acquisitions. *Harvard Business Review*, November-December: pp. 147–158
- Jemison, D. B. (1996) Corporate Acquisitions: A Process Perspective, *Academy of Management Review* 11 (1): pp. 145–163
- Zollo, S. (2004) Deliberate Learning in Corporate Acquisitions: Post-Acquisition Strategies and Integration Capability in US Bank Mergers. *Strategic Management Journal*. 25: pp. 1233–1256
- Eckbo, E B. (2009) Bidding strategies and takeover premiums: A review. *Journal of Corporate Finance*, 15: pp. 149–178
- Lovallo, D., Viguerie, P., Uhlener, R., Horn, J. (2007) Deals without Delusion. *Harvard Business Review*, December: pp. 92–99
- Aiello, R. J, Watkins, M.D. (2000) The fine art of friendly acquisition. *Harvard Business Review* (Nov-Dec): pp.100–107
- Halebian, J., Devers, C.E., McNamara, G., Carpenter, M.A., Davison, R.B. (2009) Taking stock of what we know about mergers and acquisitions: A review and research agenda. *Journal of Management*. 35: pp. 469–502

Supplementary readings

- Gugler, K., Mueller, D. C., Yurtoglu, B. (2006) The determinants of merger waves. Working Paper SPII 2006-01, Wissenschaftszentrum Berlin
- Oxley, J. E. (1997) Appropriability hazards and governance in strategic alliances: A transaction cost approach, *Journal of Law, Economics and Organization*, 13 (2): pp. 387–409
- Bertrand, O., Betschinger, M. (2012) Performance of domestic and cross-border acquisitions: Empirical evidence from Russian acquirers, *Journal of Comparative Economics* 40: pp. 413–437
- Radygin, A. (2010) The Russian Mergers and Acquisitions Market: Stages, Features, and Prospects. *Problems of Economic Transition*. 52(10): pp. 65–95
- Jensen, M. C. (1986) Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers. *American Economic Review* 76(2): pp. 323–329
- Williamson, O. (1991) Comparative Economic Transactions: The Analysis of Discrete Structural Alternatives. *Administrative Science Quarterly* 36: pp. 269–296
- Fan, J., Goyal, V. (2006) On the patterns and wealth effects of vertical mergers, *The Journal of Business*, 79 (2): pp. 877–902
- Palich, L.E, Cardinal, L.B, and Miller, C.C. (2000) Curvilinearity in the diversification-performance linkage: An examination in over three decades of research, *Strategic Management Journal*. 21: pp. 155–174
- Ismail, A. (2008) Which acquirers gain more, single or multiple? Recent evidence from the USA market. *Global Finance Journal*. 19: pp. 72–84
- Byrd, J. H. (1992) Do outside directors monitor managers? Evidence from tender offer bids. *Journal of Financial Economics* 32: pp. 195– 221
- Ahn, S., Jiraporn, P., Kim, Y. (2010) Multiple directorships and acquirer returns. *Journal of Banking & Finance* 34: pp. 2011–2026
- Sirower, M.L, Sahni, S. (2006) Avoiding the Synergy Tap: Practical Guidance on M&A Decisions for CEOs and Boards. *Applied Corporate Finance*, 18 (3): pp. 83–95
- Comment, R., Schwert, W. (1995) Poison or placebo? Evidence on the deterrence and wealth effects of modern antitakeover measures. *Journal of Financial Economics*. 39 (1): pp. 3–43

