MSc in Clinical Neurology

www.sheffield.ac.uk/clinneuro
**MSc in Clinical Neurology:**

This MSc in Clinical Neurology will enable the student to apply the fundamentals of neuroanatomy and physiology to the clinical features of patients with neurological disease. An integrated approach links recent research advances to cutting edge management in the clinic, focussing on how insights from the laboratory are translated into benefits for patients. With an ageing population, neurological diseases represent an increasing economic burden to society and a cause of much suffering to patients and carers alike.

Our MSc programme offers theoretical and practical training in clinical neurology and neuroscience research including practical experience in the dissection room to facilitate teaching of neuroanatomy. During several themed modules, each focussing on a different patho-physiological branch of neurological disease, disease-centred lectures and small group tutorials provide the necessary theoretical knowledge into the current state of the art of diagnostics and therapeutics in neurology.

All students have the opportunity to apply their theoretical knowledge to patients with neurological disease in small group teaching sessions and clinics. In the final semester students may undertake a research option (Route A) or a Clinical Neurology Experiential Learning Module [CNELM] option (Route B - requires candidate to have a MBChB or equivalent degree and to be eligible for registration with the GMC). Students who opt for the CNELM route will attend additional specialist clinics with patient-centred teaching from experts in the field who will emphasise recent advances in clinical practice. Students who opt to undertake the research route will choose either a laboratory-based or clinical research project based at the Sheffield Institute for Translational Neuroscience (SITraN); a brand new, state-of-the-art translational neuroscience facility recently opened by Her Majesty the Queen. The combination of practical teaching in neuroanatomy, course work projects, seminar programmes, taught modules, research and apprenticeship experience provides a range of subject-specific and transferable skills pertinent to a variety of careers, for doctors and other health care professionals considering a career in clinical neurology, neurological healthcare, academia or industry.

**Who is the Course for?**

This MSc in Clinical Neurology is aimed at graduates with a 2:1 or higher degree in a biomedical or healthcare related subject who wish to develop their knowledge, expertise and research skills in clinical neuroscience. The MSc will benefit those wishing to develop a career within the expanding field of translational neuroscience within research and healthcare settings. Additionally the MSc is aimed at medical graduates with a MBChB or equivalent qualification, who wish to develop a sub-specialty experience in a branch of neurology.

**Aims of the Programme are to:**

- Enable students to develop independence of thought, intellectual curiosity and a critical approach to evidence, theories and concepts.
- Foster a commitment to continuing professional development and lifelong learning.
- Enable students to develop an understanding of the pathobiological mechanisms and modern therapeutics of diseases of the nervous system.
- Prepare students for further postgraduate work and/or a professional career in clinical neuroscience or other areas of biomedical practice through transferable skills.

**Entry requirements:**

- For “Route A” a 2:1 or higher BSc degree in a relevant biomedical science or healthcare related subject.
- For “Route B” MBChB degree or equivalent and eligible for GMC registration.
- IELTS of 7 (including 7 in listening) or equivalent.
This is a 12 month, full-time course consisting of four taught module components worth 30 credits each undertaken during the autumn and spring terms. Additionally either a research project (Route A) or a Clinical Neurology Experiential Learning Module - CNELM (Route B) worth 60 credits is completed in the summer term. The taught component of the MSc is delivered through lectures, tutorial and student-led group work. Each of the 30 credit modules is assessed using a formal examination (15 credits) and on-going assessments during the module (15 credits), including essays, viva voce and oral presentations.

In the third semester students select one of three 60 credit options:

**Route A:**
- A research project (no patient contact)
- A research project (patient contact)

The research project is assessed from the written dissertation and viva voce examination. Research projects involving patient contact will require the student to complete a CRB check and apply for a research passport approved by the local NHS trust involved in the sponsorship of the research.

**Or**

**Route B:**
- Clinical Neurology Experiential Learning Module (CNELM).

The CNELM is assessed by means of a portfolio (30 credits) and a 6000 word dissertation (30 credits) on an aspect of the sub-specialty chosen for the module. The portfolio will contain a reflective log, anonymised details of cases seen and work based assessments. Students will be expected to have covered a core sub-specialty spread of cases.

“A range of teaching modalities are employed, including problem based learning, bedside teaching, the lecture series, grand rounds (including case presentations from the wards as well as talks from invited speakers), as well as a broad variety of outpatient clinics where students can see rare cases”.

*Quote by Current Neurology Trainee.*
MSc in Clinical Neurology - Taught Modules Outline

**Cerebrovascular Disease and Disorders of Consciousness**

Cerebrovascular disease is a common cause of death and disability. In recent years, great progress has been made in both prevention and acute management of cerebrovascular disease. Epilepsy is a common cause of morbidity in individuals of all ages. Correctly characterising the disorder can be difficult as can identifying the most appropriate treatment. This module provides practical exposure to expert specialist clinics in conditions such as TIA, stroke and epilepsy, in combination with lectures covering key aspects of these disorders and recent research insights. The aim is to facilitate the students’ understanding of how laboratory breakthroughs have been translated into clinical benefits for patients in the modern treatment of these conditions.

