

HPSC0042 – Advanced Sociology of Science (Sociology of quantification) Course Syllabus

2024-25 session | Dr. Tiago Mata | t.mata@ucl.ac.uk

Course description

Numbers are everywhere. Statistics, indexes, indicators, scores govern public and private bureaucracies. The digital inscriptions of wearable and domestic devices generate data on our fitness, metabolism, leisure habits and viral exposures to empower projects of self-actualization. We not only live with numbers, we live by them, at work and at play. For over forty years, scholars in the social sciences and humanities have studied how numbers govern us and the consequences of their dominion. Drawing from concepts and lessons of science studies and economic sociology students will learn how to ask questions of numbers. What are their politics? How do we open the black box of commensuration? How can numbers be made accountable?

Basic course information

Moodle Web site:	https://moodle.ucl.ac.uk/course/view.php?id=43024
Assessment:	Essay 1, 1000 words 25%; Essay 2, 2000 words 75%
Timetable:	Wednesdays, 11 to 1, Rockefeller Building 337 David Sacks
Prerequisites:	No pre-requisites.
Required texts:	Readings listed below.
Course tutor(s):	Tiago Mata
Contact:	t.mata@ucl.ac.uk
Office location:	22 Gordon Square, room 2.4
Office hours:	Fridays, 11-12; online by email appointment

Schedule

UCL Week	Week beginning	Topic	Activity
6	2 Oct	Introduction, literatures and problems	Discuss weekly reading.
7	9 Oct	Accounting and science	Discuss weekly reading. Look at primary source.
8	16 Oct	Averaging nature	Discuss weekly reading. Debate.
9	23 Oct	Calculating risk and profit	Discuss weekly reading. Survey and discussion.
10	30 Oct	Finance and futures	Discuss weekly reading. Look at primary source.
12	6 Nov	Reading Week	
11	13 Nov	States and war	Discuss weekly reading. Debate.
13	20 Nov	Inequality and IQ	Discuss weekly reading. Look at media source.
14	27 Nov	SDGs and global government	Discuss weekly reading. Review.
15	4 Dec	HE and reputation	Discuss weekly reading. Survey and discussion.
16	11 Dec	Algorithms	Discuss weekly reading. Debate.

Aim

To develop an understanding of how numbers (statistics, indicators, accounting regimes) govern modern life, from global government and big science to our private lives.

Objectives

By the end of this module students should

- (1) have an understanding of how numbers do political work, i.e. numbers organize relationships that are typically asymmetric, and numbers intervene as actors in relationships;

- (2) have a detailed knowledge of the main theories and concepts in the sociology of quantification and commensuration;
- (3) be aware of the interconnections between science, expertise and metrologies that often extend far beyond science;
- (4) be able to link the sociology of science with critical perspectives on the sociology of numbers.

Assessments (summary, see below for more details)

Type	Description	Deadline	Word limit
Essay	The politics of a statistic	13 November, 5 pm	1000
Essay	SDG indicators: a study in commensuration	4 December, 5 pm	2000

Format of classes

The classes for this module will be a hybrid of lectures and seminars. The classes blend passive and active learning situations. In the lecture parts the readings of the week will be set against a broader analytical context and connections will be made across the weeks' themes. In the seminar portions of our meetings we will do activities that rely on the week's reading. It is therefore key that students come prepared with notes on the essential readings to fully grasp the lecture component of the meetings and to participate in the activities.

We will also reserve time each week to answer questions about the module's "additional" readings and the larger issues in the sociology of quantification.

Course expectations

Students are expected to attend and participate in all classes. They are expected to come prepared by having read the "essential readings." These readings are the foundation for the work we will do in class.

Students are expected to talk and participate in discussions at every session, if they do not volunteer they may be called on to participate. Hearing and reading is generally not enough to grasp new knowledge, using that knowledge in discussion with peers or applying it in new settings is key for comprehension.

To create an effective learning environment, students and lecturer must strive to make the classroom a safe and supportive space, where one can speak freely of own's puzzlements and incomprehension. Only together, helping each other, can we hope to understand the key theories and concepts that make up this module. When giving and receiving feedback, students should do so in the spirit of helping one another. All students should be mindful of

UCL's [Code of Conduct for Students](#) and Guidance on [Good Online Behaviour](#).

