

Philosophy of Science for IBA

COURSE MANUAL

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| Course name | Philosophy of Science for IBA |
| Course code | 30J205-B-6 |
| Number of credits | 6 ECTS |
| Program | B.Sc. International Business Administration |
| Position in Program | Year 2, Semester 1 |
| Academic Year | 2023-2024 |
| Language of instruction | English |

READ THIS MANUAL THOROUGHLY BEFORE THE START OF THE COURSE

Minor changes are possible; these changes will be published on Canvas.

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Course description

Ask yourself: When and how do you rely on science to make your decisions? Should governments and businesses rely on scientific advice? Why, or why not? What is science anyway? How is it objective? Is economics a science? How do you know that climate change is happening, or that the Earth is not flat? How do you know whether using social media has bad effects on your mental health? Will Artificial Intelligence and big data make existing jobs redundant? These and related questions have clear impact on your life, *and* they are questions with clear philosophical aspects.

The *overarching goal* of this course is to prepare you to be able to address similar questions, enhancing your understanding of what science should be like to be a trustworthy route to knowledge and help us achieve goals we care about. Achieving this goal will help you to become a curious entrepreneur, ask big-picture questions, and think critically, humbly, and creatively about science and its bearing on your life.

The *content* of this course, then, concerns questions about the nature, aims, and limits of scientific reasoning. We start by considering how to identify good, trustworthy science, and why this is important. Then, we zoom in on different aspects of scientific reasoning—including experimental reasoning, modelling, logical, statistical, and causal reasoning. We end by discussing the role of values in science. We explain abstract, general questions and ideas from the philosophy of science considering concrete case studies from different scientific fields, not just from economics.

You should have the right *expectations* about this course right from the start. This course is *not* a course in business ethics, which you will be offered in your third year. This course is *not* a course in the history of philosophy either. So, *no* Laozi, Socrates, Ibn Sina, or Kant. However, if you are interested in reading any book in philosophy on a particular topic for your personal enjoyment and development, your lecturers will be more than happy to make suggestions. Do not hesitate to ask us!

Course learning outcomes

Upon successful completion of the course, you will be able:

- ❖ to describe and explain various aims, methods, assumptions and limitations of various scientific practices (e.g., experiment, modelling, statistical reasoning, causal reasoning) in the light of contemporary and historical case studies
This learning outcome concerns Bloom's cognitive skills KNOWLEDGE and COMPREHENSION
- ❖ to evaluate and put forward arguments concerning the nature, aims and methods of science, referring to relevant scientific examples and philosophical ideas
This learning outcome concerns Bloom's cognitive skill EVALUATION
- ❖ to apply concepts from philosophy of science to address a complex problem involving scientific, business, administrative and philosophical dimensions
This learning outcome concerns Bloom's cognitive skill APPLICATION
- ❖ to apply the academic rules and conventions regarding spelling, structure and language in written texts or orally
This learning outcome concerns Bloom's cognitive skill APPLICATION

Teaching staff

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Roles in this course: Course coordinator, lecturer, tutor & grader for the team assignment

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Roles in this course: tutor & grader for the final exam

Position in the program

| Marketing and Analytics | Accounting and Finance | Strategy, Management, and Economics | IBA skills | IBA character |
|---|---------------------------------|--|-------------------------------|---------------------------------|
| Marketing Management | Financial Accounting | Foundations of International Strategy | Academic communication skills | Philosophy of science |
| Decision Making in Marketing | Finance & Investment | Organizational behavior | Programming for IBA | Global Sustainable Leadership |
| International business research | Management Accounting | Microeconomics | Mathematics | The morality of commercial life |
| Decision making with business analytics | Corporate governance for IBA | Macroeconomics | Statistics 1 | |
| Business strategy & data analytics | International business taxation | Comparative and Cross-Cultural Management | Project management | |
| | Corporate Finance | Human Resource Management | Statistics 2 | |
| | Business law for IBA | Information management | | |
| | | Operations Management | | |
| | | Innovation & Technology Management for IBA | | |

Ask yourself What are the consequences of *widespread ignorance, intellectual arrogance, and lack of curiosity* about science and philosophy in a business administration international context? By engaging with this course, you will put into better focus some of these consequences, which supplements the content and skills in several other courses in the IBA programme you chose. Issues covered in our course obviously relate to many foundational and methodological problems involved in **other courses in your IBA programme**, such as (30J112-B-3) Economics 1, (30J114-B-3) Economics 2, and (30J107-B-6) Finance 1. For example, **ask yourself**: How are economics or finance sciences? Why is it important to tell? What is the role for experiment in economics? What is a good model in finance? What is a good economic explanation? Our discussion of logical reasoning is related to questions about (30J105-B-6) Mathematics 1, (30J214-B-3), Human Resource Management, and (30J115-B-6) Statistics and Data Management 1. For example, **ask yourself**: what is a good argument? How can you tell? What is the difference between deductive and inductive logic? What is an error in reasoning? What is probability? What is the logic behind different approaches to statistics? Our discussion of the role of values in science resonates with topics from (30J302-B-6) The Morality of Commercial Life. For example, what's the role of values in science? What's a conflict of interest? Why is it problematic? What is scientific misconduct? And how should it be addressed?