**Neuroinflammation (CNS) and diseases of the PNS**

Inflammatory diseases of the nervous system are a common cause of disability, often in young people. In recent years, great progress has been made in elucidating the pathological mechanisms underlying neuroinflammation, which has led to new treatments and a better understanding of links with the neurodegenerative processes discussed in other modules. This module provides practical exposure to expert specialist clinics in conditions such as multiple sclerosis, autoimmune ataxia, muscle disease and peripheral neuropathy, in combination with lectures summarising recent research insights. The module will also facilitate the students’ understanding of how laboratory breakthroughs have been translated into clinical benefits for patients in the modern treatment of neuroinflammatory disease.

**Applied Neuroanatomy & Clinical Neuroscience**

Clinical neurology is underpinned by knowledge of the neuroanatomy of the central and peripheral nervous system. In order to diagnose, investigate and provide appropriate treatment we must first localize the lesion. In order to do this, a thorough knowledge of basic neuroanatomy is essential. This module will provide neuroanatomy video sessions followed by laboratory dissection of the human brain and spinal cord by students. The dissection course is complimented by a lecture series on functional neuroanatomy and functional neuroscience. This lecture course covers the basic anatomy and physiology that underpins our understanding of neurological disease.

**Neurodegeneration**

Neurodegenerative diseases increase in prevalence with age and as such are increasing rapidly with the ageing population. They result in a large number of years of disability and resulting burden on families, carers, health and social care costs. Despite recent advances in understanding the underlying pathophysiology of these conditions, no disease modifying therapy has recently come into clinical practice.

This module provides practical exposure to expert specialist clinics including those for motor neuron disease (MND), Parkinson’s disease (PD), dementia and Huntington’s disease.

The student will have clinical tutorials and lectures on the pathophysiology underlying the selective neuronal loss in these conditions.
### Speciality Clinics and Clinical Neurology Areas of Interest

<table>
<thead>
<tr>
<th>Multiple Sclerosis (MS)</th>
<th>Ataxia</th>
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<tr>
<td>Stroke</td>
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<td>Epilepsy</td>
<td>Rehabilitation</td>
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<td>Motor Neurone Disease (MND)</td>
<td>Neuro- oncology</td>
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<td>Neuromuscular Disorders</td>
<td>Spasticity</td>
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<td>Sleep Disorders</td>
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<td>Neuro- ophthalmology</td>
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<td>Dementia</td>
<td>Functional Disorders</td>
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### Course Leaders:

**Dr Christopher J McDermott MBChB PhD FRCP**  
Clinical Senior Lecturer in Neurology, University of Sheffield, Consultant Neurologist Sheffield Teaching Hospitals NHS Foundation Trust. Co-Director of the Sheffield Care and Research Centre for Motor Neuron Disorders, Chair Neurology Specialty Training Committee for South Yorkshire, Neurology Training Programme Director – South Yorkshire.

**Professor Pamela J Shaw MBBS MD FRCP FAAN FANA FMedSci**  
Professor of Neurology, University of Sheffield, Consultant Neurologist Sheffield Teaching Hospitals NHS Foundation Trust. Director Sheffield Institute for Translational Neurosciences (SITraN); Director of the Sheffield Care and Research Centre for Motor Neuron Disorders; Associate Director Dementia and Neurodegenerative Diseases Clinical Research Network (DeNDRoN). Academic Director, Directorate of Neuroscience, Sheffield Teaching Hospitals NHS Foundation Trust.

**Dr Basil Sharrack MD PhD FRCP DHMSA DTM&H DPMSA**  
Consultant Neurologist, Sheffield Teaching Hospitals NHS Foundation Trust and Honorary Reader, University of Sheffield. Director of the Sheffield Multiple Sclerosis Research Clinic.

**Dr Tom Jenkins MBChB MRCP PhD**  
Clinical Lecturer, University of Sheffield and SpR in Neurology, Sheffield Teaching Hospitals NHS Foundation Trust.

**Dr Daniel Blackburn BSc MBChB MRCP PhD**  
Clinical Lecturer, University of Sheffield and SpR in Neurology, Sheffield Teaching Hospitals NHS Foundation Trust.
Why Sheffield?
Sheffield is a major city with a strong sense of community situated in the heart of the UK, adjacent to the scenic Peak District National Park. The city is diverse with a rich cultural life, the perfect place to spend a year taking your masters. The people are friendly. You'll find they go out of their way to help you and make you feel welcome. The cultural life of the city is vibrant. The award-winning Millennium Gallery complex is linked to the Tate and the V&A in London. The Showroom is the biggest independent cinema outside London. The Crucible, Lyceum and Studio are among the UK's most important theatres. It’s a compact city, easy to get around, so you’ll settle in quickly. People in Sheffield have a high standard of living and Sheffield is one of the least expensive and safest places in the UK to live and study. There is affordable city-centre living for students, that is within walking distance of the University, making Sheffield a top destination in which to undertake your studies.

