

**Федеральное государственное автономное образовательное учреждение
высшего профессионального образования
"Национальный исследовательский университет
"Высшая школа экономики"**

Институт статистических исследований и экономики знаний

Программа дисциплины
«Управление государственными научными организациями»
для направления 38.04.02 «Менеджмент» подготовки магистра

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Management of Public Research Institutions

1. Introductory note

Program authors: Dirk Meissner

General Description of the Program:

The course is delivered to master students. It is a part of general scientific curricula unit, and it is delivered in modules. The course length is **114** academic hours in total of which **30** hours are class room hours and **84** are devoted to self study.

Academic control forms are one written exam and one essay.

Course Objective

The course spans 1 academic module. Students are assessed with a written exam. The teaching is based on selected writings and experiences of faculty members. In addition selected reputed scholars and experts are invited bringing together views from different perspectives on the meaning of intellectual property for science, technology and innovation to provide in-depth learning opportunities for all students.

Lectures are designed to deliver theoretical frameworks and international experiences. The course is accompanied by a seminar, and some sessions will feature additional foreign experts. Accompanying seminars introduce and develop new approaches to understand and further develop different facets of innovation thinking and to provide participants with ready to use state of the art knowledge as well as academic training.

Course Language: English.

Abstract

Public research institutions exist in many different shapes. There is a widespread of different stakeholders involved in such research institutions imposing a broad range of their tasks, missions and objectives. In principle these institutions are established for the purpose of research and a contribution to innovation. The latter varies between the different institutions. The course will discuss the role and meaning of public research institutions for STI. After introducing a typology of PRIs different models for their governance will be discussed. 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 PRI. Here the different channels and their respective characteristics for transferring knowledge and technology from PRI will be discussed. Approaches towards establishing knowledge and technology transfer from these organizations discussed including organizational aspects, intellectual property right and contract management related issues, project specifications and quality assessment.

Training Objectives

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

Target audience

- Master students

2. Thematic Plan

a) Lectures

Module	Topic	Course hours, total
Characteristics of PRIs	Institutional models of PRIs	4
	Organizational models of PRIs	4
	Strategic planning of R&D&I in PRIs	2
	<i>total</i>	<i>10</i>
Human Resource management	Human resource management in PRI – development of competences	2
	Knowledge management at PRIs	2
	<i>total</i>	<i>4</i>
Creating impact and evaluation	Research cooperation and technology transfer in PRIs	2
	Research evaluation and performance measurement for PRI	4
	<i>total</i>	<i>6</i>
	total	20

a) seminars

The seminar consists of an introductory session which highlights the phenomena in discussion, introduces the theoretical background and practical applicability. Following introductory session students will develop a practical applicable concept for a given problem which is based on sound scientific grounds. The session ends with the introduction of core themes for which the students are asked to prepare a presentation. Finally these concepts are introduced in a concluding session which is devoted to presentations of concepts developed by students and a concluding discussion of these concepts from both a scientific and a practical view. Students will develop concepts in teams and be supervised during development of their concepts

Topic	Total academic hours
Introductory presentation	4
Presentations	6
Total	10

3. Basic literature

- OECD (2011): Managing Public Research Institutions: Mapping Sector Trends. OECD, Paris 2011
- OECD (2013) Commercializing Public Research — New Trends. OECD, Paris.

- Elliott C. Kulakowski, Lynne U. Chronister (2008): *Research Administration and Management*. Jones and Bartletts Publishers International London 2008
- Dorothea Jansen (2010): *Governance and Performance in the German Public Research*. Springer 2010
- Albert N. Link (1996): *Evaluating Public Sector Research and Development*. Praeger Publishers, Westport 1996
- Allen T.J. (1984): *Managing the Flow of Technology: Technology Transfer and the Dissemination of Technological Information within the R&D Organization*. The MIT Press 1984

4. Education control forms

Final control (F): written exam (60 minutes)

Seminar (S): Oral presentation at the end of the seminar.

The overall course grade (10-point scale) is calculated as a sum of

$$G = 0,5 F + 0,5 S$$

The overall course grade G (10-point scale) includes results achieved by students in their exam F , seminar (S); it is rounded up to an integer number of points.

Summary Table: Correspondence of ten-point to five-point system's marks

Ten-point scale [10]
1 – unsatisfactory 2 – very bad 3 – bad
4 – satisfactory 5 – quite satisfactory
6 – good 7 – very good
8 – nearly excellent 9 – excellent 10 – brilliant

6 Programme Contents

Module 1 - Characteristics of PRIs

Topic 1 Institutional models of PRIs

Topic outline:

- Science, technology and innovation targeted PRI
- PRI and universities – complementarities and / or competition
- Structure of PRI associations – holdings and individual PRI
- Characteristics of PRI according to STI field
- National and multinational PRI

Main references/books/reading:

- Joly P.B.; Mangematin V. (1996): Profile of public laboratories, industrial partnerships and organisation of R & D: the dynamics of industrial relationships in a large research organization. Research Policy, Volume 25, Issue 6, September 1996, Pages 901–922
- OECD (2011): Managing Public Research Institutions: Mapping Sector Trends. OECD, Paris 2011

Topic 2 Organizational models of PRIs

Topic outline:

- Organizational models
- Reporting duties and freedom of research
- Organizational aspects of cooperation with external partners

Main references/books/reading:

- Arora A.; Belenzon S. , Rios L.A. (2011): The Organization of R&D in American Corporations: The Determinants and Consequences of Decentralization. NBER Working Paper No. 17013 Issued in May 2011
- Gassmann O.; von Zedwitz M. (1999): New concepts and trends in international R&D organization. Research Policy. Volume 28, Issues 2–3, March 1999, Pages 231–250
- Joly P.B.; Mangematin V. (1996): Profile of public laboratories, industrial partnerships and organisation of R & D: the dynamics of industrial relationships in a large research organization. Research Policy, Volume 25, Issue 6, September 1996, Pages 901–922