Students are encouraged to raise their queries about the module's contents in class. It is very likely that others will have the same questions and we all benefit from addressing them together. However, if ever time runs out, we move onto other topics, or the explanations in class are insufficient, students are strongly encouraged to approach the lecturer at his office hours.

Reading list

Below is a list of **essential** and **additional** readings for this module. The moodle page for the module includes links to all the readings.

In class we will discuss the **essential** readings. They were deemed essential for a reason: the classes cannot function without them. These readings are original contributions to the field of the sociology of quantification, even when abridged they will be challenging to read. Some of these texts are dense and subtle and making notes and re-reading parts will be necessary. This patience and care will pay off!

Essential readings are likely not to be sufficient to have a good mark in the module. Students should also be mindful of the **lectures** that partner with the readings. The **additional** readings will be useful for the essay assignments and to deepen knowledge of weekly topics.

Week 1: Introduction, literatures and problems

The protagonists of this module are numbers, as cultural artefacts loaded with meaning, as infrastructure in regimes of knowledge, as regulators of relationships. The sustained and detailed sociological study of quantification has existed for little more than two decades. In our introductory session we discuss some programmatic texts for this subdiscipline, looking to identify the research problems that animate inquiry. We also look at more contemporary analyses that question the direction and progress in the field.

Essential Reading

Espeland, Wendy Nelson and Stevens, Mitchell L. (2008) "A Sociology of Quantification." *European Journal of Sociology*. 49(3): 401-436.

Additional Reading

Berman, E. Popp and Hirschman, Daniel (2018). "The Sociology of Quantification: Where Are We Now?" *Contemporary Sociology* 47(3): 257-266.

Diaz-Bone, Rainer and Didier, Emmanuel (2016) "Introduction: The Sociology of Quantification - Perspectives on an Emerging Field in the Social Sciences" *Historical Social Research* 41(2): 7-26.

Martin, A. and Lynch, M. (2009). "Counting Things and People: The Practices and Politics of Counting." *Social Problems*, 56(2): 243-266.

Mennicken, Andrea and Espeland, Wendy Nelson (2019) "What's New with Numbers? Sociological Approaches to the Study of Quantification" *Annual Reviews of Sociology*

45:223–45.

Week 2: Accounting and science

While the sociology of quantification is of recent vintage, historians of science have long been interested how practices of note taking and counting shaped the epistemologies of early science. Historians have noted how accounting, which long predated science, offered physical sciences with an ontology of balances and equilibria. In very blunt terms, we consider how commerce and industry inscribed itself into science practice.

Essential Reading

Porter, Ted (1992) "Quantification and the Accounting Ideal in Science" *Social Studies of Science* 22(4) 633-651.

Additional Reading

Daston, Lorraine and Galison, Peter (2007). *Objectivity*. Zone Books. Chapter 7.

Porter, Ted (1995) *Trust in Numbers. The Pursuit of Objectivity in Science and Public Life*. Princeton University Press. Chapters 1 and 2.

Cohen, Bernard (2006) *The Triumph of Numbers: How Counting Shaped Modern Life*. W.W. Norton & Company. Chapter 4.

Norton Wise, M and Smith, Crosbie (1990) "Work and Waste: Political Economy and Natural Philosophy in Nineteenth Century Britain (III)" *History of Science* 28(3): 221-261.

Week 3: Averaging nature

We continue led by the hand of historians of science, but this week we turn to the origins of statistics and of reasoning with probabilities. We also pay attention to our home institution, UCL. The origins of inferential statistics (biometrics, psychometrics, econometrics) are closely linked to scholars who researched and taught at UCL. Their work emerged not from mathematical theory but from a now controversial take on social science, eugenics. We look at the legacy of eugenics in statistical tools and language.

Essential Reading

Gigerenzer, Gerd et al (1989) *Empire of Chance, How Statistics Changed Life and Everyday Life*. Cambridge University Press. Chapter 7.

