UNIVERSITY OF CAMBRIDGE

Institute of Continuing Education

# Undergraduate Certificate in Cognitive Psychology

## 2021-2022

Course code: 2122CCB251

## COURSE GUIDE

University of Cambridge Institute of Continuing Education, Madingley Hall, Cambridge, CB23 8AQ
Tel 01223 746222 www.ice.cam.ac.uk

Welcome to the **Undergraduate Certificate in Cognitive Psychology**, a University of Cambridge award offered by the Institute of Continuing Education (ICE). The Certificate is taught and awarded at FHEQ level 4 (i.e. first-year undergraduate level) and attracts 60 credits. The award is completed in one academic year. For further information about academic credit please see our website, http://www.ice.cam.ac.uk/studying-with-us/information-for-students/qualifications-that-we-offer.

## Important information for the 2021-2022 Academic Year

During the 2021-2022 Academic Year the **Undergraduate Certificate in Cognitive Psychology** is taught using remote methods. There will be no face-to-face teaching on the course. Teaching is via asynchronous, self-paced approaches facilitated by the course Virtual Learning Environment (VLE) along with scheduled synchronous delivery using remote learning platforms such as Zoom. You are encouraged to attend synchronous sessions to maximise your learning. However, as this may not always be possible we will record these sessions and place them in the Virtual Learning Environment.

Examples of asynchronous teaching approaches on the course include, but are not limited to: structured reading within the VLE and through external recommended sources; utilisation of podcasts or videos; engagement with virtual practical and laboratory resources; quizzes and activities in the VLE; pre-recorded lectures and seminars; online discussion forums; and your own self-directed learning. Synchronous teaching may include: delivery of lectures, seminars and their associated discussion; group-based activities; journal clubs; debates; discussions based around pre-reading; and practical demonstrations.

Synchronous teaching takes place during a time window as outlined in each provisional unit structure. Exactly when teaching occurs in this window varies from session to session and is confirmed, via the VLE, in advance of the teaching. This allows the teaching staff to maximise the effectiveness of the synchronous sessions for the material they are covering. For example, it might consist of 4 separate sessions each of 45 minutes in length; or a 30 minute seminar, followed by discussion, group work, group feedback and another seminar.

The majority of the course teaching, both in terms of material and content, occurs through asynchronous approaches via the VLE ahead of and between the synchronous sessions. This material appears progressively over the unit to help guide and structure your learning journey.

## Course Overview

This course will help you to understand how the brain enables us to see, hear, speak, remember and think. Cognitive scientists, neuropsychologists and psychologists from across Cambridge will explore how the scientific method is being applied to the study of the mind, brain and behaviour.

Focusing on some of the most advanced areas of research in modern Cognitive Psychology, including perception, memory and language, we will explore how humans think, what is meant by intelligence and social cognition.

The course offers three termly units, a syllabus and reading and resource list for each of these units are included in this course guide.

The course aims to:

1. provide students with the core knowledge in the study of memory, perception, language and cognition;
2. provide insight into the core research methods used in psychology, from behavioural experiments, to the study of patients with brain damage (neuropsychology) and the use of neuroimaging techniques;
3. provide an understanding of the historical development of modern psychology, and how the scientific method can be applied to the study of the mind and behaviour;
4. develop an understanding of how experimental methods can be applied to complex behavioural questions;
5. develop a conceptual understanding of some of the core statistical methods and issues in analysing behavioural research.

## Transferable skills for further study and employability

- The capacity for independent thought and judgement
- The development of independent learning, study and time management skills
- The deployment of skills in critical reasoning
- The development of competence in using IT to support one's work
- The ability to work with others, productively and equitably
- The qualities necessary for employment requiring the exercise of some personal responsibility and the demonstration of high levels of motivation and personal commitment through part-time study

## Study hours

The award of academic credit is a means of quantifying and recognising learning and within the UK, one credit notionally represents 10 hours of learning[1]. Each of the units in this course attracts 20 credits so students should expect to need to study for approximately 200 hours in total to complete each unit successfully. However, it is recognised that students study at different paces and use a variety of approaches, so this is a recommendation, rather than a hard-and-fast calculation.

