



Trinity College Dublin

Coláiste na Tríonóide, Baile Átha Cliath

The University of Dublin

Defence from the Dark Arts: Science and other tools for critical thinking

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What will you learn from this Elective?	This module will provide students with a toolbox of critical thinking skills and draw on everyday life examples to train them how to use them regularly and efficiently. Specific teachings, developed through active learning approaches, will include how to <ul style="list-style-type: none">• identify and parse relevant information• distinguish between evidence and its interpretations• hunt, expose and verify assumptions• expose visual manipulation of data• analyse analogies• diagnose common reasoning fallacies• recognize valid deductive arguments• test hypothesis• fact check for 'fake news' fast• identify common manipulative techniques using statistics																									
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Assessment Components

- MCQ quiz delivered online. This will relate to weeks material/topic
- Critical Thinking Skills Exam delivered online. This is the main piece of summative assessment for the course (60%)
- Myth debunking brief (infographic/poster). Students will draw from their daily experience to choose one example of poor reasoning, deliberate misinformation, or fake news to deconstruct and explain in the form of an infographic. (20%)
- Short video (max 5 mins, for YouTube/Tik-Tok): identifying and dismantling an example of poor reasoning, drawn from local (public) information streams.(20%)

Indicative Reading List

- Sagan, C. and Druyan, A. (1996) 'Chapter 12: The Fine Art of Baloney Detection', in *The Demon-Haunted World: Science as a Candle in the Dark*. Random House.
- Frankfurt, H.G. (1986) *On Bullshit*. Princeton University Press.
- Orwell, G. (2004) *Why I Write*. Penguin Books.
- Pennycook, G. *et al.* (2015) 'On the reception and detection of pseudo-profound bullshit', *Judgment and Decision Making*, 10, pp. 549–563.
- Pingry, R.E. (1951) 'Critical Thinking—What Is It?', *The Mathematics Teacher*, 44(7), pp. 466–470.
- Paris 21, (2021) Advancing Data Literacy in the Post-Pandemic World <https://paris21.org/sites/default/files/inline-files/>

Learning Outcomes

On successful completion of this module, students should be able to:

LO1. Evidence an increased capacity to note and analyse source, context and medium when parsing information on any issue or problem

LO2. Demonstrate an increased ability to use evidence and information obtained across multiple sources to effectively support the comprehensive analysis of a problem

LO3. Evaluate competing claims that inform global environmental debates and policy

LO4. Develop and defend better logically argumentative positions, to face daily challenges posed by the current information ecosystem

LO5. Interpret information, make decisions, and solve problems by applying critical thinking methods and techniques