Additional Reading

Cohen, Bernard (2006) *The Triumph of Numbers: How Counting Shaped Modern Life*. W.W. Norton & Company. Chapter 6 and 7.

Desrosières, A. (1998) "Averages and the Realism of Aggregates" "Correlation and the Realism of Causes" "Statistics and the State: France and Britain." in *The politics of large numbers: a history of statistical reasoning*. Cambridge, MA.: Harvard University Press.

Farrall, L. A., (2019) *The origins and growth of the English eugenics movement, 1865-1925*. London: UCL Department of Science and Technology Studies (STS).

McKenzie, Donald (1981) *Statistics in Britain, 1865-1930. The Social Construction of Scientific Knowledge*. Edinburgh University Press. Chapters 5 and 7.

Week 4: Calculating risk and profit

We move from science to capitalism, and examine how the key concepts of risk and profit are socially constructed through inscription practices. Neither risk nor profit are things in the world, that can be captured by the senses, they are conventions of incredible power that steer organisations that decide on the personal fortune of billions of individuals.

Essential Reading

Carruthers, Bruce G. and Wendy Espeland. 1991. "Accounting for Rationality: Double-Entry Bookkeeping and the Rhetoric of Economic Rationality," *American Journal of Sociology* 97: 31-69.

Additional Reading

Chiapello, Eve and Christian Walter (2016) "The Three Ages of Financiers' Metrology" *Historical Social Research* 41(2): 155-177.

Delaney, Kevin J. (1994) "The Organizational Construction of the Bottom Line," *Social Problems* 41: 201-222.

Kalthoff, Herbert (2005) "Practices of Calculation Economic Representations and Risk Management" *Theory, Culture & Society* 22(2): 69-97.

MacKenzie, Donald (2009) "Making things the same: Gases, emission rights and the politics of carbon markets," *Accounting, Organizations and Society* 34: 440-455.

Soll, Jacob (2009) "Accounting for government: Holland and the rise of political economy in seventeenth-century Europe." *Journal of Interdisciplinary History* 40(2): 215-238.

Week 5: Finance and futures

Modern capitalism is distinctive for its orientation towards the future. We are surrounded by values that are not measures of the present or the past but of the future. Contemporary finance is the dominant mode to regulate this future orientation. This week we look at how the future is made into valuations, securities, and so also numbers. We look at how economic and financial theory provides a key intellectual infrastructure for high finance.

Essential Reading

Carruthers, Bruce G. (2015) "Financialization and the institutional foundations of the new capitalism" *Socio-Economic Review* 13(2): 379-398

Additional Reading

Bear, Laura (2017) "Anthropological futures: for a critical political economy of capitalist time" *Social Anthropology*.

Carruthers, Bruce G. and Jeong-Chul Kim (2011) "The Sociology of Finance" *Annual Reviews of Sociology* 37:239-59.

Lengwiler, Martin (2016) "Risky Calculations: Financial Mathematics and Securitization since the 1970s" *Historical Social Research* 41(2): 258-279.

MacKenzie, Donald, and Yuval Millo (2003) "Constructing a Market, Performing Theory: The

Historical Sociology of a Financial Derivatives Exchange." *American Journal of Sociology*, 109(1): 107–45.

Mitchell, Timothy (2014) "Economentality: how the future entered government" *Critical inquiry*, 40(4), pp.479-507.

Week 7: States and war

What numbers are made public is a political choice. This week we focus on the politics of knowledge and of ignorance, and study how the numbers of warfare are constructed. We pay close attention to how democracies rely on numbers to make themselves known, for their own political epistemics. And how numbers are not merely information for the sovereign, numbers govern.

Essential Reading

Rappert, B. (2012). States of ignorance: the unmaking and remaking of death tolls. *Economy and Society*, 41(1): 42-63.

Additional Reading

Ashworth, William J. (2004) "Metrology and the State: Science, Revenue, and Commerce," *Science* 306(5700): 1314-1317.

Faust, Drew Gilpin (2006) "Numbers on Top of Numbers: Counting the Civil War Dead," *Journal of Military History* 70(4): 995-1009.

Gould, L. and Stel, N. (2022) "Strategic ignorance and the legitimation of remote warfare: The Hawija bombardments" *Security Dialogue*, 53(1): 57–74.