- Antoniou, A., Arbour, P., Zhao, H. (2008) How Much Is Too Much: Are Merger Premiums Too High? *European Financial Management*, 14 (2): pp. 268–287
- Hayward, M.L.A. and Hambrick, D.C. (1997) Explaining the premiums paid for large acquisitions: Evidence of CEO hubris. *Administrative Science Quarterly*, 42: pp. 103–127
- Bris, A., Brisley, N., Cabolis, C. (2008) Adopting better corporate governance: Evidence from cross-border mergers. *Journal of Corporate Finance*, 14, pp. 224–24
- Rossi, S., Volpin, P. (2004) Cross-Country Determinants of Mergers and Acquisitions. *Journal of Financial Economics* 74: pp. 277–304
- Kohers, N., Ang, J. (2000) Earnouts in Mergers: Agreeing to Disagree and Agreeing to Stay. *Journal of Business*. 73 (3): pp. 445–476
- Puranam, P., Powell, B.C., Singh, H. (2006) Due diligence failure as a signal detection problem, *Strategic Organization*, 4(4): pp. 319–348
- Harding, D., Rouse, T. (2007) Human Due Diligence, *Harvard Business Review*, April: pp. 124–131
- Barkema, H. G., Schijven, M. (2008) Toward unlocking the full potential of acquisitions: The role of organizational restructuring. *Academy of Management Journal*, 51(4), pp. 696–722
- Birkinshaw, J., Bresman, H., Hakanson, L. (2000) Managing the post-acquisition integration process: How the human integration and task integration processes interact to foster value creation. *Journal of Management Studies*, 37: pp. 395–425
- Homburg, B. (2006) Is speed of integration really a success factor of M&A? An Analysis of the role of internal and external relatedness. *Strategic Management Journal*. 27: pp. 347–367
- Lee, D., Madhavan, R. (2010) Divestiture and Firm Performance: A Meta-Analysis. *Journal of Management*, 36: pp. 1345–1371
- Capron, L. Guillen, M. (2009) National Corporate Governance Institutions and post-acquisition target reorganization. *Strategic Management Journal*. 30: pp. 803–833
- Puranam, P., Singh, H., Zollo, M. (2003) A Bird in the Hand or Two in the Bush? Integration Trade-offs in Technology-grafting Acquisitions, *European Management Journal* 21 (2): pp. 179–184

Risk Assessment for Science, Technology and Innovation

3 credits

Abstract

The course is designed for master students and represents an upper level course. This course discusses risk assessment from the perspective of STI projects. The course examines various types of risks and risk management procedures in the context of the general framework of enterprise-wide risk management. The emphasis of the course is on application of risk assessment methods rather than on the technical details of statistical measurement and pricing of derivatives. The course considers issues of risk measurement, risk aggregation, performance evaluation and strategic decision making using risk assessment techniques. The course does not require extensive knowledge of mathematics and statistics.

Major sections / topics

- The role of risk assessment
- Measuring financial risks in STI projects
- Measuring business risks in STI projects
- Firm, project and organization-wide risk management framework

Main references/books/readings

- James L. (2014) Enterprise Risk Management: From Incentives to Controls. 2nd edition, Wiley Finance

Supplementary readings

- Doherty, N. (2000) Integrate Risk Management: Techniques and Strategies for Managing Corporate Risk, Englewood Cliffs, NJ: Prentice-Hall
- Meulbroek, L. (2002) Integrate Risk Management for the Firm: A Senior Manager's Guide, Harvard Business School
- Stulz, R. (2003) Risk Management and Derivatives, Thomson/South-Western.
- Banks E. (2005) Alternative Risk Transfer: Integrated Risk Management through Insurance, Reinsurance, and the Capital Markets, The Wiley Finance Series,
- Jorion, P. (2007) Value at Risk, 3rd edition, McGraw Hill,
- Hull, J. (2013) Options, Futures, and Other Derivatives, 9th Edition, Prentice-Hall
- Damodaran, A.(2007) Strategic Risk Taking: A Framework for Risk Management, Pennsylvania: Wharton School Publishing
- Fehlea, F., Tsyplakov, S.(2005) Dynamic Risk Management: Theory and Evidence, Journal of Financial Economics, Vol. 78 (1): pp. 3–47
- Rogers, J. (2004) Strategy, Value and Risk – the Real Options Approach, Palgrave Macmillan
- Shimpi, P.A. (2002) Integrating Risk Management and Capital Management, Journal of Applied Corporate Finance, Vol. 14 (2): pp. 27–40
- Andersen, T.J. (2005) Risk Management, Capital Structure and Performance: A Real Options Perspective, Copenhagen Business School, Denmark

Business Model Innovation

3 credits

Abstract

Business Model Innovation is a topic rarely taught at universities. Companies are often confronted with the challenge to adjust their business model to changing environments but lack a profound understanding what they should change and to which extend. The course thus provides insights to students how companies can change their business model, identify opportunities for business model innovation and how such innovation and changes should be implemented in the organization. The course is designed for master students and represents an upper level course. It discusses business model innovation as one of the most important forms of innovation and stresses the need for organizations to adjust to changing environments and to adapt their business models.