1 'Academic credit in higher education in England – an introduction' . The Quality Assurance Agency for Higher Education, 2009

## Teaching staff

### Course Director

Giulia Mangiaracina joined ICE as a Panel Tutor/Course Director in Cognitive Psychology in 2020 from the University of Kent, where she taught Cognitive Psychology as an Associate Lecturer. Giulia is completing a PhD in Cognitive Psychology/Neuropsychology at the University of Kent and previously worked as a researcher in Stockholm University and in the Department of Neuromotor Rehabilitation of Buccheri La Ferla Hospital (Palermo, IT). She is interested in embodiment theories of emotions' recognition and social cognition. Giulia takes a research-embedded approach to teaching and she is a strong believer that learning stems from critical and creative thinking. During her teaching, she gives priority to the development of a stimulating environment of learning, interest and curiosity.

Alongside Giulia a range of academic experts from the University of Cambridge and other academic institutions teach on the course. This means you will have access to and involvement with people who have extensive subject knowledge and who are, in many cases, actively involved in research in cognitive psychology and its related disciplines. Further details of the teaching staff will be provided on the course website.

## Administrative staff

| | | | |
|---|---|---|---|
| **Co-ordinator** | Liz Deacon | 01223 746227 | psychology@ice.cam.ac.uk |
| **Administrator** | Mairi Mayfiled | 01223 760861 | psychology@ice.cam.ac.uk |

## The Institute of Continuing Education

The Institute of Continuing Education's administrative headquarters are at Madingley Hall, an elegant country house built in the 16th century and set in gardens of about seven acres, designed in the 18th century by Capability Brown. Please visit www.ice.cam.ac.uk and www.madingleyhall.co.uk for further information.

The course itself is taught entirely remotely during the 2021-22 Academic Year.

## Contact details of ICE

Institute of Continuing Education
University of Cambridge
Madingley Hall
Madingley
Cambridge
CB23 8AQ
T: 01223 746222
www.ice.cam.ac.uk

*Please also refer to the 'information for students' section on ICE's website http://www.ice.cam.ac.uk/studying-with-us/information-for-students and the 2021/22 Student Handbook for award-bearing courses for further information and guidance relating to all aspects of the course including study skills, assignments, assessment and moderation. The Course Information and Help and Guidance section of the ICE Virtual Learning Environment (VLE) will also contain valuable information specific to your course.*

*Information correct as at 16/04/2021*

Syllabus
Michaelmas term 2021

# Unit 1: History, core themes and methods

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|---|---|---|---|
| **Start date** | 8 October 2021 | **End date** | 05 January 2022 |
| **Synchronous teaching dates** | 11 October 2021<br>8 November 2021<br>22 November 2021<br>6 December 2021 | **Time** | 10am – 4pm |
| **Venue** | Remote delivery | | |
| | | **No. of synchronous sessions** | 4 |

**Aims**

This unit offers a broad introduction to the history, key methods and important debates in Cognitive Psychology and has four key aims:

1. to introduce students to the concepts, methods and theories in Cognitive Psychology which provide a systematic and critical framework for the science of the mind, brain and behaviour;
2. to outline and assess central debates concerning the role of nature vs nurture in shaping the human mind, understanding the relationship between the mind and the brain and the role of automatic vs controlled processes in shaping human behaviour;
3. to promote students' knowledge and critical understanding of methods in Cognitive Psychology;
4. to outline and evaluate the way in which neuroimaging techniques and neuropsychology (the study of patients with brain damage) can contribute to our understanding of human behaviour and cognition.

**Content**

The unit will cover some of the most important developments in the western philosophy and science that have shaped psychology, from empiricism and the concept of the 'blank slate' to evolution and the concept of a "modular mind". Some of the most important papers that have shaped Cognitive Psychology will be discussed in detail to provide a critical insight into how empirical evidence is used to shape and inform theory. This unit will also introduce the core methods in behavioural and neuroscience research. A number of experimental approaches will be introduced to provide insight into the key issues and challenges in designing and implementing a behavioural research project, and to develop the skills needed to write a research report in the third term. Finally, this unit will focus on the role of neuroscience in Cognitive Psychology, exploring how patient neuropsychology, neuroimaging techniques and neuromodulatory techniques can help to inform and constrain theories of how the mind works.

**Presentation of the unit**

This unit will be delivered through four themes of study, each with a supporting session of synchronous day-schools, and the provision of asynchronous learning and online resources through the ICE Virtual Learning Environment (VLE). In between synchronous sessions there will be a number of small experiments to complete, the results of which will form the basis for one of the summative assignments in Unit 3. Students are expected to participate as far as possible in both synchronous and asynchronous learning opportunities.

