

BSc Neuroscience

Modules year 1	
Module Title	Module description and context
Understanding the Brain and Nervous System	<p>This module will provide you with an in-depth understanding of the brain and nervous system. You will learn about different structures and systems in the nervous system and their functions, including key structures in the brain. You will learn how we sense information from the world around us and how we control our movements, and how the nervous system regulates other bodily processes and systems. You will learn about cells in the nervous system and how these communicate with each other to enable the brain to function and the effect of various substances on this, as well as how the brain and nervous system develop. We will also consider cognitive functioning, with an emphasis on memory. This module will provide you with a solid grounding to understand the nervous system for the rest of your degree, postgraduate studies, and future career, and later modules in your degree will build on the knowledge you will gain here.</p> <p>Throughout this module you will be taught in a mixture of lectures and seminars. The lectures will cover core information for each topic. Interactive seminar activities will enhance your understanding of the structures and functions of the nervous system through activities to test your knowledge and understanding of the material covered in the lectures. You will also learn about the impact of damage to different systems, and how we can apply our knowledge from neuroscience to address the impact of damage to the nervous system. Seminar activities will also be designed to support the assessments for the module.</p> <p>In this module your knowledge and understanding of the nervous system will be assessed using an essay and a public communication. These will assess your understanding of the structures and functions of the nervous system, key topics for the remainder of your degree. Your communication skills will be developed through these assessments, and your creative skills will be developed through the public communication. These are skills that will be required for the rest of your degree and for many careers.</p>
Topics and Techniques in Neuroscience	<p>This module will provide you with information on key techniques used to investigate brain and nervous system structures and functions, as well as information on key topics in neuroscience. You will learn about techniques including MRI and EEG. You will learn about the basic principles behind the techniques and how to use these, key research findings using these, and the key principles during data analysis. You will explore real datasets and form conclusions based on these. You will also learn about key topics in neuroscience, and current research questions related to these. This module will help provide you with a solid grounding in neuroscience, and later modules in your degree will build on this knowledge.</p> <p>In this module you will be taught in a mixture of lectures and seminars. Lectures will cover the key information relating to the technique or topic. Interactive seminars will consist of practical activities where you will perform tasks such as interpreting data collected using different techniques and from different patient groups, or taking part in activities to demonstrate brain plasticity. You will also explore applications of our knowledge from neuroscience to real-world situations to answer key research questions in seminars. The seminars will therefore further develop your knowledge and understanding related to different techniques and topics in neuroscience. In addition, seminar activities will be designed to support the assessments for the module.</p> <p>Your knowledge and understanding for this module will be assessed using a case study and a poster presentation. These will assess your understanding of</p>

	<p>techniques and topics in neuroscience, key information you will need for the rest of your degree. These assessments will develop your written communication, oral presentation, and creativity skills. These are skills that will be vital for the rest of your degree and for many careers.</p>
<p>Psychology of Resilience and Success</p>	<p>The Psychology of Resilience and Success provides the ideal inspiration and support for your learning journey in psychology, both in academia and beyond.</p> <p>This module will empower you to:</p> <ul style="list-style-type: none"> • discover the ways of learning that are most effective for you. • develop your confidence in conveying your ideas. • develop your Psychological Literacy skills. • develop an understanding of how groups can work effectively. • deepen your writing and thinking skills for your degree and beyond. • develop an awareness of how you can apply your knowledge and skills <p>Whatever your experience prior to starting your psychology degree this module will enable you to become aware of the skills and resources that you already have and how you can strengthen and add to these. This module is framed within psychological theories of self and learning and will teach skills (e.g. communication styles, academic writing, managing procrastination, team working, conflict management and interpersonal skills) that are vital for university study, as well as for future employment, while giving key opportunities to practice these skills.</p>
<p>Introduction to Psychological Research</p>	<p>This module will provide you with an introduction to research methods and basic statistics so that you can both perform and understand the information provided by simple experiments. Further, this module aims to provide you with a basic knowledge of research methods that will allow you to better understand psychological research, and as such, all methods and techniques will be linked to the research discussed in other first-year modules. This module will link closely with research methods modules provided in years 2 and 3, so that you will be well equipped to undertake your independent research project in year 3. Finally, the skills provided in this module such as analytical skills, skills in the use of software packages such as Microsoft Excel and SPSS, and understanding of basic statistics and competency with data are transferrable and marketable in psychology careers and careers that value a psychology degree, ultimately improving your employability.</p>
<p>Chemistry of Life</p>	<p>Students will study the structure, evolution and simple biochemistry of the cell. This module is also designed to equip students with the specific knowledge and skills in chemistry which underpin other modules in the biosciences programmes. Standard laboratory practice in terms of handling equipment, recording results and the writing up of experimental procedures is also a pre-requisite for a scientific discipline.</p>
<p>Cell Biology</p>	<p>Modern Cell Biology underpins, informs and impacts all areas of biomedical and biological study. This module teaches the basic principles of the cellular theory, signalling pathways and its molecular genetic basis. Additionally, many areas of biological science now require detailed knowledge and understanding of cell structure and function at the molecular level and so this module will introduce a basic understanding of cell structure and function. The structure and function of a range of macromolecules will be addressed. In particular, extensive consideration will be given to nucleic acids and their role in information storage and its transcription and translation into RNA and protein molecules. The basic elements for subsequent study of the control of gene expression and of molecular genetics will be considered. The module will address the integration of molecular aspects of cell structure and function in the overall control of cell growth and division in the cell cycle and in cell signaling.</p>