Major sections / topics

- Main features of business innovation models;
- Key factors for successfully designing and implementing business model innovation
- The management of different local business models under the umbrella of multinational companies

Main references/books/readings

- Afuah, A. (2014) *Business Model Innovation: Concepts, Analysis, and Cases*, Routledge, N.Y.
- Kaplan, S. (2012) *The Business Model Innovation Factory: How to Stay Relevant When the World Is Changing*, Wiley, N.Y.
- Amit, R., Zott, C. (2012) *Creating Value through Business Model Innovation*, MIT Sloan Management Review, Vol. 53 (3): pp. 41–49

Supplementary readings

- Osterwalder, A. (2004) *The Business Model Ontology: A Proposition in the Design Science Approach*, University of Lausanne
- Osterwalder, A., Pigneur, Y. (2010) *Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers*, Wiley, N.Y.
- Muelhausen, J. (2013) *Business Models for Dummies*, Wiley, Hoboken (NJ)
- Teece, D. J. (2010) *Business Models, Business Strategy and Innovation*, Long Range Planning, Vol. 43 (2): pp. 172–194
- Magretta, J. (2002) *Why business models matter*, Harvard Business Review, May: pp. 86–92
- Johnson, M., Christensen, C., Kagerman, H. (2008) *Reinventing Your Business Model*, Harvard Business Review, December 2008
- Shafer, S. M., Smith, H.J., Linder, J.C. (2005) *The Power of Business Models*, Business Horizons, Vol. 48 (1): pp. 199–207
- BCG (2009), *Business Model Innovation: When the Game Gets Tough, Change the Game*, N.Y.
- Bereznoy, A. (2015) *Shaping Competitive Landscape Through Business Model Innovation: The New Imperative for Corporate Market Strategy*, Journal of the Knowledge Economy, URL: <http://link.springer.com/article/10.1007/s13132-015-0324-x>

Marketing Innovation

3 credits

Abstract

Marketing Innovation is a 21st century topic with a rapidly developing instrumental framework. In the rapidly changing economic environment and growing interdependence of market players, the market resistance to innovation becomes only stronger. In the process of innovation management, companies sometimes underestimate the role of product marketing and further product development based on anticipated demand. As the market becomes more consumer-centric, the companies face constant challenges to develop new instruments of bringing innovations to market. The course thus provides insights to students how innovative companies can adopt the comprehensive approach to their go-to-market techniques, develop relationship-based marketing instruments, and processes of value co-creation in order to shape consumer experience. The course is designed for master students and is an upper level course. It indicates marketing innovation as the key element of innovation management and justifies the need for companies to respond to changing consumer demands and expectations.

Major sections / topics

- Consumer-centric marketing tools
- Target markets
- Instruments of bringing innovations to market
- Relationship-based marketing instruments
- Value co-creation processes
- Decision making on consumer experience data

Main references/books/readings

- Blank S., Dorf B. (2012) The Startup Owner Manual. The Step-by-Step Guide for Building a Great Company. K and S Ranch Inc.
- Christensen C.M. (2013) The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail (Management of Innovation and Change). Harvard Business Review Press
- Christensen C.M., Raynor M. (2013) The Innovator's Solution: Creating and Sustaining Successful Growth. Harvard Business Review Press
- Constable G., Rimalovski F. (2014) Talking to Humans: Success starts with understanding your customers. Giff Constable

