This paper covers biological and cognitive topics involving the connection of brain, body, and behaviour, and will do so from a social sciences perspective. Specific content includes neuroanatomy, neuroendocrinology and neurophysiology, as well as learning, memory, judgment, decision making, intelligence, and cognition and emotion. Topics are presented in the context of the complete individual, and in interaction with the social environment. Lectures include relevant methodologies and methodological issues, and integrative examples will be provided on topics such as executive function, sex differences in the brain, social neuroscience and autism. Practicals will serve to further illustrate the links between theoretical foundations and experimental methods. Students are expected to read in depth, as well as broadly, and to bring their independent perspective and insight to the material at hand.

Assessment: One 3-hour examination at the end of the year, with questions from both Biology and Cognition. Students will need to answer three examination questions: One on Biology, one on Cognition, and a third on either topic. Practicals may involve assessed/required components as well; attendance for practicals is compulsory.

Lecture Time: Tuesday and Thursday, 11:00-12:00 (location varies; see below for details).

Important Note to Students: Some of the lectures offered as part of PSY3 are shared with PSY2 (Experimental Psychology). During those weeks, there are additional lectures on Saturdays, 11:00-12:00, for which attendance is expected.

Michaelmas Term

Thursday, 6 October (Anatomy Lecture Theatre): Introductory Lecture (with PSY2): Dr. Mike Aitken

Tuesday, 11 October (Room 606, Centre for Family Research): Functional Architecture of the Brain 1: Susanne Schweizer

Thursday, 13 October (Social Sciences Seminar Room): Functional Architecture of the Brain 2: Susanne Schweizer

Tuesday, 18 October (Room 606, Centre for Family Research): Functional Architecture of the Brain 3: Johan Carlin

Thursday, 20 October (Social Sciences Seminar Room): Functional Architecture of the Brain 4: Susanne Schweizer

FRIDAY, 21 OCTOBER, Practical: Neurobiology 1 (Dr Jeff Dalley)

2 hours; students will be assigned to time slot (Location: Psychological Laboratory)

In this session we will examine the functional neuroanatomy of the human brain. The main objective of this practical class is to introduce the essential organising principles of the human brain and its key functional divisions, including the fronto-parietal attentional network, the limbic system, the visual system, and the basal
ganglia. The focus of this session is functional systems in the brain not fine-grain connectivity and will involve computer-based exercises, a 20-min video and a guided tour of the human brain in 3D.

Tuesday, 25 October (Social Sciences Seminar Room): Functional Architecture of the Brain 5: Susanne Schweizer

Thursday, 27 October (Social Sciences Seminar Room): Stress, the Brain and Mental Illness 1: Prof. Joe Herbert

Tuesday, 1 November (Social Sciences Seminar Room): Stress, the Brain and Mental Illness 2: Prof. Joe Herbert

Thursday, 3 November (Social Sciences Seminar Room): Stress, the Brain and Mental Illness 3: Prof. Joe Herbert

FRIDAY, 4 November, Practical: Neurobiology 2 (Dr Jeff Dalley)
2 hours; students will be assigned to time slot (Location: Psychological Laboratory)
This practical continues our tour of the human brain from the prospective of human brain imaging, specifically magnetic resonance imaging (MRI) and positron emission tomography (PET) and considers how these imaging modalities can be used to infer functional brain activity in humans. The basic principles of MRI, fMRI and PET will be described using examples from recent imaging studies, all of which will be relevant to your lectures and course work. The primary aim of this practical is to gain an appreciation of contemporary brain imaging techniques and to understand how they can be applied to investigate functional brain activity in humans.

Saturday, 5 November (Anatomy Lecture Theatre): Learning, Memory and Motivation 1 (PSY 2): Dr. Lisa Saksida

Tuesday, 8 November (Anatomy Lecture Theatre): Learning, Memory and Motivation 2 (PSY 2): Dr. Lisa Saksida

Thursday, 10 November (Anatomy Lecture Theatre): Learning, Memory and Motivation 3 (PSY 2): Dr. Lisa Saksida

Saturday, 12 November (Anatomy Lecture Theatre): Learning, Memory and Motivation 4 (PSY 2): Dr. Luke Clark

Tuesday, 15 November (Anatomy Lecture Theatre): Learning, Memory and Motivation 5 (PSY 2): Dr. Lisa Saksida

Thursday, 17 November (Anatomy Lecture Theatre): Learning, Memory and Motivation 6 (PSY 2): Dr. Lisa Saksida