**Unit structure**

**Topic 1: History and key debates (synchronous teaching 11October 2021)**

Modern Psychology has been shaped by the history of ideas in Western philosophy, the development of the scientific research method, the culture within which we understand our place in the world and the development of technology to study the brain in action. This topic will attempt to situate modern Cognitive Psychology within that broader context and explore the key ideas and developments that have shaped the focus of modern research. It will explore long standing debates, such as; the relationship between nature and nurture in shaping behavior, the extent to which the mind can be studied scientifically, the relation between the mind and the brain and the role of reason vs emotion in shaping our decision making. It will also explore more recent debates that have emerged as psychology has advanced, such as; the limits to introspective awareness, the extent of plasticity in the adult brain and the degree to which the mind is organised in a modular fashion with different functions performed by separate and distinct parts of the brain.

**Topic 2: Key papers and experiments in Cognitive Psychology (synchronous teaching 8 November 2021)**

Cognitive Psychology can be understood most broadly as the science of the mind and behaviour. This topic will focus on some of the key experiments that have shaped modern Cognitive Psychology. This will offer a critical insight into the nature of psychology as a science and the way in which (often simple behavioural experiments) can provide profound insights into the way the mind works. Empirical papers are however often difficult to understand without an appreciation of the broader context within which they fit, so this part of the unit will critically reflect on a number of key papers and attempt to explore their broader significance and impact on psychology. Key papers will include; Nesbitt and Wilson's *"Telling More Than We Can Know: Verbal Reports on Mental Processes"* (1977), Tversky and Kahneman's *"Judgement Under Uncertainty: Heuristics and Biases"* (1974) and Sperry's *"Hemisphere Deconnection and Unity in Conscious Awareness"* (1968).

**Topic 3: Behavioural research methods and statistics (synchronous teaching 22 November 2021)**

Cognitive Psychology is underpinned by a range of behavioural research and statistical methods. This part of the unit will explore in more detail some of the core aspects of experimental design, in particular focusing on the validity of experimental measures, and their reliability. Different types of empirical research methods will also be outlined and evaluated, including longitudinal, cross-sectional and within-vs-between participant experimental designs. Different strategies to control for confounding and extraneous variables in behavioural research will be explained, including counterbalancing and randomization methods. These methodological issues will be considered in the context of concrete examples from empirical research, and their implications for the conclusions that can be drawn from them. During this part of the topic, we will further explore the practical implications of designing well controlled experiments. Finally, you will be introduced to statistical tools that enable us to make inferences regarding whether empirical data support theoretical claims. This statistical overview will not require an understanding of the mathematics involved in testing different models, but will focus on the more general issues of evidence based reasoning encountered when relying on (often messy and noisy) behavioural and biological data.

**Topic 4: Neuroscience research methods: from neuroimaging to neuromodulation (synchronous teaching 6 December 2021)**

Cognitive Psychology is increasingly informed by research using a diverse range of methods to measure and modulate brain activity. The last topic in this unit will outline some of the most important techniques in the broader 'cognitive neurosciences' and evaluate the contribution they can make to theories in Cognitive Psychology. Key methods of neuroimaging techniques covered will include, magnetic resonance imaging (MRI), functional magnetic resonance imaging (fMRI), functional near-infrared spectroscopy (fNIRS), electroencephalogram (EEG), magnetoencephalography (MEG) and single cell recordings. Particular attention will be placed on the role of 'patient neuropsychology' in understanding how damage to the brain can help us to test how the brain normally functions. The role of neuroimaging techniques in enhancing the conclusions that can be drawn from patient neuropsychology will be explored. Consideration will be given to techniques for actively manipulating neural activity (e.g. Transcranial magnetic stimulation (TMS) and transcranial direct current stimulation (tDCS)) and exploring the theoretical questions these techniques can help us to address.