Required course material

- ❖ Potochnik, Angela, Colombo, Matteo, & Wright, Cory (2024). *Recipes for Science: An Introduction to Scientific Methods and Reasoning*, 2nd edition, Routledge.

NOTE The 2nd edition is thoroughly revised with new material, so the 1st edition will not work for this course.

Assessment

There are two assessment components in this course.

1. An *individual, in-class, written exam* (60%).

This exam is meant to assess your capacity (i) to describe and explain various aims, methods, assumptions and limitations of various scientific practices (e.g., experiment, modelling, statistical reasoning, causal reasoning) in light of contemporary and historical case studies, (ii) to evaluate and put forward arguments concerning the nature, aims and methods of science, referring to relevant examples and philosophical ideas, and (iii) to apply the academic rules and conventions regarding use of language in written texts.

During the exam, You will receive a short text adapted from a scientific journal, and you will be asked Comprehension (e.g., provide definitions, explain a concept or example), Analysis, (e.g., break down an argument in steps, drawing pertinent connections between examples or ideas), and Evaluation (e.g., give your reasoned opinion and make an assessment about something) questions. Examples of what this exam will be like are given and discussed during the lectures. The grading rubric is on Canvas.

Material covered All lectures/Textbook + All lectures' readings

Duration of the exam: 3 hours

Fraud and Plagiarism Having unauthorized notes at your exam, cribbing from a fellow student, manipulating results and copying text from others without references are examples of fraud. If fraud is suspected, the Examination Board will be informed right away <https://www.tilburguniversity.edu/students/studying/regulations/fraud/economics>

NOTE There are probably a number of social media groups associated with this course. We also know there are lecture notes/exam answers sold (!) by other students' groups. If you have any question or doubt about any aspect of this course, You must ask your questions to your instructors in class or on the form linked below. You should *not* rely on rumours from other students on social media groups; and you should not speak on behalf of a teacher. We strongly advice you *not* to buy lectures notes/exam answers from other students, since these notes are of low quality, contain mistakes, and helped several students to fail their exam in previous years.

2. A *team assignment* (40%)

This assignment is meant to assesses your capacities to (i) evaluate and put forward cogent arguments concerning a big contemporary challenge involving philosophical, scientific and business dimensions, (ii) apply concepts from philosophy of science to clarify and reason about a case study, and (iii) apply the academic rules and conventions regarding effective communication and use of language. Full details about the specifics of your team assignment and its

assessment are given during your first tutorial, and are spelled out on the slides for the first tutorial and on Canvas assignments.

NOTE Use of any LLM such as ChatGPT for completing any of your assignments is forbidden. For some of the reasons behind this choice, check out Prof. Iris van Rooij's reflections [here](#)

!Avoiding free-riding! Should any free-riding or social loafing occur during your group work, it is crucial to address this issue early on. In such cases, (1) address your concerns with that group member as early as possible via email and copy your tutor on the email. (2) Agree upon a way in which that person can contribute to the group and notify the instructor of your resolution by email. (3) If the problem persists, make an appointment for your group to meet with the instructor. We will attempt to resolve the issue together. (4) If this attempt fails, leave the person's name off the title page of the class project. (5) We will inform the group member that s/he will fail the team project. We will only give a fail if steps 1-4 have been followed.

NOTE In the case of a resit, the highest grade counts. You should receive a grade of at least 5.5 on both individual exam and team assignment to pass this course.

Study Load

| Activity | Assessed number of hours |
|--|--------------------------|
| Lectures participation | 14 X 2 hours |
| Tutorials participation | 4 X 2 hours |
| Preparation for lectures (ie reading textbook, check out slides, watch clips, and take/organize notes) | 14 X 3 hours |
| Preparation for individual exam (reading/studying/rehearsing, practicing exam questions, consult lecturers) | 36 hours |
| Preparation for tutorials (ie, reading) | 4 X 1 hours |
| Team assignments | 47 hours |
| Individual exam | 3 hours |
| Total | 168 hours |

Course structure

This course includes 14 lectures and 4 tutorials.

The content of the lectures is based on our textbook, *Recipes for science*. You are expected to do the relevant reading prior to each lecture/tutorial.