Saturday, 19 November (Anatomy Lecture Theatre): Higher Cognition 1 (PSY 2): Dr. Jon Simmons

Tuesday, 22 November (Anatomy Lecture Theatre): Higher Cognition 2 (PSY 2): Dr. Jon Simmons

Thursday, 24 November (Anatomy Lecture Theatre): Higher Cognition 3 (PSY 2): Dr. Jon Simmons

Saturday, 29 November (Anatomy Lecture Theatre): Higher Cognition 4 (PSY 2): Dr. Jon Simmons

Tuesday, 29 November (Anatomy Lecture Theatre): Higher Cognition 5 (PSY 2): Dr. Jon Simmons
Lent Term


Tue 31 January (Mill Lane Lecture Room 10): Intelligence and its measurement: Prof. John Rust

Thu 2 February (Arts School Room B): Intelligence and its measurement: Prof. John Rust

Tue 7 February (Mill Lane Lecture Room 10): Executive functions: Dr. Michelle Ellefson

Thu 9 February (Arts School Room B): Executive functions: Dr. Michelle Ellefson

Tue 14 February (Mill Lane Lecture Room 10): Integrative example: Social Neuroscience: Dr. Dean Mobbs

Thu 16 February (Arts School Room B): Integrative example: Social Neuroscience: Dr. Dean Mobbs

Tue 21 February (Mill Lane Lecture Room 10): Integrative example: Sex differences in the brain and in behaviour: Prof. Melissa Hines

Thu 23 February (Arts School Room B): Integrative example: Sex differences in the brain and in behaviour: Prof. Melissa Hines

Tue 28 February (Mill Lane Lecture Room 10): Integrative example: Autism, cognition and emotion: Dr. Claire Hughes

Thu 1 March (Arts School Room B): Integrative example: Autism, cognition and emotion: Dr. Claire Hughes

Tue 6 March (Mill Lane Lecture Room 10): Integrative example: Autism and the brain: Dr. Michael Lombardo

Thu 8 March (Arts School Room B): Integrative example: Autism and the brain: Dr. Michael Lombardo

Tue 13 March (Mill Lane Lecture Room 10): Integrative example: Autism and the brain: Dr. Michael Lombardo
Reading List

**Functional Architecture of the Brain: Susanne Schweizer**
(Susanne.Schweizer@mrc-cbu.cam.ac.uk)

Brain Facts from The Society for Neuroscience (SfN)

*Brain Facts* is a 74-page primer on the brain and nervous system, designed as an introduction to neuroscience and available as a free public download from SfN. The individual sections are quite short but taken together form a broad overview of contemporary neuroscience concepts.

**Recommended reading:**


**Supplemental reading:**


Further Information:

Neuroanatomy and functional atlas:
http://www.med.harvard.edu/AANLIB/home.html

Synapse:
http://www.mind.ilstu.edu/curriculum/neurons_intro/neurons_intro.php

Visualising the brain:

**Stress, the brain and mental illness: Prof. Joe Herbert (jh24@cam.ac.uk)**


**Learning, Memory and Motivation: Dr. Lisa Saksida (lms42@cam.ac.uk) and Dr. Luke Clark (lc260@cam.ac.uk)**


**Higher Cognition: Dr. Jon Simons (jss30@cam.ac.uk)**


**Reasoning and Decision Making: Dr. Luke Clark** ([lc260@cam.ac.uk](mailto:lc260@cam.ac.uk))


(Ch. 15 & 17 in Eysenck & Keane, Cognitive Psychology: a Student Handbook (3rd Edition.) cover similar material).


**Intelligence: Prof. John Rust** ([jnr24@cam.ac.uk](mailto:jnr24@cam.ac.uk))


**Executive functions: Dr. Michelle Ellefson** ([mre33@cam.ac.uk](mailto:mre33@cam.ac.uk))

**Required Readings:**


**Supplementary Readings:**


Integrative example: Sex differences in the brain and in behaviour: Professor Melissa Hines (mh504@cam.ac.uk)

Primary reading


**Integrative example: Autism, cognition and emotion: Dr. Claire Hughes (ch288@cam.ac.uk)**

*Good introductory books:*

Mark Haddon (2004). *The Curious Incident of the Dog in the Night-time*

*Highly cited journal articles that review specific theories / aspects of autism research:*


Please note that there are literally thousands of excellent articles on autism – the above are just a few suggestions to get you started with your reading. This is such a fast moving area that it’s definitely worth learning how to use Scopus to download research articles as pdfs.