Krause, K. (2017). "Bodies count: the politics and practices of war and violent death data." *Human Remains and Violence: An Interdisciplinary Journal* 3(1): 90-115.

Rose, N. (1991) "Governing by numbers: Figuring out democracy", *Accounting, Organizations and Society*, 16(7): 673–692.

Timmermans, Stefan (2005) "Suicide Determination and the Professional Authority of Medical Examiners," *American Sociological Review* 70(2): 311-333.

Week 8: Inequality and IQ

Continuing on the theme of numbers that govern we turn from security to social policy. Inequality has often been defined by the measurements we make of it. The phenomena is made actionable by the existence of metrics that direct political attention and public sentiment. We look at the evolution of inequality metrics and concepts, paying close attention the those of an economic and psychological vintage.

Essential Reading

Alacevich, M., & Soci, A. (2018) *Inequality : a short history*. Brookings Institution Press, chapter 3 and the appendix.

Additional Reading

- Pinto, P. R. and Paidipaty, P. (2020) 'Introduction: Measuring Matters', *History of Political Economy*, 52(3): 413–434.
- Kamin, Leon J. (1974) *The Science and Politics of IQ*. Routledge: London. Chapters 1-3.
- Lepenies, Philipp. (2019) "Products before People: How Inequality Was Sidelined by Gross National Product." In *Histories of Global Inequality: New Perspectives*, edited by Christiansen, Christian Olaf; Jensen, Steven L.B., 83–106. Cham: Palgrave Macmillan.
- Norton, B. (1979) 'Charles Spearman and the general factor in intelligence: Genesis and interpretation in the light of sociopersonal considerations', *Journal of the History of the Behavioral Sciences* 15(2): 142–154.
- Schneider, W. H. (1992) 'After Binet: French intelligence testing, 1900–1950', *Journal of the History of the Behavioral Sciences* 28(2): 111–132.
- Tucker, W. H. (1997) 'Re-reconsidering Burt: Beyond a reasonable doubt', *Journal of the History of the Behavioral Sciences* 33(2): 145–162

Week 9: SDGs and global government

If numbers govern, why not recruit them as allies? This insight underpins the UN investment into creating indexes and indicators for its Sustainable Development Goals. This week we discuss global government and numbers, MDG and SDGs, and other globalized statistics in public health and trade and investment. We pay close attention at how qualities, like development and well-being, are turned into numbers.

Essential Reading

- Speich Chassé, Daniel (2016) "The Roots of the Millennium Development Goals: A Framework for Studying the History of Global Statistics." *Historical Social Research/Historische Sozialforschung* 41(2): 218–37.

Additional Reading

- Speich, D., (2011) "The use of global abstractions: national income accounting in the period of imperial decline" *Journal of Global History*, 6(1), pp.7-28.
- Espeland, Wendy Nelson (2015) "Narrating Numbers." In *The World of Indicators: The Making of Governmental Knowledge through Quantification*, edited by Mugler, Johanna; Rottenburg, Richard; Merry, Sally E.; Park, Sung-Joon, 56–75. Cambridge Studies in Law and Society. Cambridge: Cambridge University Press.
- Espeland, Wendy Nelson; Stevens, Mitchell L.. (1998) "Commensuration as a Social Process." *Annual Review of Sociology* 24(1): 313–43.
- Kalpagam, U. (2014) *Rule by Numbers: Governmentality in Colonial India*. Lanham: Lexington Books.
- Morgan, Mary S. and Bach, Maria (2018) "Measuring Development—from the UN's Perspective." In *The Political Economy of Development Economics: A Historical Perspective*, edited by Alacevich, Michele; Boianovsky, Mauro, 193–210.
- Rottenburg, Richard; Merry, Sally Engle (2015) "A World of Indicators: The Making of Governmental Knowledge through Quantification." In *The World of Indicators: The Making of Governmental Knowledge through Quantification*, edited by Mugler, Johanna;

Rottenburg, Richard; Merry, Sally E.; Park, Sung-Joon, 1–33. Cambridge Studies in Law and Society. Cambridge: Cambridge University Press.