Modules year 2

Module Title	Module description and context
<p>Research and Experiments in Cognitive Neuroscience</p>	<p>This module will provide you with knowledge relating to key paradigms to assess different cognitive functions, and experience of designing and conducting research and data analysis in cognitive neuroscience. You will learn about and re-create classic paradigms and experiments used to assess and enhance our knowledge of a variety of cognitive functions such as perception, attention, memory, decision-making, language, and emotion. This module will introduce you to the conceptual issues associated with these major paradigms in cognitive neuroscience research and will foster your understanding of the nature, purpose, and logic of experimental methods and a quantitative approach. You will also design and conduct research studies using these paradigms, and so will see how these can be applied in real-life.</p> <p>During this module you will be taught in a mixture of lectures and workshops. The lectures will give an overview of the different paradigms and the key findings using these. Workshops will provide you with the opportunity to design and conduct your own research studies using these paradigms. As a part of the workshops you will also have the opportunity to be a participant in another person's study. Workshop activities will also be designed to support the assessments for the module.</p> <p>Your knowledge in this module will be assessed through an essay and a research report. These assessments will develop your abilities in synthesising, summarising, and evaluating relevant literature. Your work on the research report will also develop your abilities in designing, conducting, analysing the results of, and reporting the findings of studies in cognitive neuroscience. You will develop your skills in literature searching and reviewing as a part of this module, as well as your practical skills in programming and using computer software for data collection (e.g. E-Prime and Working Memory Analyser) and to perform statistical analysis (e.g. Excel and SPSS). This module will also further develop your academic written communication skills. These skills and your developed knowledge and understanding of cognitive neuroscience research will build on your knowledge from the first year and will be important for later modules, particularly your dissertation in the third year. This module will provide you with several skills that are highly desirable for postgraduate studies and employment within a wide range of careers linked to psychology and neuroscience, in particular careers in research and data analytics.</p>
<p>Applied Neuroscience</p>	<p>In this module you will learn about the different ways we can apply knowledge from neuroscience to current real-world situations and careers. We will look at different neurological, psychological, and neurodevelopmental conditions, and how our knowledge from neuroscience can be applied firstly to improve earlier diagnosis of conditions, and secondly to improve treatments and interventions. Topics may include using biological markers for an earlier diagnosis of Alzheimer's disease, using brain stimulation to reduce trauma in PTSD, and using neurofeedback to improve cognitive functioning in ADHD. You will also learn about how we can use neuroscience in everyday life, such as improving our cognitive and emotion regulation abilities, as well as links between neuroscience and the law, educational outcomes, understanding consumer behaviours, and drug development. We will relate topics to different possible careers, and so you will develop your understanding of possible careers that you might like to consider.</p> <p>Throughout this module you will be taught in a mixture of lectures and seminars. The lectures will cover the background to the topic and applications of neuroscience knowledge in the area. Where appropriate we will include guest speakers who have different careers linked to neuroscience, to inform you about possible careers following your degree. Seminars will give you opportunities to further explore applied uses of neuroscience to improve people's lives, and to design your own studies to assess these uses. Seminar activities will also give you opportunities to reflect on your own development and career path. Finally, seminar activities will be designed to support the assessments for the module.</p>

