

# PS927-15 Neuroeconomics

**21/22**

**Department**

Psychology

**Level**

Taught Postgraduate Level

**Module leader**

Elliot Ludvig

**Credit value**

15

**Module duration**

10 weeks

**Assessment**

100% coursework

**Study location**

University of Warwick main campus, Coventry

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## Description

### Introductory description

This module provides an overview of the multidisciplinary field of neuroeconomics. In recent years, a new science of decision-making has emerged combining approaches from multiple fields, including economics, psychology, neuroscience, and computer science.

[Module web page](#)

### Module aims

The module will introduce students to the key theories and major findings in neuroeconomics. Core questions that will be addressed include: What are the neural substrates of subjective values, delay discounting, and risk aversion? How does the brain learn from rewarding experience? Can neuroscientific discoveries inform economic theory? How can neuroeconomic ideas be used and applied in the real world? Students will learn the requisite background and directly engage the primary literature.

### Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

Week 1: Introduction to the Brain  
Week 2: the Brain  
Week 3: Values  
Week 4: Making Choices  
Week 5: Risk & Ambiguity  
Week 6: Timing & Discounting  
Week 7: Multiple Decision-Making Systems  
Week 8: Memories and Choice  
Week 9: Social & Moral Neuroscience  
Week 10: Applying Neuroeconomics

## **Learning outcomes**

By the end of the module, students should be able to:

- - Cogently discuss the relationships between psychology, neuroscience, and economics
- - Engage and critically evaluate the primary literature on neuroeconomics
- - Generate new experimental ideas to test theories of the neural basis of decision making
- - Identify potential zones of real-world application for neuroeconomic advances and discoveries

## **Indicative reading list**

Glimcher, P. & Fehr, E. (2013). *Neuroeconomics: Decision Making and the Brain* (2nd edition). Academic Press: London.

Sutton, R. & Barto, A. (1998/2014). *Reinforcement Learning*. (2nd edition). MIT Press: Cambridge, MA.

Redish, A. D. (2013). *The Mind within the Brain: How We Make Decision and How Those Decisions Go Wrong*. Oxford University Press: Oxford.

Kahneman, D. (2012). *Thinking Fast and Slow*. Farrar, Strauss, Giroux: New York.

Dayan, P. & Abbott, L. E. (2005). *Theoretical Neuroscience*. MIT Press: Cambridge, MA.

Glimcher, P. (2004). *Decisions, Uncertainty, and the Brain: The Science of Neuroeconomics*. MIT Press: Cambridge, MA.

Greene, J. (2014). *Moral Tribes: Emotion, Reason and the Gap Between Us and Them*. Atlantic Books: London.

## **Subject specific skills**

Ability to generate experimental ideas to test theories  
Understanding of a range of disciplines and how these interact  
Understanding of theories of the neural basis of decision making

## **Transferable skills**

Identification of how theoretical knowledge can be applied to the practical domain  
Effective communication skills to present and justify conclusions  
Critical evaluation of primary and secondary sources

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## Study

### Study time

Type	Required
Lectures	10 sessions of 2 hours (13%)
Seminars	8 sessions of 1 hour (5%)
Other activity	2 hours (1%)
Private study	120 hours (80%)
Total	150 hours

### Private study description

120 Hours Guided Reading and private study.

### Other activity description

Class tests, taken in seminars.

### Costs

No further costs have been identified for this module.

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## Assessment

You do not need to pass all assessment components to pass the module.

Students can register for this module without taking any assessment.

### Assessment group A2

	Weighting	Study time
4000 word essay	45%	
Thought questions	5%	
Weekly thought questions		
Oral/Video Presentation	10%	

**Weighting****Study time**

20 minute group presentation

tests

40%

2x tests

**Feedback on assessment**

Group oral feedback given for first test. Written feedback will be provided for oral presentation and essay. Feedback will be provided by email and/or through Tabula as appropriate.

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**Availability****Courses**

This module is Core for:

- Year 1 of TPSS-C8P7 Postgraduate Taught Behavioural and Economic Science (Science Track)

This module is Core optional for:

- Year 1 of TPSS-C803 Postgraduate Taught Behavioural and Data Science

This module is Optional for:

- Year 1 of TPSS-C8P7 Postgraduate Taught Behavioural and Economic Science (Science Track)
- Year 1 of TECS-C8P8 Postgraduate Taught Behavioural and Economics Science (Economics Track)

This module is Core option list A for:

- Year 1 of TPSS-C803 Postgraduate Taught Behavioural and Data Science