- Cooper B., Vlaskovits P. (2013) *The Lean Entrepreneur: How Visionaries Create Products, Innovate with New Ventures, and Disrupt Markets*. Wiley
- Mauborgne R., Kim W. C. (2015) *Blue Ocean Strategy: How to Create Uncontested Market Space and Make Competition Irrelevant*. Harvard Business Review Press; Expanded edition
- Porter M. (2008) *On Competition*. Harvard Business Review Press; Updated edition
- Slywotzky A. J., Weber K. Demand. (2011) *Creating what people love before they know they want it*. Headline Publishing Group

Supplementary readings

- Drucker P. (1985) *Innovation and Entrepreneurship: Practice and Principles*. Harpercollins
- Gladwell M. (2000) *The Tipping Point: How Little Things Can Make a Big Difference*. Little, Brown and Company
- Govindarajan V., Trimble C. (2010) *The Other Side of Innovation: Solving the Execution Challenge*. Harvard Business Review Press
- Gunther McGrath R., Gourlay A. (2013) *The End of Competitive Advantage: How to Keep Your Strategy Moving as Fast as Your Business*. Harvard Business Review Press
- Keeley L., Walters H., Pikkell R., Quinn B. (2013) *Ten Types of Innovation: The Discipline of Building Breakthroughs*. John Wiley & Sons
- Osterwalder A., Pigneur Y., Bernarda G. (2014) *Value Proposition Design: How to Create Products and Services Customers Want (Strategyzer)*. Wiley
- Prahalad C.K., Krishnan M.S. (2009) *The New Age of Innovation: Driving Cocreated Value Through Global Networks*. McGraw-Hill Education
- Ries E. (2011) *The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses*. Crown Business
- Slywotzky, A. J., Morrison D. J., Andelman B. (1997) *The Profit Zone: How Strategic Business Design Will Lead You to Tomorrow's Profits*. Crown Business
- Stevenson, J. (2011) *Breaking Away. How Great Leaders Create Innovation that Drives sustainable Growth and Why Others Fail*. McGraw-Hill
- Von Hippel E. (1998) *The Sources of Innovation*. Oxford University Press

University Pool Discipline

3 credits

Students have to choose one elective course which is included in the university pool of courses. The Master's Programme "Governance of Science, Technology and Innovation" offers 2 courses which are included in the HSE university pool of courses.

History of Technological Development in Society

Abstract

Humans interact with each other and the world through technology – the use of materials, energy, tools, and complex machines. Technology has been designed and created to serve human needs and desires. Furthermore, technology has itself shaped human co-existence and societies and become a defining feature of human existence.

Taking as a starting point the Western industrial revolution at the end of the 18th century, this course discusses technology as the outcome of particular technical, historical, cultural, and political efforts in Europe, Russia and the US during the 19th and 20th centuries. The focus is on the societal consequences triggered by technological change and the influence of societal change on technological possibilities.

The course discusses several historical examples of technological developments and societal changes, such as the introduction of modern means of communication. It also analyses the emergence of modern management and the creation and development of new professions.

Major sections / topics

- Episodes of technological and societal development in mechanization, communications, electronics, computers, power & energy, and military technology
- Concepts of 'technological lock-in', serendipity-effects and unintended consequences
- Ethical and moral issues associated with technological choices

Main references/books/readings

- Brookey, R.A. (2010) *Hollywood gamers: digital convergence in the film and video game industries*, University of Indiana Press
- Smith, M.R., (ed. 1987) *Military Enterprise and Technological Change: Perspectives on the American Experience*, Cambridge, MA: MIT Press
- Castells, M. (2007) *Communication, Power and Counter-power in the Network Society*, *International Journal of Communication*, Vol 1: pp. 238–266
- Hobsbawm, E.J. (1999) *Industry and Empire: The Birth of the Industrial Revolution*, Penguin Group
- Razlogova, E. (2012) *Listener's Voice: Early Radio and the American Public*, University of Pennsylvania Press, Inc.
- Shome, R., Hegde R. (2002) *Culture, communication, and the challenge of globalization*, *Critical Studies in Media Communication*, Vol. 19 (2): pp. 172–189
- Standage, T. (1999) *The Victorian Internet: The Remarkable Story of the Telegraph and the Nineteenth Century's Online Pioneers*, The Berkeley publishing group

