National Research University Higher School of Economics

Course Syllabus for
Foresight

<div align="right">

Approved by

Academic Council

of the Master's Programme

Minutes AC2

</div>

Developer	Dr. Ozcan Saritas Professor, Institute for Statistical Studies and Economics of Knowledge
No. of credits	6
Contact hours	64
Independent study (hours)	164
Year of study, degree programme	Master's programme "Governance of Science, Technology and Innovation" 1st year, 4th module, compulsory
Study format	No use of on-line courses

Abstract

Foresight is the Art and Science of anticipating and shaping the future. It is the first and key step of innovation in a fast changing world. A number of international organizations, national and regional governments as well as leading corporations have used Foresight to monitor trends, uncertainties, weak signals and wild cards; explore alternative futures under complexity and uncertainty; build future visions; identify key scientific and technological areas; develop new products and services; and recommend policies and strategies. This course aims to theoretical background as well as quantitative and qualitative methods like horizon scanning, big data analysis, scenario planning, prioritization, Delphi surveys, strategic and technological roadmaps among the others. The course will involve practical and hands on sessions to allow students to gain practical experience by 'learning by doing'.

1. Objectives, Results and Pre-requisites

Learning Objectives

This course aims to provide an overview of Foresight and Strategic Planning. The course introduces several key approaches used both in Foresight and Strategic Planning in a complementary stance, including methods for scanning environments, identifying trends and drivers of change with weak signals and wild cards, developing future scenarios and visions and making long, medium and short term strategic plans for identifying priorities and actions. During the course, innovative ways of decision-making and STI policy formulation; STI strategy- and priority-setting; and cooperation and networking with stakeholders will be introduced. Through seminars, students will also be provided with practical experience in designing Foresight and Strategic Planning processes for public and private organizations.

Expected Learning Outcomes (ELO)

This course will be organized as a combination of lectures and seminars. Lectures will be both (i) informatory with the aim of giving background information and raising awareness on the topic and (ii) participative and interactive with the aim of building capacity on how to implement the theory of Foresight in practice at the international, national, corporate and sectoral/thematic levels. During the lectures, students will have an opportunity to apply and practice what they learned through hands-on practical exercises. Students will be given tasks during seminars, which will help them to gain an in depth knowledge on the topic. Overall, students will gain the following competences:

- Develop and apply quantitative and qualitative methods for Foresight
- Analyze emerging trends, drivers of change, weak signals and wild cards
- Explore alternative scenarios for the future
- Develop Strategic and Technological Roadmaps
- Recommend policy and strategy for public and private organizations

Pre-requisites

- Awareness of qualitative and quantitative research methods

- Creative and critical thinking
- Ability to work in teams

2. Course Contents

Chapter	Topic (course section)	Total hrs[1] (LC/SW)	ELO to be assessed	Assessment formats
Introduction	Introduction to the course	2	-	-
		0		
1. Theory and concepts of Foresight and Strategic Planning	Background, rationales and key concepts for Foresight and Strategic Planning	6	- Ability to build necessary theory, argumentation and practice of using Foresight and Strategic planning at the national, regional and corporate levels	- Individual assignment - Final exam with multiple choice and essay questions
		25		
	Objectives and Processes of Foresight and Strategic Planning	10		
		25		
2. Methods of Foresight and Strategic Planning	Quantitative and Qualitative methods for Foresight and Strategic Planning	8	- Ability to use quantitative and qualitative approaches, processes and methods in a practical case study	- In class performance - Group presentations - Final exam with multiple choice and essay questions
		20		
	Gathering Intelligence for emerging trends, technologies and markets	8		
		20		
	Planning alternative futures and scenarios	8		
		20		
	Priority setting and strategy development	8		
		20		
	Generating outputs and outcomes from Foresight and Strategic Planning	8		
		20		
	Linking Foresight and Strategic Planning to Policies and Actions	6		
		14		
	Hours for types of classes:	64		
		164		
	Total hours	**228**		

Course formats:
LC – lectures;

---

[1] Leave blank for syllabi, which are not part of a degree programme curriculum and not planned for a schedule

SM - seminars/practical courses/ laboratory work;

Onl. –online lectures and other Internet courses;

SW – student independent work.