Week 10: HE and reputation

After introducing the case of indicators of global development, we look at a similarly contemporary but closer to home case, higher education. Higher education has changed dramatically in the past two decades with the introduction of global and national metrics of scholarly and educational excellence. We look at what is driving this passion for rankings and how they are reshaping University values and culture.

Essential Reading

Hazelkorn, E. (2015) *Rankings and the reshaping of higher education ; The battle for world-class excellence*. Basingstoke: Palgrave Macmillan, chapter 1, “Globalization and the reputation race.”

Additional Reading

Power, Michael (1997) *The Audit Society: Rituals of Verification*. Oxford: Oxford University Press. (excerpt tbc).

Espeland, W. N., & Sauder, M. (2016). *Engines of anxiety : academic rankings, reputation, and accountability*. Russell Sage Foundation. (excerpt tbc).

Bleemer, Z., Kumar, M., Mehta, A., Muellerleile, C., & Newfield, C. (2023). *Metrics that matter : counting what’s really important to college students*. Johns Hopkins University Press. Introduction.

Pardo-Guerra, J. P. (2022). *The quantified scholar : how research evaluations transformed the British social sciences*. Columbia University Press. (excerpt tbc).

Week 11: Algorithms

In our final session we will be first looking at the rise of algorithms and their opaque work. Analytically the politics of algorithms is less interesting than some of the metrologies discussed in earlier weeks, since it seems like a prime case of technical fetishism, what is interesting is how algorithms have replicated to colonise public, communitarian and personal spheres. We will also be reviewing and mapping the themes of the module.

Essential Reading

Burrell, Jenna and Fourcade, Marion (2021) “The Society of Algorithms” *Annual Review of Sociology*. 47:213–37

Additional Reading

Nelson, A. (2016) *The social life of DNA: race, reparations, and reconciliation after the genome*. Boston: Beacon Press, chapter 9 “Radical Politics after the genome.”

Benjamin, R. (2019a) *Race after technology: abolitionist tools for the new Jim code*. Cambridge: Polity, chapter 1 “Engineered Inequity.”

- Benjamin, R. (2019b) "Assessing risk, automating racism" *Science*, 366(6464): 421–422.
- Eubanks, Virginia (2018) *Automating Inequality*. St. Martin's Press, "The Digital Poorhouse."
- Noble, S. U. (2018) *Algorithms of oppression: how search engines reinforce racism*. New York: New York University Press, chapter 2 "Searching for girls."
- Vallas, S. and Schor, J. B. (2020) "What Do Platforms Do? Understanding the Gig Economy" *Annual Review of Sociology*, 46(1): 273–294.
- Wright, Jack and Tiago Mata (2020) "Epistemic Consultants and the Regulation of Policy Knowledge in the Obama Administration." *Minerva* 58: 535–558.

Assessments

More detailed guidance will be provided on moodle and in class.

ASSESSMENT ONE: Essay (1000) 25%, 13 November

The assignment is titled: "The politics of a statistic" and the goal is for students to write an opinionated piece on how a particular statistic shapes political discussion, attention and action. Throughout the module we will encounter critics of existing metrologies, with an emphasis on how the choices of what and who counts favor some actors over others and/or how metrics can exclude key aspects of a phenomena for close consideration.

1. CHOICE. The student should search for a media controversy over a statistic. This is very common with numbers of economic government and of public health, for example the GDP, the CPI, the rate of unemployment.
2. RESEARCH. The student will build a collection of texts that from distinct or overlapping perspectives critique the chosen statistic. They will find plenty of sources among statistical bulletins, academic literature and mass media.
3. WRITE UP. The student will write a short and polemical piece, as might appear in a magazine, of the dangerous distortions and inadequacies of a statistic that guides our collective lives. It is crucial that the student decide on a coherent rhetorical strategy, so it is very likely that much of the critical material of 2 will not be used.