Supplementary readings

- Buckley at al. (2008) *Urbanization and Growth*, World Bank
- Stoneman, P., Battisti, <http://www.sciencedirect.com/science/article/pii/S0169721810020010> – aff2 G. (2010) Chapter 17 – *The Diffusion of New Technology*, *Handbook of the Economics of Innovation*, Volume 2
- Pick, D. (1996) *War Machine: The Rationalization of Slaughter in the Modern Age*, New Haven, CT, Yale University Press
- Birke, D. (2013) *Social Networks and Their Economics: Influencing Consumer Choice*, John Wiley & Sons
- Hacklin, F., Marxt, C., Fahrni, F. (2010) *An evolutionary perspective on convergence: inducing a stage model of inter-industry innovation*, *International Journal of Technology Management*, Vol. 49 (1–3): 220–249

Management of Public Research Institutions (PRI)

Abstract

Public research institutions (PRIs) exist in many different forms around the world. There is a wide variety of different stakeholders involved in such institutions, which implies a broad range of tasks, missions, and objectives. In principle, these institutions are established for the purpose of research and inputs for innovation. The latter varies across PRIs. The course discusses the role and meaning of PRIs for STI. After introducing a typology of PRIs, we discuss different governance models. This is accompanied by methodologies for PRI strategy development, resources allocation, and research management process design and relationship management. These internal management dimensions are complemented by external relationship management which strongly emphasizes knowledge and technology transfer from PRIs. Here the different channels and their respective characteristics for transferring knowledge and technology from PRIs are discussed. The different approaches towards establishing knowledge and technology transfer from these organizations that we investigate include organizational aspects, intellectual property right and contract management related issues, project specifications, and quality assessment.

Major sections / topics

- Institutional organization of public research institutions
- Core activities of PRIs and support functions
- Human resource management in PRIs – development of competences
- Incentive schemes for scientists and researchers in PRIs
- Management of intellectual property for PRIs
- Commercializing research outputs
- Research and exploitation strategies for PRIs

Main references/books/readings

- OECD (2011) *Managing Public Research Institutions: Mapping Sector Trends*, OECD, Paris
- Kulakowski, E. C., Chronister, L. U (2008) *Research Administration and Management*, Jones and Bartletts Publishers International, London
- Jansen, D. (2010) *Governance and Performance in the German Public Research*, Springer

Supplementary readings

- OECD (2013) *Commercializing Public Research — New Trends*, OECD, Paris
- Link, A.N. (1996) *Evaluating Public Sector Research and Development*, Praeger Publishers, Westport

Massive Open Online Courses (MOOCs)

6 credits

Students have to choose two online elective courses from the list of courses prepared by the Master's programme "Governance of Science, Technology and Innovation". The chosen courses should be approved by the academic director and included into the student's study plan. Grades and credits received for the courses are accepted by the programme.

Course work

6 credits

Course work is a mandatory piece of scientific work prepared by all students in the first year of study. It is designed to train students' competences in analysing and structuring specific problems, develop students' capabilities in structured writing and verbal presentation, and in creative thinking. Students define and agree a topic for their course work with their supervisor. Course work results in a written text. The successful completion of the written text with a grade of at least '4' is precondition for admission to an oral defence. The grade for course work is calculated as the sum of the grades for the written text and the oral defence.

Research Seminar

15 credits

The Research Seminar is a significant element of the Master's programme curriculum. It combines traditional educational activities and students' self-initiated and conducted work on selected STI related problems. Students learn to apply and further develop knowledge obtained in courses through the lectures and seminars by undertaking independent research with substantial supervision by experienced researchers.