**Learning Outcomes**

As a result of the unit, within the constraints of the time available, students should be able to:

- demonstrate an understanding of the key concepts, methods and theories in Cognitive Psychology which provide a systematic and critical framework for the science of the mind, brain and behaviour;
- show an insight into some of the central debates in Cognitive Psychology concerning the role of nature vs nurture in shaping the human mind, understanding the relationship between the mind and the brain and the role of automatic vs controlled processes in shaping human behaviour;
- demonstrate an understanding of methods in Cognitive Psychology, and show a critical ability to reflect upon whether specific methods support particular theoretical conclusions;
- critically evaluate how neuroimaging techniques and neuropsychological findings (from patients with brain damage) can contribute to theoretical claims regarding how the human mind works.

**Student assessment**

Students are required to write **<u>one</u>** essay of **1,800 – 2,000 words** from the following list:
*(This assignment is weighted at 20% of the overall award of credit)*

1) What were the key findings that enabled psychology to move beyond behaviourism?
2) Has patient neuropsychology provided insights into how the mind works that we could not have learned from simple behavioural experiments?
3) Has neuroimaging taught us anything about the way the mind works that we could not have learned from simple behavioural experiments?
4) What are the limits to human introspection: what aspects of our cognition are we truly unable to access?
5) Is it appropriate to think of human cognition as having a modular architecture, with different cognitive processes operating independently from each other?

***Closing date for the submission of assignments***
**Wednesday 5 January 2022 by noon GMT*** (*Greenwich Mean Time)

Students are expected to submit their assignments online and feedback on assignments is delivered online.

**Reading and resource list**

Please note, further reading will be provided for specific lectures.

| Author / editor | Year of publication | Book title | Publisher and place of publication |
|---|---|---|---|
| Ellis, A. W., & Young, A. W. | 2013 | *Human cognitive neuropsychology: A textbook with readings*. | Psychology Press. |
| Damasio, A. R. | 2006 | *Descartes' error*. | Random House. |
| Fodor, J. A. | 1983 | *The modularity of mind: An essay on faculty psychology*. | MIT press. |
| Gazzaniga, M., Ivry, R. & Mangun, G. | 2008 | *Cognitive Neuroscience.* | W. W. Norton & Company |
| Kahneman, D. | 2011 | *Thinking, fast and slow*. | Macmillan. |
| Pinker, S. | 1997 | *How the mind works.* | NY: Norton. |
| Ward, J. | 2015 | *The students' guide to cognitive neuroscience*. | Psychology Press. |

Syllabus
Lent term 2022

# Unit 2: Memory, language and perception

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|---|---|---|---|
| **Start date** | 5January 2022 | **End date** | 23 March 2022 |
| **Synchronous teaching dates** | 10 January 2022<br>31 January 2022<br>14 February 2022<br>7 March 2022 | **Time** | 10am – 4pm |
| **Venue** | Remote delivery | | |
| | | **No of synchronous meetings** | 4 |

**Aims**
This unit offers an introduction to memory, language and perception and has four interconnected aims:

1. to provide an insight into the basic mechanisms of visual and auditory perception, and to explore the extent to which previous experience can shape what we see and hear;
2. to develop an understanding of the distinctions between different memory systems and to develop an understanding of the ways in which memory can go wrong and the factors that shape memorability;
3. to develop an understanding of the core issues in language use, in particular focusing on language development, and the extent to which language is 'taught' vs 'acquired';
4. to develop an understanding of the ways in which memory, perception and language can interact and influence each other.

**Content**

This unit provides an introduction to the study of memory, language and perception. This introduces students to the core distinctions between different types of memory and the different areas of the brain that underpin these different forms of memory. Students are introduced to both auditory and visual perception, paying particular attention to how light and sound is converted into electrical signals by the eye and ear, and exploring how those electrical signals are communicated to and processed by the rest of the brain. This until also introduces some of the key aspects of language processing, with a particular focus on how we learn language and different language deficits. Finally, this unit considers the way in which memory, language and perception can interact to influence each other.

**Presentation of the unit**

This unit will be delivered through four themes of study, each with a supporting session of synchronous day-schools, and the provision of asynchronous learning and online resources through the ICE Virtual Learning Environment (VLE). In between synchronous sessions there will be a number of small experiments to complete, the results of which will form the basis for one of the summative assignments in Unit 3. Students are expected to participate as far as possible in both synchronous and asynchronous learning opportunities.

