GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject name and code	*Sociology of Quantification: Models at the Policy Interface*		
Field of study	----------		
Date of commencement of studies	February 2026	Academic year of realisation of subject	2025/2026
Education level	Master's degree	Subject group	Humanistic-social science subject
Mode of study	Full-time study	Mode of delivery	E-learning
Year of study	Second	Language of instruction	English
Semester of study	Summer	ECTS credits	2
Learning profile	General academic	Assessment form	Assessment
Conducting unit	*Faculty of Management and Economics*		
Name and surname of lecturer (lecturers)	Subject supervisor	*dr Samuele Lo Piano*	
	Teachers	*dr Samuele Lo Piano*	

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30	0	0	0	0	30
E-learning hours included: 30						
eNauczanie PG source addresses: *<Addresses of e-learning sources on eNauczanie PG or other e-learning platforms>*						

Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
Number of study hours	30	2	18	50

Subject objectives

The primary objective of this course is to equip master's students with a critical sociological understanding of **quantification** processes, particularly how **models** are constructed, deployed, and contested at the **policy interface**. Students will learn to analyze the social, political, and ethical implications of using quantitative models (e.g., in climate change, public health, or economic forecasting) to inform governance and decision-making, with a focus on issues of **uncertainty, ignorance,** and the **post-normal science** strategy.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_K71] is able to explain the need to apply knowledge from humanistic, social, economic or legal sciences in order to function in a social environment	*The student can propose sociologically informed interventions or governance mechanisms to improve the transparency and accountability of models used in public policy, particularly in contexts of high stakes and high uncertainty.*	*[SK5] Assessment of ability to solve problems that arise in practice*
[K7_W71] has general knowledge in humanistic, social, economic or legal sciences, including their fundamentals and applications	*The student can articulate the core theoretical concepts of the sociology of quantification (e.g., 'performativity', 'data power') and the principles of post-normal science and its relevance to contemporary policy challenges*	*[SW1] Assessment of factual knowledge*
[K7_U71] is able to apply knowledge from humanistic, social, economic or legal sciences in order to solve problems	*The student is able to critically analyze a policy-relevant quantitative model, identifying its underlying assumptions, social biases, political effects, and performing a conceptual sensitivity auditing*	*[SU3] Assessment of ability to use knowledge gained from the subject*

Subject contents

- ***Introduction to the Sociology of Quantification (4 hrs):*** *Defining quantification; historical and theoretical foundations (e.g., Foucault, Hacking, Porter). The shift from statistics to data and algorithms.*
- ***The Social Life of Models and Post-Normal Science (6 hrs)****: The construction of models as social objects; boundary work between science and policy; model validation, calibration, and uncertainty. Introduction to post-normal science (Funtowicz & Ravetz) and the role of sensitivity auditing. Case studies: climate models, epidemiological models.*
- ***Quantification and Governance (6 hrs)****: The role of metrics, indicators, and rankings in public administration. Governing by numbers; the politics of evidence-based policy. Focus on audit cultures and performance management.*
- ***Data Power and Algorithmic Governance (6 hrs):*** *Critical perspectives on 'big data' and AI in policy. Bias, fairness, and discrimination in algorithmic decision-making systems (e.g., predictive policing, welfare allocation).*

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<tr><td></td><td colspan="3">- Contestation, Accountability, and the Honest Broker (6 hrs): Public resistance to quantification; data activism and counter-metrics. The role of the scientist in policy (Pielke's 'Honest Broker'). Mechanisms for model accountability, transparency, and ethical oversight (Saltelli, Sarewitz).
- Conclusion and Future Directions (2 hrs): Synthesis of key themes; emerging areas in the sociology of quantification (e.g., platform governance, digital sovereignty)</td></tr>
<tr><td></td><td colspan="3"><Subject contents Tutorial> N.A.</td></tr>
<tr><td></td><td colspan="3"><Subject contents Laboratory> N.A.</td></tr>
<tr><td></td><td colspan="3"><Subject contents Project> N.A.</td></tr>
<tr><td></td><td colspan="3"><Subject contents Seminar> N.A.</td></tr>
<tr><td>Prerequisites and co-requisites</td><td colspan="3">Prerequisites: Basic knowledge of sociological theory and research methods. Familiarity with the policy-making process is beneficial.

Co-requisites: None.</td></tr>
<tr><td>Assessment methods and quantitative criteria</td><td>Subject passing criteria</td><td>Passing threshold</td><td>Percentage of the final grade</td></tr>
<tr><td></td><td>Submission of a 4,000-word critical analysis of a policy model. Must demonstrate clear application of course concepts, including model assumptions and conceptual sensitivity.</td><td>60%</td><td>75%</td></tr>
<tr><td></td><td>15-minute presentation of the critical analysis developed.</td><td>60%</td><td>25%</td></tr>
<tr><td>Recommended reading</td><td>Basic literature</td><td colspan="2">1. Porter, Theodore M. (1995). Trust in Numbers: The Pursuit of Objectivity in Science and Public Life. Princeton University Press.
2. O'Neil, Cathy (2016). Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy. Crown.
3. Funtowicz, Silvio O., and Jerome R. Ravetz (1993). "Science for the Post-Normal Age." Futures 25(7): 739-755.
5. Pielke Jr., Roger A. (2007). The Honest Broker: Making Sense of Science in Policy and Politics. Cambridge University Press.
6. Espeland, Wendy N., and Michael Sauder (2007). "Rankings and Reactivity: How Public Measures Reconfigure Social Worlds." American Journal of Sociology 113(1): 1-40.
7. Zuboff, Shoshana (2019). The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power. PublicAffairs. (Selected chapters)
8. Saltelli, Andrea, et al. (2020). "Five ways to ensure that models serve society: a manifesto." Nature 582: 482-484.
9. Sarewitz, Daniel (2016). "The pressure to publish pushes down quality." Nature 533: 147.
10. Jasanoff, Sheila (2004). States of Knowledge: The Co-Production of Science and Social Order. Routledge.
11. Saltelli, Andrea, and Silvio Funtowicz (2014). "When all models are wrong." Issues in Science and Technology 30(2).</td></tr>
<tr><td></td><td>Supplementary literature</td><td colspan="2">Relevant academic journals (e.g., Science, Technology, & Human Values, Social Studies of Science, Futures).

Policy reports from organizations like the OECD, UN, EU, or specific national bodies focusing on digital governance and AI ethics.</td></tr>
<tr><td></td><td>eResources addresses</td><td colspan="2"><eResources addresses> Forthcoming</td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="3">Example Issue: Analyze the social and political consequences of using predictive risk models in the criminal justice system (e.g., COMPAS algorithm), considering the high stakes and high uncertainty of the policy context (Post-Normal Science).

Example Question: How does the pursuit of objectivity through quantification paradoxically introduce new forms of subjectivity and political contestation into policy-making? Discuss this in light of Pielke's typology of science-policy roles.

Example Task: Develop a short policy brief arguing for or against the use of a specific public health model (e.g., an infectious disease model) in setting lockdown measures, incorporating sociological critiques of its assumptions and performing a conceptual sensitivity auditing.</td></tr>
<tr><td>Practical activities within the subject</td><td colspan="3"><Work placement> N.A.</td></tr>
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