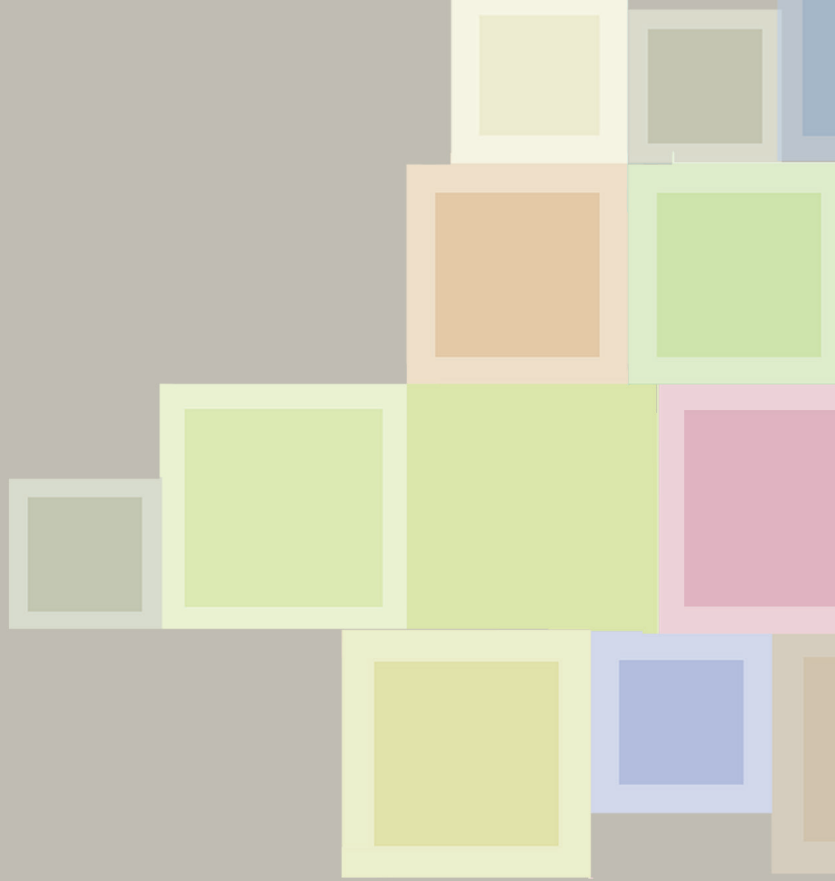
The Research Seminar aims to be a forum for intensive discussion of current ideas, issues and projects in the field of STI, as well as of students' own – both individual and collective – research projects. In addition, the Research Seminar helps to develop students' skills in collaborative research and the promotion of research and publication activities. The topics of the Research Seminar are defined at the beginning of the academic year and usually correspond to ongoing research at NRU HSE ISSEK. The aim is to integrate students in professional research work and give students early stage guidance for publication and communication of their research work.

During the Research Seminar, different methodologies will be applied:

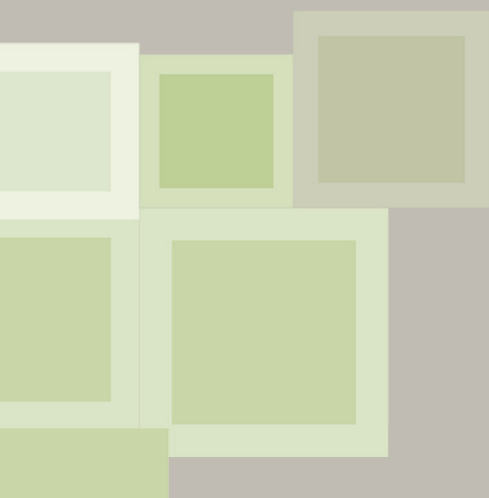
- Guest lectures by renowned experts – both practitioners and scientists
- Interactive discussions
- Students' presentations and discussions
- Essay writing
- Group work for problem solving

Participation in the Research Seminar is mandatory for all students. In the last two modules of year 2, the research seminar will be used as a platform for students to introduce and present their Master's Thesis and discuss the work.