Lectures

Lecture 1

Topic: The Nature of Science

Read: *Recipes* Ch. 1

Lecture 2

Topic: How Science Pursues its Aims

Read: *Recipes* Ch. 2

Lecture 3

Topic: Scientific Experiments

Read: *Recipes* Ch. 3

Lecture 4

Topic: Non-Experimental Investigation

Read: *Recipes* Ch. 4

Lecture 5

Topic: Scientific Modeling

Read: *Recipes* Ch. 5

Lecture 6

Topic: Deductive Reasoning

Read: *Recipes* Ch. 6

Lecture 7

Topic: Inductive and Abductive Reasoning

Read: *Recipes* Ch. 7

Lecture 8

Topic: Probabilistic Reasoning

Read: *Recipes* Ch. 8

Lecture 9

Topic: Statistical Reasoning

Read: *Recipes* Ch. 9

Lecture 10

Topic: Statistical Inference

Read: *Recipes* Ch. 10

Lecture 11

Topic: Causal Reasoning

Read: *Recipes* Ch. 11

Lecture 12

Topic: Explaining and Theorizing

Read: *Recipes* Ch. 12

Lecture 13

Topics: Science in Society

Read: *Recipes* Ch. 13

Lecture 14

Review session and answers to your questions about the final exam

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Tutorials

The overarching goal of our tutorials is to train your capacities to collaboratively and independently research, understand, critically evaluate, and effectively communicate an important topic of your choice, involving philosophical, scientific, and business and administration aspects.

Specifically, we focus on *topics related to themes covered during the lectures* and associated with one starting paper, which is freely available online—click on the doi (Digital Object Identifier) next to the references below to access the paper. The research starting topics are the following:

Research problem #A

Starting paper: Francisco H. G. Ferreira (2022). Not all inequalities are alike. *Nature* 606, 646-649. doi: <https://doi.org/10.1038/d41586-022-01682-3>

Research problem #B

Starting paper: Jason Hickel, Giorgos Kallis, Tim Jackson, Daniel W. O'Neill, Juliet B. Schor, Julia K. Steinberger, Peter A. Victor & Diana Ürge-Vorsatz (2022). Degrowth can work — here's how science can help. *Nature* 612, 400-403. doi: <https://doi.org/10.1038/d41586-022-04412-x>

Research problem #C

Starting paper: Alexandre Antonelli (2023). Indigenous knowledge is key to sustainable food systems. *Nature* 613, 239-242. doi: <https://doi.org/10.1038/d41586-023-00021-4>

Research problem #D

Starting paper: Amy Orben & Sarah-Jayne Blakemore (2023). How social media affects teen mental health: a missing link. *Nature* 614, 410-412. doi: <https://doi.org/10.1038/d41586-023-00402-9>

Research problem #E

Starting paper: Lyn Horn, Sandra Alba, Gowri Gopalakrishna, Sabine Kleinert, Francis Kombe, James V. Lavery & Retha G. Visagie (2023). The Cape Town Statement on fairness, equity and diversity in research. *Nature* 615, 790-793. doi: <https://doi.org/10.1038/d41586-023-00855-y>

Research problem #F

Starting paper: Joseph Bak-Coleman, Carl T. Bergstrom, Jennifer Jacquet, James Mickens, Zeynep Tufekci & Timmons Roberts (2023). Create an IPCC-like body to harness benefits and combat harms of digital tech. *Nature* 617, 462-464 (2023) doi: <https://doi.org/10.1038/d41586-023-01606-9>

Teamwork In a team, you will collaborate to complete three milestone assignments geared towards the production of a final podcast (between 3-5 minutes long), where:

- (i) you tell your listeners about one case study involving some philosophical, scientific, or business or admin aspects;
- (ii) you explain why this case matters to how we think about science, business/admin, or our everyday life—full details will be given throughout the tutorials.

Tutorial 1

In this first tutorial, you will be provided with an overview of what we are going to do during the rest of tutorials, why we are going to do that, and how what we are going to do relates to philosophy of science, and business and administration. Full details about the team assignment will be explained, and you will join one team for your team assignment.

Tutorial 2

During the tutorial, you will be provided with an overview of each of the starting papers, and you will be explained how to apply one philosophical concept to your project. The rest of the tutorial gives you and the rest of your team to start working on your next milestone assignment under the supervision of your teacher.

Tutorial 3

During the tutorial, you will be provided with guidance on how to find a topic for your independent research and how to do targeted research. The rest of the tutorial gives you and the rest of your team to start working on your next milestone assignment under the supervision of your teacher.

Tutorial 4

During this tutorial, each team will present their podcast. The rest of the class is expected to ask questions, and provide feedback and suggestions.