**Unit structure**

**Topic 1: Visual and auditory perception (synchronous teaching date 10 January 2022)**

This unit begins by considering two of the most important senses for human cognition, the visual and auditory senses. We will explore the nature of the stimulus, the way in which it is encoded (by the eye and ear respectively) and how the stimulus is then processed and understood by the brain. Key topics will include the way in which sensory input is organised into distinct objects, the way in which high level knowledge and previous experience shapes the way we see and hear and the different ways in which visual and auditory input is actively used to perceive and act upon the world.

**Topic 2: Memory (synchronous teaching date 31 January 2022)**

The second topic of the unit will explore the different forms of memory that support human cognition, focusing on episodic memory, semantic memory, procedural memory and priming. A particular emphasis will be placed on the neuropsychology of memory and the way in which different patient populations have enabled us to understand the different forms of memory and the neural mechanisms underpinning them. The role of the hippocampus in supporting the encoding and consolidation of episodic memories will be explored in detail. Finally, there will be consideration of some of the factors that limit our memorability and some of the 'memory illusions' that can result from the reconstructive nature of memory retrieval.

**Topic 3: Language (synchronous teaching date 14 February 2022)**

We will start by considering how we learn language and whether this process supports the idea that we are innately predisposed to be able to use and understand language. The nature of the learning context that supports language learning will be explored, focusing on the role of shared attentional orienting (between the parent and the infant) in facilitating language learning. The different components of language will be reviewed, from phonology and morphology to semantics and syntax (grammar). Deficits to these different aspects of language use and comprehension will be reviewed including both acquired aphasias, genetic deficits and patients with Specific Language Impairments.

**Topic 4: Integrating language, memory and perception (synchronous teaching date 7 March 2022)**

The unit will end by bridging together the different topics in this unit to understand how perception, memory and language interact to enable cognition. This will include looking at cross-modal effects whereby processing in one modality (what we see for example) can influence another modality (what we hear). It will also focus on the process of reading, exploring how the constraints and nature of the visual system make reading such a challenge and explore how visual input is integrated with semantic representations of language. The role of perception in language and language in perception will also be reviewed, asking, for example, is our perception influenced by having different words for colours? Finally this topic will explain how perceptual processing shapes and influences memorability.

**Learning Outcomes**

As a result of the unit, within the constraints of the time available, students should be able to:

- demonstrate a developing knowledge and understanding of some of the core issues in perception, memory and language;
- demonstrate an increased knowledge and understanding of different psychological research methods;
- demonstrate an understanding of the ways in which different areas of cognition (memory, language, perception etc.) can interact to influence each other;
- have the ability to apply theoretical knowledge to real world problems, such as how the workings of the perceptual system might shape what we see, or to understand how a child might learn to understand the meaning of a word it encounters for the first time;

- demonstrate a developing capacity to integrate evidence from different sources (behavioural, neuropsychological, neuroimaging) and to critically reflect upon whether those findings support theoretical claims.

**Student assessment**

This unit includes **two** separate assignments;

- an essay
- a summary of a key article in Cognitive Psychology and its impact on the field

**Assignment 1 - Essay question** *(**1,800 – 2,000** words weighted at 20% of final course mark)*

Students are required to write **one** essay from the following list:

1) Does high level knowledge influence what we see?
2) How can previous experience influence what we hear?
3) Are episodic and semantic memories dependent on completely separate mechanisms?
4) Do we have to teach children how to use language?
5) Is the distinction between 'vision-for-action' and 'vision-for-perception' valid?
6) Can predictive coding explain all forms of procedural learning?

**Assignment 2 - Summary of an important article** *(**1,300 – 1,500** words weighted at 15% of final course mark)*

This summary of an important article in psychology will be based upon a presentation given over the course of this unit. It should both summarize the key findings from that article and explain that articles' broader impact on psychology. The choice of article should be agreed in advance with the Course Director. The slides used for the oral presentation delivered in this unit should also be submitted along with this written summary.

**Closing date for the submission of assignments:**
**Wednesday 23 March 2022 by 12 noon (BST)*** (*British Summer Time)

Students are expected to submit their assignments online and feedback on assignments is delivered online.