Research work undertaken in seminars and workshops enriches the teaching course work. The Research Seminar puts special emphasis on introducing and training scientific work principles, scientific presentations and discussions. During the Research Seminar, students are trained in work on academic projects, academic writing, presentation skills and essay and thesis preparation in the first module. In subsequent modules, students carry out independent research tasks and write an essay in each module. Essay writing is complemented by presentations of the essay and discussion among the students. The Research Seminar will also be used as a forum for students to introduce their experiences of the internship programme, how their internship is relevant to STI, and the potential for further academic work.



INTERNSHIP & MASTER'S THESIS



Internship

15 credits

The Internship is an integral element of the programme during which the students learn to apply knowledge gathered in lectures and seminars. The internship lasts at least 360 working hours equal to 15 credits. At the beginning of the internship students define one or more projects with direct relevance to the courses included in the Master's Programme. The student and the organization hosting the student as intern jointly develop an internship programme, which needs to be approved by the internship council. After the internship, students prepare a report about the major achievements during the internship and the competences acquired. This report is the basis for giving credits to the students. The internship is run by the hosting organization and the student. During the period of internship the department provides consultation for students by assigned supervisor. The supervisor and the programme director might undertake occasional visits to the hosting organization. In addition to applying knowledge learned, students are expected to detect problems and challenges faced by the hosting organization which are relevant to the field of study and introduce these in seminars during the programme.

The goals of the internship are the practical use of theoretical knowledge, the practical experience of environments where such projects are practised in daily operations, and the identification of research needs in the internship host organization. These goals are designed to stimulate students' research on the Master's thesis and HSE research activities.

Students are expected to work on dedicated projects with direct relevance to their chosen field of specialization. Projects have to be described and approved before the internship, including the objectives, aim(s) and approach to be taken. After the internship, a report must be prepared which shows how the project work was done and what results were achieved.

Master's Thesis

24 credits

The Master's Thesis is students' own independent piece of scientific work accomplished in the 2nd half of the 2nd year of study. Students are offered different topics to choose from by faculty members. Alternatively, students may propose their own topics to faculty members who should approve the topic. Each student receives individual supervision when preparing their Master's Thesis. Overall, students are given 6 months to complete the Master's Thesis. This period may be extended on the grounds and according to the procedures described in the Programme Regulations.

Students can prepare the Master's Thesis internally at NRU HSE ISSEK or at a firm, in a government institution, international organization, or a special university. Master's Theses that are prepared with an external organization are jointly supervised by a NRU HSE ISSEK faculty member and a second supervisor appointed by the external organization. The Master's Thesis might also be prepared under student exchange agreements or double degree agreements recognized by the programme.

The written thesis should be approximately 60 pages text including references but excluding annexes. Successfully completed written theses are stored and made publicly available. A dedicated online series for Master's thesis will be installed at NRU HSE ISSEK.

A written thesis graded as 'failed' can be repeated. If the written thesis is repeated, another topic must be chosen and approved. Repetition of the written thesis is allowed twice. If the written thesis fails on the second attempt, it cannot be repeated and the student is not considered to fulfil the requirements for obtaining the degree.

During preparation of the Master's Thesis, students are obliged to attend the weekly Research Seminar. In the Research Seminar, each student will introduce the theme of their Master's Thesis at the beginning of the module, present interim results at the end of module 3 and/or at the beginning of module 4, and give a presentation of final results at the end of module 4.

Each Thesis is complemented by an oral defence. The defence typically involves a 30 minute presentation of the Thesis by the student and discussion with the supervisor. The defence is open to the public to attend. Successfully passing the written thesis with a grade of no less than '4' is precondition for admission to oral defense.

The Master's Thesis and the oral defence are graded separately. The overall grade for the Master's Thesis is calculated as the equally weighted sum of the written thesis and the defence. The defence is conducted within four weeks after submission and approval of the written thesis.

In cases where the written thesis is prepared at NRU HSE ISSEK, the internal supervisor will propose a second examiner of the defence who is a member of the Programme Faculty. A defence considered failed can be repeated twice. If the defence is repeated, another topic is given by the examiners. The new topic has to be in the field of the written thesis topic. If the second repeated defence is graded a 'fail', it cannot be repeated and the student is not considered to fulfil the requirements for obtaining the degree.