	<p>Your knowledge in this module will be assessed through an intervention design and a careers leaflet. The intervention design will allow you to demonstrate your ability to synthesise, summarise, and evaluate relevant literature, as well as applying knowledge to a real-world issue. The careers leaflet will allow you to develop your creativity, as well as your ability to summarise key information. Your written communication skills to different audiences will be further developed through these assessments. These assessments will therefore provide you with multiple skills that will be required for the rest of your degree, postgraduate studies, and for many careers.</p>
Cognitive Psychology and Neuroscience	<p>On this module you will learn about the core topics of cognitive psychology and neuroscience. Taken together, they are concerned with the study of how the brain, nervous system and other physiological systems affect and are affected by mental functioning and behaviour, with a specific focus on the neural substrates of mental processes. You will learn how this field of research has made exciting discoveries about the way we perceive the world, remember, communicate, learn and think. The focus of the lectures and seminars will be on conceptual and historical issues, as well as contemporary theory and research. You will be encouraged to engage critically with the material and think about the applications of biological psychology, cognitive psychology and neuroscience. Additionally, this module will further develop skills including communicating effectively (face to face and in-writing), handling materials critically, and reasoning scientifically to consider alternative approaches and solutions, which are crucial skills for future employment.</p>
Molecular Biology: Theory and Practice	<p>This module consists of a theoretical basis, interspersed with a series of laboratory classes which introduce a range of basic techniques and recent progress in the fields of Molecular Biology and Biotechnology. Over the last 30 years a revolution has taken place that has put molecular biology at the heart of all the biological sciences. The gene revolution has included many technological advances and so biosciences graduates are required both to understand the theory which underpins these techniques, and to develop appropriate laboratory skills.</p> <p>This module builds on BSS020C141Y Cell Biology to develop students' understanding of the principles, applications and practical methods of molecular biology. It provides an essential introductory approach to basic molecular biology research.</p>
Pharmacology and Toxicology	<p>This module aims to develop an awareness and understanding of pharmacodynamics and pharmacokinetics in relation to healthy individuals and in the treatment of disease. The effects of drug applications on mode of delivery and dose according to personal characteristics, are explained and evaluated. Toxicology deals with the adverse effects of chemical substances on living systems and is therefore of relevance to all areas of the biosciences. Like pharmacology it is an interdisciplinary subject encompassing biochemistry, physiology and pathology. In this module, routes for the entry, distribution and excretion of a range of organic and inorganic toxins are examined together with the molecular mechanisms of toxicity and the enzyme systems and pathways involved in their metabolism.</p>
The Brain in Health and Disease	<p>An opportunity to study the basis of modern neurobiology providing an insight into the most recent developments in the field, such as brain imaging or new theories of brain plasticity. The module also includes elements of the established and accepted concepts like those concerning neurotransmission. The module addresses the issue of multiple links between biological events and behaviour, in both health and disease. In its latter part, it looks at biological rhythms and the functions of sleep. It deals with neurobiology of addiction and brain disorders, and discusses neurobiological aspects of modern psychiatry. The module is designed to facilitate student understanding of current directions in brain research, both basic and applied.</p>