Topic 3 Strategic planning at PRIs

Topic outline:

- priority setting for RDI
- top-down and bottom-up strategy making
- budget allocation to priority fields of RDI

Main references/books/reading:

- Ernst H. (1998): Patent portfolios for strategic R&D planning. Journal of Engineering and Technology Management, Volume 15, Issue 4, September 1998, Pages 279–308

- Frohman, A. L. (1985). Putting Technology Into Strategic Planning. *California Management Review*, 27(2), 48-59.
- Liu S.-J.; Shyu J. (1997): Strategic planning for technology development with patent analysis. *International Journal of Technology Management*. Volume 13, Issue 5, pp 661- 680
- Madey, G. R.; Dean, B. V. (1985): Strategic planning for investment in R&D using decision analysis and mathematical programming. *Engineering Management, IEEE Transactions on* Volume:EM-32, Issue: 2
- Scott, G. M. (2001), Strategic planning for technology products. *R&D Management*, 31: 15–26. doi: 10.1111/1467-9310.00193
- Steine G.A. (1979): *Strategic Planning. What Every Manager Must Know*. The Free Press, New York 1979

Module 2 - Human Resource management

Topic 1 Human resource management in PRI – development of competences

Topic outline:

- professional development for PRI staff
- professional duties and freedom of research
- Conflict of interest - publication vs secrecy for contract research

Main references/books/reading:

- Laursen K., NJ Foss N.J. (2003): New human resource management practices, complementarities and the impact on innovation performance. *Camb. J. Econ.* (2003) 27 (2): 243-263. doi: 10.1093/cje/27.2.243
- McNay I. (2007): Research Assessment; Researcher Autonomy, in Carole Kayrooz, Gerlese S. Åkerlind, Malcolm Tight (ed.) *Autonomy in Social Science Research (International Perspectives on Higher Education Research, Volume 4)*, Emerald Group Publishing Limited, pp.183-216
- Robert K. (1994): The transition into management by scientists and engineers: A misallocation or efficient use of human resources? *Human Resource Management*, Volume 33, Issue 4, pages 561–579, Winter 1994
- Soliman F., Spooner K. (2000): Strategies for implementing knowledge management: role of human resources management, *Journal of Knowledge Management*, Vol. 4 Iss: 4, pp.337 – 345
- Thomas J. Allen T.J.; Katz R. (1995): The project-oriented engineer: A dilemma for human resource management. *R&D Management*, Volume 25, Issue 2, pages 129–140, April 1995
- Yahya S., Goh, W.K. (2002): Managing human resources toward achieving knowledge management, *Journal of Knowledge Management*, Vol. 6 Iss: 5, pp.457 – 468

Topic 2 Knowledge management at PRIs

Topic outline:

- Design and implementation of Knowledge Management Systems
- Structuring and storing Knowledge

- Staff incentives for knowledge codification

Main references/books/reading:

- Rubenstein-Montano, Bonnie, et al. "A systems thinking framework for knowledge management." *Decision support systems* 31.1 (2001): 5-16.
- Von Krogh, Georg, Johan Roos, and Dirk Kleine, eds. *Knowing in firms: Understanding, managing and measuring knowledge*. Sage, 1998.
- Kasvi, Jyrki JJ, Matti Vartiainen, and Milla Hailikari. "Managing knowledge and knowledge competences in projects and project organisations." *International Journal of Project Management* 21.8 (2003): 571-582.
- Bock, Gee-Woo, et al. "Behavioral intention formation in knowledge sharing: Examining the roles of extrinsic motivators, social-psychological forces, and organizational climate." *MIS quarterly* (2005): 87-111.
- Disterer, Georg. "Management of project knowledge and experiences." *Journal of Knowledge Management* 6.5 (2002): 512-520.

Module 3 - Creating impact and evaluation

Topic 1 Research cooperation and technology transfer in PRIs

Topic outline:

- IPR portfolio building
- Employee IPR competences

Main references/books/reading:

- Chapter 8 (Mowery) in Jan Fagerberg, David Mowery, and Richard Nelson (eds) *The Oxford Handbook of Innovation* Oxford: Oxford University Press, 2004
- Institute of Innovation Research, 2003, *Knowing How, Knowing Whom: A Study of the Links between the Knowledge Intensive Services Sector and The Science Base* ,
- IOIR; Report to the Council for Science and Technology available at: <http://www.cst.gov.uk/cst/reports/files/knowledge-intensive-services/services-study.pdf>
- X. Peng 2006, University spin-offs: Opportunity or challenge?, *Nature Materials* 5, 923 - 925 at: <http://www.nature.com/nmat/journal/v5/n12/full/nmat1790.html>

Topic 2 Research evaluation and performance measurement for PRI

Topic outline:

- indicator and measurement systems
- use and interpretation of performance indicators
- benchmarking and comparison of PRI

Main references/books/reading:

- Argyres N.S.; Silverman B.S.(2004): R&D, organization structure, and the development of corporate technological knowledge. *Strategic Management Journal*, Special Issue: The Global Acquisition, Leverage, and Protection of Technological Competencies, Volume 25, Issue 8-9, pages 929–958, August - September 2004

- Joly P.B.; Mangematin V. (1996): Profile of public laboratories, industrial partnerships and organisation of R & D: the dynamics of industrial relationships in a large research organization. *Research Policy*, Volume 25, Issue 6, September 1996, Pages 901–922