Course section contents:

Topic 1: Introduction to the course

Basic guidelines and requirements of the course. Schedule and deadlines. Academic control. Criteria for written papers evaluation.

No readings are required

Topic 2: Background, rationales and key concepts for Foresight and Strategic Planning

Introduction to Foresight and Strategic Planning. Rationales of Foresight and Strategic Planning. Key concepts and approaches in Foresight and Strategic Planning.

Required readings

- Miles, I., Saritas, O. and Sokolov, A. (2016). Foresight for Science, Technology and Innovation, Springer Verlag, Berlin.

Optional readings

- Meissner, D., Gokhberg, L. and Sokolov, A. (eds.) (2013). Science, Technology and Innovation Policy for the Future: Potentials and Limits of Foresight Studies, Springer Verlag, Berlin.

Topic 3: Objectives and Processes of Foresight and Strategic Planning

Uses of Foresight and Strategic Planning. Foresight in the STI policy processes. Strategic Planning in corporate management processes. Key functions and roles of Foresight and Strategic Planning.

Required readings

- Loveridge, D. (2009). "Foresight: The art and science of anticipating the future", Routledge, New York and London.
- Simerson, K.B. (2011). Strategic Planning: A Practical Guide To Strategy Formulation and Execution: A Practical Guide To Strategy Formulation And Execution, Abc-clio.

Optional readings

- Martin, B.R. (1995). Foresight in Science and Technology, "Technology Analysis and Strategic Management", vol. 7, 2, 139-168.

Topic 4: Quantitative and Qualitative methods for Foresight and Strategic Planning

Methodology for STI Policy Foresight and Strategic Planning. Key quantitative and qualitative methods for Foresight and Strategic Planning.

Required readings

- Saritas, O., & Burmaoglu, S. (2015). The evolution of the use of foresight methods—A scientometric analysis of global research output for cutting-edge FTA approaches. Scientometrics, 105(1), 497–508.
- Saritas, O. (2013). Systemic Foresight Methodology, in Science, Technology and Innovation Policy for the Future: Potentials and Limits of Foresight Studies, D. Meissner, L. Gokhberg, and A. Sokolov and eds. Springer Verlag, Berlin, pp.83-117.
- Miles, I., Saritas, O. and Sokolov, A. (2016). Foresight for Science, Technology and Innovation, Springer Verlag, Berlin.

Optional readings

- Daim, T.U., Chiavetta, D., Porter, A.L. and Saritas, O. (eds.) (2016). Anticipating Future Innovation Pathways through Large Data Analysis, Springer Verlag, Berlin.

Topic 5: Gathering Intelligence for emerging trends, technologies and markets

Competitive, technology and market intelligence and trend monitoring. Identification of emerging and disruptive technologies. Planning for emerging technologies.

Required readings

- Saritas, O., & Smith, J. (2011). The big picture—Trends, drivers, wild cards, discontinuities and weak signals. Futures, 43(3), 292–312.
- Saritas, O. (2016). Integration of Trend Monitoring into STI Policy and Strategy, Deploying Foresight for Policy and Strategy Makers: Turning Grand Challenges into Grand Opportunities through Science, Technology and Innovation, , eds, L. Gokhberg, D. Meissner, and A. Sokolov, Springer Verlag, Berlin, pp.11-32.
- OECD (2016), OECD Science Technology and Innovation Outlook 2016, OECD Publishing, Paris. http://dx.doi.org/10.1787/sti_in_outlook-2016-en

Optional readings

- OECD (2018), OECD Science, Technology and Innovation Outlook 2018: Adapting to Technological and Societal Disruption, OECD Publishing, Paris.
- Sokolova, A., Mikova, N., Saritas, O. et al. (2016). Global Technology Trends, eds. L. Gokhberg, O. Saritas, A. Sokolov, and A. Sokolova, A report published by National Research University, Higher School of Economics, Moscow.

Topic 6: Planning alternative futures and scenarios

Processes of scenario planning and vision development. Case examples on selected scenarios and vision building processes. Positioning of scenarios in STI strategy and policy making processes.

Required readings

- Miles, I., Saritas, O. and Sokolov, A. (2016). Foresight for Science, Technology and Innovation, Springer Verlag, Berlin.

