UCL SUMMER SCHOOL

HOW THE BRAIN WORKS AND WHAT CAN GO WRONG

Key Information

Module code: ISSU0065
Taught during: Session One: Monday 1 July - Friday 19 July 2018
Module workload: 45 teaching hours plus approximately 100 study hours
Module leader: Dr Julie Evans
Department: Faculty of Brain Sciences
Credit: 15 UCL credits, 7.5 ECTS, 4 US
Level: Level 1, first year undergraduate
Pre-requisites: Standard entry requirements
Assessment: Group presentation (20%), Essay (80%)

Module Overview
The brain is an amazing object which controls human lives – it is a complex inter-connection of neurons which store our memories and knowledge and has a complex brain chemistry. However, our brains can sometimes go wrong- either because there is something wrong with our genetics or brain chemistry or due to some injury to the brain and central nervous system at some at some point in our life. Brain dysfunction can have a major impact upon an individual’s ability to live and interact within their environment, depending on where the injury or dysfunction occurs. The brain is also affected by the environment and many genetic vulnerabilities in individuals do not necessarily result in dysfunction unless there is a maladaptive or threatening environment e.g. such as in schizophrenia. This module will look at what we know about healthy brains - how the brain is structured, the different types of brain cells, localisation of function and neurochemistry of different brain areas, communication within the brain and how we investigate the brain in week 1. In weeks 2 and 3 the module will look at dysfunction in relation to vision, hearing, movement, memory, thinking, emotion and behaviour. UCL is ranked as second in the world for neuroscience and students will get to hear about the amazing world class research that takes place within the Faculty of Brain Sciences and its constituent parts: the Division of Psychology and Language Sciences, the Division of Psychiatry, the Institutes of Ophthalmology and Neurology and the Ear Institute.

Week One
- How the brain works: structure
- How the brain works: function and localisation
- How the brain works: neurochemistry
- How do we investigate the brain?
- Developmental and acquired disorders of vision and visual perception
- Developmental and acquired disorders of hearing and speech
Module Aims
The aims of the module are initially to give students an overview of healthy brain structure and function, localisation of function, how this relates to human activity and behaviour and the recent advances in technology that allow us to study the brain in health and dysfunction. The rest of the module will look at specific areas where developmental or acquired brain disorder has resulted in identifiable disorders and health issues outlining symptoms, causes and treatment and the impact on the individual’s life. The module will use population and incidence data as well as look in more detail at individual case studies.

Teaching Methods
Teaching methods will include a mixture of lectures and small group discussions. Students will also have the opportunity to obtain formative feedback on their essay plan.

Learning Outcomes
Upon successful completion of this module students will:
- Have knowledge of the brain structure and function in humans
- Have knowledge of methodologies uses to study the brain
- Have developed understanding of the theories and evidence for causality of acquired and developmental brain disorders
- Be able to critically appraise and evaluate
- Have an overview of main treatment interventions and evaluation of their efficacy
- Have understanding of the complex interaction of genes and environment

Assessment Methods
- Group presentation (20%)
- 1,500 word essay (80%)

Module Leader
Dr Evans has been a university educator for 25 years in the UK and has a background in psychology, specifically in individual differences and abnormal psychology. Dr Evans has been involved in educating university students from undergraduates to postgraduate research students and has also taught overseas on joint programmes. Dr Evans has a 1st class degree in Psychology from Swansea University a PhD from the University of Oxford and has been awarded a Senior Fellowship by the Higher Education Academy in the UK. In her current role, Dr Evans has overarching responsibility for education and the student experience within the Faculty of Brain Sciences. Since joining UCL in 2012 Dr Evans has been the recipient of two Provost Teaching awards in recognition for an outstanding contribution to teaching and learning at UCL.

Key Texts