**Reading and resource list**
Please note, further reading will be provided for specific lectures.

| Author / editor | Year of publication | Book title | Publisher and place of publication |
|---|---|---|---|
| Baddeley, A. D., Eysenck, M., & Anderson, M. C | 2014 | *Memory (2nd ed.)*. | Hove: Psychology Press. |
| Gregory, R. | 2015 | *Eye and Brain: The psychology of seeing*. | Princeton University Press. |
| Palmer, S. | 1999 | *Vision Science: Photons to Phenomenology.* | MIT Press. |
| Pinker, S. | 1995 | Pinker, S. (1995). *The language instinct: The new science of language and mind* (Vol. 7529). | Penguin UK. |

Syllabus
Easter term 2022

# Unit 3: Executive functions, intelligence and social cognition

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|---|---|---|---|
| **Start date** | 28 March 2022 | **End date** | 10 June 2022 |
| **Day-school dates** | 28 March 2022<br>11 April 2022<br>9 May 2022<br>30 May 2022 | **Time** | 10am – 4pm |
| **Venue** | Remote delivery | | |
| | | **No. of synchronous sessions** | 4 |

**Aims**
This unit offers an introduction into some of the core topics in cognition and has four key aims:

1. to introduce students to the important concepts, theories and methods in studying executive functions, intelligence, attention and social cognition;
2. to outline and assess central debates in this domain, including; the evidence for and against the notion of 'general intelligence', the extent to which 'mirror neurons' shape our ability to understand others and how we can think about and research free will within a scientific framework;
3. to promote an understanding regarding how different areas of cognition (across the whole certificate) influence each other;
4. to promote a developing capacity to integrate different sources of information and to critically evaluate the extent to which empirical studies support different theoretical claims.

**Content**

This unit provides an introduction into some of the core topics in cognition, starting with classical models of 'executive function', and its relation to short term memory. It also explores the notion of general intelligence and neural mechanisms involved in general problem solving. This unit also explores some of the core topics in social cognition, from our ability to understand that others might have mental states that differ from our own (theory of mind reasoning) to the concept and implications of 'mirror neurons'. Finally it will explore the importance of attention, our ability to judge the accuracy of our own perception and cognition (e.g. meta-cognition) and the limits to introspection.

**Presentation of the unit**

This unit will be delivered through four themes of study, each with a supporting session of synchronous day-schools, and the provision of asynchronous learning and online resources through the ICE Virtual Learning Environment (VLE). In between synchronous sessions there will be a number of small experiments to complete, the results of which will form the basis for one of the summative assignments in the unit. Students are expected to participate as far as possible in both synchronous and asynchronous learning opportunities.

**Unit structure**

**Topic 1: Working memory and executive functions (synchronous teaching session 28 March 2022)**

This topic will introduce the concepts of working memory and executive functions. The most influential models of working memory will be explained and evidence will be explored for the notion of a 'phonological loop' and 'visuo-spatial' buffer for short term memory. The role of the frontal and parietal lobe in supporting executive functions and working memory will be explored, with a particular focus on the lessons that can be learned from patients with damage to these areas of the brain. Finally, the topic will explore the limits to short term memory and the broader implications of these limits for understanding what constitutes a unit of information in human cognition.

**Topic 2: Intelligence, cognitive control and free will (synchronous teaching session 11 April 2022)**

In this topic we will start by considering evidence for a unitary intellectual or problem solving capacity or 'General Intelligence'. It will move on to discuss the notion of a set of areas in the brain that are commonly used as a potential general purpose problem solving network. The notion of automatic vs controlled processing will be critically evaluated and the extent to which some perceptual and cognitive processes can happen outside of consciousness will be explored. Finally, the notion of free will or conscious will be considered and we will explore the kinds of experiments that provide an empirical handle on this complex philosophical issue.

**Topic 3: Social and emotional cognition and cognitive biases (synchronous teaching session 9 May 2022)**

The third topic of the unit will consider how we reason about other agents and whether our understanding of others mental states is supported by a specific 'theory of mind' ability that might be disrupted in Autistic Spectrum Disorders. The extent to which 'mirror neurones' contribute to our understanding of others behaviour and intentions will also be critically evaluated. The topic will then move on to consider some of the cognitive biases we bring to different reasoning tasks and the role of emotions in complex decision making. We will explore the heuristics (or mental short cuts) that potentially lead to different cognitive biases. Finally, we will explore in more detail the notion of a 'bias towards essentialism' in human reasoning, which can be defined as the propensity to explain observable phenomena in terms of fixed, unchanging, underlying inherent properties, rather than contingent or contextual circumstances.