Optional readings

- Ringland, G. (1998). Scenario planning: Managing for the future. Chichester: Wiley.
- Saritas, O., & Nugroho, Y. (2012). Mapping issues and envisaging futures: An evolutionary scenario approach. Technological Forecasting & Social Change, 79(3), 509–529.

Topic 7: Priority setting and strategy development

Assessment and prioritization of alternative STI strategies. Approaches and methods used for the prioritization process. Roadmapping for action plan development.

Required readings

- Saritas, O., & Aylen, J. (2010). Using scenarios for roadmapping: The case of clean production. Technological Forecasting & Social Change, 77(7), 1061–1075.

Optional readings

- Saritas, O., & Oner, M. A. (2004). Systemic analysis of UK foresight results: Joint

application of integrated management model and roadmapping. Technological Forecasting & Social Change, 71(1–2), 27–65.

Topic 8: Generating outputs and outcomes from Foresight and Strategic Planning

Generating outputs and outcomes of Foresight and Strategic Planning. Evaluating Foresight and Strategic Planning studies.

Required readings

- Miles, I. (2012). Dynamic foresight evaluation. Foresight, 14(1), 69–81.
- Georghiou, L., & Keenan, M. (2006). Evaluation of national foresight activities: Assessing rationale, process and impact. Technological Forecasting and Social Change, 73, 761–777.
- Borch, K., Dingli, S.M. and Jorgensen, M.S. (2013). Participation and Interaction in Foresight: Dialogue, Dissemination and Visions, Edward Elgar, Cheltenham.

Optional readings
- Georghiou, L., & Keenan, M. (2008). Evaluation and impact of foresight. In L. Georghiou, J. Cassingena Harper, M. Keenan, I. Miles, & R. Popper (Eds.), The handbook of technology foresight. Cheltenham: Edward Elgar.

Topic 9: Linking Foresight and Strategic Planning to Policies and Actions

Linking Foresight to decisions, strategies and policies. Embedding Foresight and Strategic Planning in organisations. Creating a culture of Foresight and Strategic Planning.

Required readings

- Saritas, O. (2016). Integration of Trend Monitoring into STI Policy and Strategy, Deploying Foresight for Policy and Strategy Makers: Turning Grand Challenges into Grand Opportunities through Science, Technology and Innovation, , eds, L. Gokhberg, D. Meissner, and A. Sokolov, Springer Verlag, Berlin, pp.11-32.
- Phaal, R., Farrukh, C. J. P., & Probert, D. R. (2004). Technology roadmapping—A planning framework for evolution and revolution. Technological Forecasting and Social Change, 46(7–8), 1071–1080.

Optional readings

- Miles, I. (2013). Interactive impacts—Foresight as a product, service and coproduction process. In D. Meissner, L. Gokhberg, & A. Sokolov (Eds.), Science, technology and

innovation policy for the future: Potentials and limits of foresight studies (pp. 60–82). Berlin: Springer.

3. Assessments

Final control (F): written exam (60 minutes multiple choice exam + a short essay)

Presentation (P): An oral presentation of the practical Foresight study performed as a group of students

Home Assignment (H): Performed by each student individually

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

$G = 0.4\,F + 0.3\,P + 0.3\,H$

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

4. Resources

The list of required and optional publications is to be found in Course Contents as distributed between the topics covered by the course. Students are recommended to use HSE e-Library to access the publications. Also all the materials can be uploaded from LMS.

No specialized software or equipment is required.

5. Organization of Studies for Persons with Limited Mobility and Disabilities

If necessary, learners with limited mobility or a disability (as per his/her application), as well as per his/her individual rehabilitation programme, may be offered the following options for receiving learning information with due consideration of his/her individual psycho-physical needs (e.g., via eLearning studies or distance technologies):

- for persons with impaired vision: enhanced fonts in hard copy documents; e-documents; audio files (transfer of study materials to an audio-format); hard copy documents with the use of Braille; individual consultation with a facilitated communicator; individual assignments and mentoring;
- for persons with hearing impairments: in hard copy; e-documents; video materials with subtitles; individual consultation with a facilitated communicator; individual assignments and mentoring;
- for persons with a muscular-skeleton disorder: in hard copy; e-documents; audio-files, individual assignments and mentoring.