The University of Sheffield
The University of Sheffield has been named UK University of the Year in the 2011 Times Higher Education Awards. The University won this prestigious award because it is a world-class university in a unique city. We are a community true to our civic roots and our straightforward approach informs everything we do, both close to home and around the world. The University is a world-renowned research intensive university. Founded in 1905, it provides students with an environment where high quality teaching is informed by the latest research developments. The University attracts students from all over the world, as well the UK and Europe.

Facts and Figures
- 93% of our research submitted to the 2008 Research Assessment Exercise (RAE2008) was rated as 3* (internationally-recognised) or 4* (world-leading) confirming our ranking in the top ten UK research-intensive universities.
- The University is ranked in the top 10 the UK and in the top 100 in the world in an annual academic ranking of the top 500 universities worldwide published by Shanghai Jiao Tong University.
- Times Higher Education Student Experience Survey 2011 The University came second in the country and was named as "the university most people would recommend to a friend".
- The Virgin 2011 Alternative Guide to British Universities "Sheffield is a top university across the board".
- 2011 National Student Survey The University is in the top 10 of UK universities out of 154 for student satisfaction.
Neuroscience in Sheffield

Sheffield is a leading national centre for neurology teaching at both undergraduate and postgraduate levels. Neurology teaching is complemented by neurological disease research, with strengths in the fields of neurodegeneration, cerebrovascular disease, neuro-inflammation, epilepsy and functional neurology. The Sheffield Neuroscience Faculty has a strong track record of training undergraduates, postgraduates and research fellows. We have established a pathway of translational research from basic neuroscience through to phase 3 clinical trials in patients with neurological disease. We have excellent teaching facilities and resources, including cohorts of patients carefully characterised throughout the disease course, and a large collection of optimally prepared biosamples in multiple neurological disease areas. Sheffield has an excellent collaborative environment for interdisciplinary research between clinicians and basic scientists, together with researchers from health services research, public health (ScHARR and CLARHC), engineering, and bioinformatics. Interaction with the University of Sheffield’s newly formed Virtual Physiological Human Institute, provides a unique platform for the continuing application of computation modelling to all aspects of clinical neuroscience teaching and research.

Department of Neuroscience

Neuroscience in Sheffield spans several faculties and departments, with academics and clinicians dedicated to teaching and research into the understanding and treatment of neurological and psychiatric disorders. The Department of Neuroscience is also home to SCANlab, a dedicated neuroimaging laboratory that offers state-of-the-art computing facilities for the analysis of structural and functional MR imaging data. The Department provides an exciting and world-class research environment for MSc. Students. Students are taught in a multidisciplinary environment and supervised by highly interactive, trained research teams of basic and clinical scientists applying state of the art approaches in a variety of clinical patient based studies, disease models and patient cohorts. The course will be based at the Sheffield Institute for Translational Neuroscience (SITraN), which was opened by Her Majesty the Queen in November 2010. The major areas of research interest are in neurodegenerative diseases (diseases of the motor system and dementia); psychiatric disorders (psychoses, including schizophrenia) and clinical neurology (epilepsy, stroke, ataxia, multiple sclerosis). We use disease models, patient material and neuroimaging to understand the molecular, cellular and genetic aspects of disease as well as undertaking new approaches for treatment discovery and development. The primary research strategy is to develop novel therapeutic approaches which can be translated into clinical applications for patients with neurological disorders.

Sheffield Teaching Hospitals NHS Foundation Trust

The STH Trust represents an excellent environment for clinical care and research (Dr Foster Trust of the Year in 2005, 2008 and 2011) and provides NHS services to a population of 2.2 million people in the region. There are 5 specialist adult hospitals in Sheffield and 1 dedicated Children’s Hospital. The STH Trust hosts the South Yorkshire Specialist Training Programme in Neurology within the Neuroscience Directorate. The Neuroscience Directorate was the flagship Academic Directorate (Academic Director - Professor Pamela Shaw) which has been established with the core aim of integrating clinical service and research to provide an optimal environment in which patients receiving clinical care can participate in translational research. Within the Neuroscience Directorate there are 39 consultant staff: 22 neurologists; 12 neurosurgeons and 5 neuro-physiologists and the Directorate operates many specialty neurological clinics on a weekly basis and is a recognised centre for delivering quality clinical teaching and research training.
Other Related Courses Available at the University of Sheffield:

**MSc Translational Neuroscience:**
http://www.sheffield.ac.uk/postgraduate/taught/courses/medicine/neuroscience/translational-neuroscience-msc

**MSc Molecular Medicine:**
http://www.sheffield.ac.uk/postgraduate/taught/courses/medicine/biomedical/molecular-medicine-msc

**MSc Cognitive & Computational Neuroscience:**
http://www.sheffield.ac.uk/postgraduate/taught/courses/science/psychology/cognitive-computational-neuroscience-msc

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Course Webpage:  
http://www.sheffield.ac.uk/clinneuro

Departmental Webpages:  
http://www.shef.ac.uk/neuroscience  
http://www.shef.ac.uk/sitran

Application Information: http://www.sheffield.ac.uk/postgraduate/taught