Modules year 3

Module Title	Module description and context
<p>Developmental Cognitive Neuroscience</p>	<p>In this module you will learn about changes in the brain and in cognitive abilities across development. We will discuss both the typical development of different cognitive functions, such as memory, language, and social cognition, as well as the atypical development that is seen in neurodevelopmental conditions such as autism, attention deficit hyperactivity disorder, dyslexia, and intellectual disabilities. This module will cover current research and perspectives in these topics as well as future directions, giving you an up-to-date overview of key research questions in these areas.</p> <p>Throughout this module you will be taught in a mixture of lectures and seminars. The lectures will give an overview of key research and the current research questions for each topic. Seminars will give you the opportunity to discuss current perspectives in the field to enhance your understanding, as well as consider how we can apply our knowledge to better support people and improve their lives. Seminar activities will also be designed to support the assessments for the module.</p> <p>In this module your knowledge and understanding of developmental cognitive neuroscience will be assessed through a research summary portfolio and a public communication. These assessments will develop your ability to synthesise, summarise, consider the impact of, and apply knowledge, as well as your communication skills for non-academic audiences. Both postgraduate study and many workplaces require effective communication for different audiences, and so these skills will be vital for the next stage in your career.</p>
<p>Neuroscience of Health and Illness</p>	<p>In this module you will learn about links between neuroscience and wellbeing, and different neurological and psychological conditions. We will discuss the effects of different conditions affecting the brain, such as schizophrenia, substance abuse, and mood disorders. We will also discuss factors important for promoting healthy cognitive and brain functioning, such as the roles of the immune system, sleep, and gut functioning. This module will cover current research and perspectives in topics relating to health and illness as well as future directions, giving you an up-to-date overview of key research questions in these areas.</p> <p>Throughout this module you will be taught in a mixture of lectures and seminars. The lectures will give an overview of key research and the current research questions for each topic. Seminars will give you the opportunity to discuss relevant topics to enhance your understanding, as well as opportunities to consider how we can develop further research studies so that we can assess applications of our theoretical knowledge to better support people and improve their lives. Seminar activities will also be designed to support the assessments for the module.</p> <p>Your knowledge in this module will be assessed through a stakeholder report and a presentation. These assessments will develop your ability to synthesise, summarise, consider the impact of, and critically evaluate knowledge. Your ability to apply knowledge to a real-world issue will be developed through the presentation. Your written and oral communication skills for academic and non-academic audiences will also be further developed through these assessments. These assessments will therefore provide you with multiple skills that are important for postgraduate studies and many careers.</p>
<p>Psychological Practice for Communities and Industry</p>	<p>This module will support you to further develop your employability, communication and reflective skills, focusing on marketing yourself in relation to CV writing, communication and interview skills, teamwork and developing an online social media presence (e.g LinkedIn). You will be supported in adopting a life-long learning perspective, identifying and pursuing knowledge and skills directly relevant to academic, personal, and work-based development. In the latter part of the module, you will have the opportunity to acquire experience in the workplace, applying psychological knowledge and skills in a paid or voluntary capacity. Over the course of this module, you will develop a personal development portfolio and reflective journal drawing on your learning in industry, enterprise or with the community. This module</p>

	will enable you to develop your employability skills, reflective capacity and psychological literacy, preparing you for your career after graduation.
Neuropsychology	This module will explore key areas in neuropsychology covering each major lobe of the brain and covering sustained as well as progressive neuropsychological brain disorders. Each week is devoted to a key topic within the field, with the background material covered in the lecture and then the seminars focussed on critical evaluative discussion of important papers within that topic area. Students successfully completing this module will gain knowledge and understanding of the main theoretical perspectives, debates, research and statistical paradigms that have informed and shaped key neuropsychological disorders.
Neuroscience Project	<p>Producing an independent project is an important part of your degree. In this module you will develop your research, project management, and written and oral communication skills through either conducting an independent research project or an independent consultancy project. If you conduct a research project you will apply your previous knowledge and skills around research methods and statistics to your own project, where you will independently design your research question(s), collect your data, manage and analyse your data, and report on your findings. In addition, you will interpret your findings in terms of the existing literature and the possible implications of these. If you conduct a consultancy project you will apply your previous knowledge and skills around literature searching and critical evaluation to independently perform a systematic and critical evaluation of contemporary research and future directions in a specific topic, and report on your findings.</p> <p>Available projects will span different areas relating to neuroscience, meaning you are able to select a topic in an area that interests you. You will be supported in your project by a supervisor who is an expert in the topic, and you will also take part in lectures and workshops to further develop your research skills and to support your work for this module.</p> <p>Whichever project you choose, you will be required to write an extended project report and deliver a poster presentation. This will further develop your written and oral communication skills, as well as your research and project management skills. Through your work on this module you will therefore develop a number of key transferable skills that are important for many graduate careers.</p>

Please note, modules are subject to change.