

## PGR Course unit outline 2022/23

<b>Unit code:</b>	<b>BMAN 80961</b>
<b>Title:</b>	Advanced Methods in Science, Technology and Innovation Policy Analysis
<b>Credit value:</b>	15
<b>Semester:</b>	Semester 1
<b>Course Coordinator contact details:</b>	Philip Shapira AMBS 9.004; 5x7376; <a href="mailto:pshapira@manchester.ac.uk">pshapira@manchester.ac.uk</a> Office Hours: Tue 09h-11h or by appointment
<b>Other staff involved contact details:</b>	Mabel Sanchez Barrioluengo <a href="mailto:msbarrioluengo@manchester.ac.uk">msbarrioluengo@manchester.ac.uk</a>
<b>Pre-requisites</b> <b>Co-requisites</b> <b>Dependent course units</b> <b>Restrictions</b>	None

### Course unit overview

Principles and applications of advanced methods for science, technology, and innovation policy analysis.

### Aims

Introduce and explain selected advanced methods used in studying science, technology, and innovation policy, including bibliometrics, patent analysis, data analytics, and evaluation.

Consider conceptual underpinning and underlying assumptions of these methods, as well as their suitability and limitations to a variety of research scenarios.

Provide hands-on experience with selected methods and software, through exercises and a project tailored to participant research interests and doctoral research topic.

### Objectives (Learning outcomes)

On completion of this unit successful students will:

- Increase their familiarity with a range of advanced methods used in studying science, technology and innovation policy
- Enhance their comprehension and skills in linking research design, data collection, and analytical methods to research questions in science, technology, and innovation policy
- Gain insight and experience to select the most suitable method for their research topics
- Understand the conceptual underpinnings and limitations of methods

### Syllabus content

Research design and methods in science, technology, and innovation policy

Data Types: structured and semi structured data (including data on bibliometric, patents, careers, surveys, etc.) and unstructured data (including websites, documents, social media, etc.)

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Data collection, cleaning, and analysis methods (including automatic and semi-automatic methods and tools)

Selected advanced methods used in studying science, technology, and innovation policy, including bibliometrics, patent analysis, data analytics, innovation surveys and analysis, evaluation methods, network analysis, and analysis of social media data (specific methods focused on may vary)

### Methods of delivery

<b>Lectures</b>	N/A
<b>Seminar/Tutorial/Workshop/Lab Hours</b>	20 hours
<b>Independent Study</b>	130 hours
<b>Total Study Hours</b>	150 hours

### Reading List

#### Pre Reading:

Sugimoto, Cassidy, and Larivière, Vincent. 2018. *Measuring Research: What Everyone Needs to Know*. 1st Edition. Oxford University Press. <https://global.oup.com/academic/product/measuring-research-9780190640125?cc=it&lang=en&>

Gök, Abdullah; Waterworth, Alec & Shapira, Philip (2015) Use of Web Mining in Studying Innovation. *Scientometrics*, 102(1):653-671. <https://doi.org/10.1007/s11192-014-1434-0>

Tether, B. (2002) Who co-operates for innovation, and why? An empirical analysis. *Research Policy*, Vol. 31, pp. 947-967. [https://doi.org/10.1016/S0048-7333\(01\)00172-X](https://doi.org/10.1016/S0048-7333(01)00172-X)

M. Watts, *The Holy Grail: In Pursuit of the Dissertation Proposal*. Institute of International Studies, University of California, Berkeley, 2001. See also additional documents at <http://iis.berkeley.edu/node/304>

#### Supplementary Texts

Porter, Alan and Cunningham, Scott (2005) *Tech Mining: Exploiting New Technologies for Competitive Advantage*. Wiley

Glänzel, W., Moed, H.F., Schmoch, U., Thelwall, M. (Eds.), *Springer Handbook of Science and Technology Indicators*, 2019.

WIPO Open Source Patent Analytics Manual: <https://wipo-analytics.github.io/>

Research Methods Knowledge Database (Online). <http://www.socialresearchmethods.net/kb/contents.php>.

### Assessment

Mode of Assessment	Length required	Weighting within unit
Individual report (in poster format) based on an application of an advanced method on the student's research topic. Posters should include:	Poster report (A1 size, typically 9 panels) plus 15-	100%

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<ul style="list-style-type: none"> <li>• problem statement, literature review, research questions and propositions (if any) (at most 1/3 of the poster area)</li> <li>• discussion of alternative data collection and analysis methods available, including their relative advantages and disadvantages</li> <li>• rationale for the selection of a research strategy</li> <li>• operational details of the chosen strategy</li> </ul> <p>Submission deadline (via Blackboard): 9 December 2022 (10h UK); feedback returned between 5 (earliest) to 15 (latest) working days from submission (16 December 2022 – 27 January 2023)</p>	minute presentation.	
<b>Resits:</b> Will take the form of revising poster report so that it is of satisfactory (passable) quality.		

### Feedback methods

Students will receive feedback through a series of methods, comprising:

- Written and/or verbal comments on non-assessed (formative) and assessed coursework.
- Informal advice and discussion during course meetings and following presentations.
- Responses to student emails and questions.
- Individual feedback in meetings with instructors (e.g. in office hours or by appointment).
- Specific course related feedback discussion in course sessions.

Feedback for all assessed coursework and formative assessment will be provided within 15 working days of the submission deadline. A working day is defined as Monday to Friday, not including bank holidays and excluding student vacation periods and University examination periods. For submission and feedback dates, see section on Assessment.

In addition to the course unit evaluation questionnaire, students are encouraged to give feedback through emails and conversations at any time, and using the online questionnaire near the end of the semester

### Social Responsibility

*AMBS aims for our graduates to develop not only academic and professional skills, but also a sense of social, ethical and environmental responsibility towards the societies of which they are part. Please give details of how social responsibility is addressed in your course unit by highlighting any knowledge or skills that support students' social and ethical understanding and conduct.*

Content, methods, and hand-on experience gained through this course will help students in assessing how science, technology and innovation addresses, and can better address, societal, human, environmental, and economic needs.

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*Please indicate by ticking the box(es) below, which specific aspect of SR your module is linked to:*

☒

A UN SDGs\*

☐

Environmental Sustainability

☐

Other (please specify)

SDG 9 Industry, Innovation and Infrastructure  
SDG 8 Decent Work and Economic Growth  
SDG 12 Responsible Production and Consumption

*\* If a UN SDG, please note which one by reviewing the list [here](#)*

*For additional support on how embed SR into your module, please review the resources here:*

<https://documents.manchester.ac.uk/DocuInfo.aspx?DocID=51837>

<https://documents.manchester.ac.uk/DocuInfo.aspx?DocID=47017>