ASSESSMENT ONE: Essay (2000) 75%, 4 December

The title of the assignment is "SDGs indicator: a study in commensuration." The assignment is to write a short essay that applies some of the ideas of Espeland and Stevens' 1998 "Commensuration as a Social Process" to one of the indicators associated with the Sustainable Development Goals. Associated with the 17 SGDs there are 231 indicators of varying complexity (see <https://unstats.un.org/sdgs/indicators/indicators-list/>). Most indicators are simple ratios and counts, but others exhibit the features discussed by Espeland and Stevens's classic paper.

1. Students must choose an indicator in consultation with the lecturer.
2. Examine available documentation at UN agencies about its choice, its construction and its implementation and use. They may also interview experts at UCL and elsewhere.
3. Write an essay that speaks to either choice, construction/definition, or

implementation. What will be the focus of the essay is a matter determined by the research.

The grading of the assignment will evaluate the clarity of the essay, its use of the concepts of the module, but also the extent of the research that informs the piece.

Written assessments must be submitted via Turnitin. They should be in 12 point type, minimum 1.5 line-spaced, with a title, page numbers added and with a word count at the end. The word count does not include bibliography and the AI statement (see below).

Criteria for assessment

The departmental marking guidelines for individual items of assessment can be found in the STS Student Handbook. In addition to the criteria indicated in the STS Student Handbook, the following are the main criteria on which your essay will be marked.

1. Address the assignment

Read the assignment request carefully and make sure to meet its learning and assessment objectives.

2. Organisation

Is the essay organized into an introduction, main body and conclusion? Does each part flow naturally into the next one? Is the evidence presented in a logical order? Using signposting sentences (in this section I will argue that...) will help.

3. Clarity

We place great emphasis on clarity of argument and expression. Avoid ambiguity and vagueness. Do not assume your reader already knows what you are talking about. Good use of English, accurate spelling, grammar, punctuation and simple, active sentence structure also improve clarity.

4. Argumentation/analysis

There is no right answer to this assignment question in that any of the mentioned authors may fit the landscape in numerous ways. (There are some wrong answers.) Even so you must provide *one answer, that is most plausible to you, and make the case*. Is the main argument of the essay clear, coherent and persuasive? Is it properly supported by the evidence available?

5. Reading/ use of sources

How well have the readings and other resources been used? Does the essay reflect them accurately? Is the essay overly dependent on one source?

6. Referencing

You must reference all quotes and all references/ summaries of books, etc. Pick one system for referencing and stick to it. Refer to individual page numbers, not just whole texts. Making use

of ideas from or paraphrasing material without clearly referencing the original source is plagiarism and has incurs serious penalties. If you are unsure how to reference, please follow the advice from UCL Library

- UCL explanation of Academic Integrity for students: <https://www.ucl.ac.uk/students/exams-and-assessments/academic-integrity>
- UCL Library guide to referencing and avoiding plagiarism: <https://library-guides.ucl.ac.uk/referencing-plagiarism>
- Tutorial on referencing and avoiding plagiarism (making use of some nice clip art) https://www.ucl.ac.uk/library/forms/articulate/referencing-plagiarism/story_html5.html
- UCL Academic Integrity Moodle Course: <https://www.ucl.ac.uk/teaching-learning/news/2019/nov/introduction-academic-integrity-new-moodle-course-taught-students-goes-live>
- Details of the penalties for academic misconduct: <https://www.ucl.ac.uk/academic-manual/chapters/chapter-6-student-casework-framework/section-9-student-academic-misconduct-procedure#9.3>

7. Bibliography and AI statement

You need to supply a bibliography of all works referenced at the end of your essay. You must supply author, title, date, place of publication and publisher.

This module adopts a category 2 use of AI in assessments:

https://www.ucl.ac.uk/teaching-learning/generative-ai-hub/using-ai-tools-assessment#%20AI%20tools%20can%20be%20used%20in%20an%20assistive%20role*

The essay must include a statement declaring to what extent generative AI was used in the research and writing. The statement can be a single sentence: “I have not used AI tools for research or writing this essay” or it can be detailed, naming the tools, the uses made of the tools and your reflection and evaluation of their usefulness.

Important policy information

Details of college and departmental policies relating to modules and assessments can be found in the STS Student Handbook www.ucl.ac.uk/sts/handbook

All students taking modules in the STS department are expected to read these policies.