**Topic 4: Attention, meta-cognition and introspection (synchronous teaching session 30 May 2022)**

The final topic of the unit will explore the notion of attention and the idea that cognition is shaped by what we selectively focus on, or attend to. In particular this day-school will focus on the influence of attention on memory, language and perception. We will also consider deficits to attention and the surprising symptoms that can result from unbalanced attentional processing in cases of visual spatial neglect. We will also ask how we decide what to attend to and consider more generally how we evaluate the decisions we make and the notion of 'meta-cognition'. Finally, we will explore the nature and limits of introspection and consider what aspects of our mental processes we can report and act upon and what processes are we unable to access via introspection.

**Learning Outcomes**

As a result of the unit, within the constraints of the time available, students should be able to:

- demonstrate an understanding of the concepts and key theories in studying executive functions, intelligence, attention and social cognition;
- demonstrate an ability to critically reflect on some of the central debates in this area and demonstrate an ability to bring together different sources of empirical evidence;

- demonstrate a refined ability to critically reflect upon the extent to which different empirical studies support theoretical claims;
- demonstrate an ability to bring together evidence from across the whole certificate and demonstrate an understanding of the ways in which different aspects of cognition influence each other.

**Student assessment**

This unit includes **two** separate assignments;

1. a research report project
2. an essay

**Assignment 1 - Research report** *(**2,500 – 3,000 words** weighted at 25% of course mark)*

This research report should be written in the format of a published article, based upon the results from one of the experiments completed over the course of the three units.

**Assignment 2 - Essay question** *(**1,800 – 2,000 words** weighted at 20% of course mark)*

Students are required to write **one** essay from the following list:

1) Are there any cognitive processes that are not influenced by attention?
2) Do mirror neurons form the basis for understanding the actions of others?
3) Are we aware of the products of cognition, but not the underlying processes?
4) Is it meaningful to say that we don't have free will, but that we do have free won't?
5) Should emotions be considered as information in decision making processes?

Students are welcome to submit additional essay questions, but these must be **discussed** and **agreed** in advance with the Course Director.

**Closing date for the submission of assignments:**
**Friday 10 June 2022 by 12 noon (BST)*** (*British Summer Time)

**Reading and resource list**

Please note, further reading will be provided for specific lectures.

| Author / editor | Year of publication | Book title | Publisher and place of publication |
|---|---|---|---|
| Duncan, J. | 2010 | *How intelligence happens*. | Yale University Press. |
| Hickok, G. | 2014 | *The myth of mirror neurons: The real neuroscience of communication and cognition*. | W. W. Norton & Company. |
| Wegner, D. M. | 2002 | *The illusion of conscious will*. | MIT Press. |
| LeDoux, J. | 1999 | *The Emotional Brain* | Weidenfield & Nicholson |

# Timetable of synchronous teaching

| Michaelmas 2021 | |
|---|---|
| **Unit 1: History, core themes and methods** | |
| Topic 1: History and key debates | 11 October 2021 |
| Topic 2: Key papers | 8 November 2021 |
| Topic 3: Behavioural research methods and statistics | 22 November 2021 |
| Topic 4: Neuroscience research methods | 6 December 2021 |
| **Assignment deadline** | 5 January 2022 |

| Lent 2022 | |
|---|---|
| **Unit 2: Memory, language and perception** | |
| Topic 1: Visual and auditory perception | 10 January 2022 |
| Topic 2: Memory | 31 January 2022 |
| Topic 3: Language | 14 February 2022 |
| Topic 4: Integrating memory, language and perception | 7 March 2022 |
| **Assignment deadline** | 23 March 2022 |

| Easter 2022 | |
|---|---|
| **Unit 3: Executive functions, intelligence and social cognition** | |
| Topic 1: Working memory and executive functions | 28 March 2022 |
| Topic 2: Intelligence, cognitive control and free will | 11 April 2022 |
| Topic 3: Social and emotional cognition and cognitive biases | 9 May 2022 |
| Topic 4: Attention and meta-cognition and introspection | 30 May 2022 |
| **Assignment deadline** | 10 June 2022 |

*Whilst every effort is made to avoid changes to this programme, published details may be altered without notice at any time. The Institute reserves the right to withdraw or amend any part of this programme without prior notice.*

University of Cambridge Institute of Continuing Education, Madingley Hall, Cambridge, CB23 8AQ
Tel 01223 746222 www.ice.cam.ac.uk