The University Of Sheffield.

Programme Specification

A statement of the knowledge, understanding and skills that underpin a taught programme of study leading to an award from The University of Sheffield

1	**Programme Title**	Neuroscience and Neurodegeneration
2	**Programme Code**	NEUT01 / NEUT02 / NEUT03
3	**JACS Code**	B140
4	**Level of Study**	Postgraduate
5a	**Final Qualification**	Master of Science (MSc)
5b	**QAA FHEQ Level**	7
6a	**Intermediate Qualification(s)**	Postgraduate Diploma (PGDip), Postgraduate Certificate (PGCert)
6b	**QAA FHEQ Level**	7
7	**Teaching Institution** (if not Sheffield)	Not applicable
8	**Faculty**	Medicine, Dentistry and Health
9	**Department**	Neuroscience
10	**Other Departments providing credit bearing modules for the programme**	Not applicable
11	**Mode(s) of Attendance**	Part-time, Distance learning
12	**Duration of the Programme**	36 months
13	**Accrediting Professional or Statutory Body**	None
14	**Date of production/revision**	October 2018

15. Background to the programme and subject area

As the average age of the population increases, neurodegenerative diseases such as Alzheimer's and Parkinson's are becoming an ever greater economic burden to society, and a cause of much suffering to patients and carers alike. Consequently, there is massive therapeutic and commercial potential for development of improved care and treatments for these disorders. Our MSc programme offers theoretical training and detailed insight in to the clinical symptoms, pathological basis, genetic factors and cellular mechanisms underlying the major neurodegenerative diseases. It draws on examples from patient, cellular and model organism-based studies spanning all levels from molecules to man. It is built on the clinical and basic research strengths in the Department of Neuroscience and, in particular, the Sheffield Institute for Translational Neuroscience (SITraN), whose mission is to apply findings from fundamental laboratory research relating to brain structure and function to development of new therapies for neurodegeneration. The course follows a programme level approach focussed on development of skills and attributes in students, with emphasis placed on coursework and formative assessment, rather than summative assessment. The modules provide subject-specific knowledge and transferable skills most relevant to those wishing to pursue non-laboratory based careers in the academic, pharmaceutical and health care sectors.

16. Programme aims

The overall aim of the programme is to train students to become creative analytical thinkers familiar with both clinical and basic aspects of neurodegeneration, while developing the professional skills needed to work in translational research in the biomedical sector. The curriculum is designed to allow students to gain:

- An in-depth understanding of the clinical signs and underlying scientific basis of the major neurodegenerative disorders.
- The ability to critically appraise and analyse scientific literature encompassing both clinical and laboratory-based studies so as to judge and interpret findings.
- Ability to synthesise information from a variety of sources to construct coherent opinions and arguments.

- Critical awareness of the ethical and legal frameworks governing studies with human participants and experimental animals.
- Capability to learn independently and with peers as part of a commitment to lifelong learning and professional development.
- Proficiency in engaging and communicating with diverse communities including lay public, peers and professionals involved in research and clinical practice.
- Ability to evaluate the potential of new and advanced therapies for translation to the clinic.
- An ability to apply analytical and synthetic skills to formulation of new hypotheses.

17. Programme learning outcomes

Knowledge and understanding (MSc K1-6, PGDip K1-5; PGCert K1-3):	
K1	Use detailed knowledge of the symptoms of the major neurodegenerative disorders to evaluate their impact on the lives of patients and carers.
K2	Apply advanced knowledge of neuroanatomy and neurodegenerative pathology to determine how specific lesions impact on brain function and daily living.
K3	Design novel experimental disease models of neurodegeneration based on current knowledge of genetic factors contributing to neurodegenerative disorders.
K4	Judge the relevance of molecular and cellular pathologies in animal models to human neurodegenerative disease.
K5	Critique and generate funding applications for neurodegeneration research targeted to research councils and charities.
K6	Design workflows for development of drug-based or advanced therapies involving academic-industrial partnerships.

Skills and other attributes (MSc S1-8, PGDip S1-6; PGCert S1-5):	
S1	Show ability to retrieve, critically analyse, synthesise and summarise published data from multiple sources, including those which present conflicting data.
S2	Demonstrate independent thought and judgement in relation to critical analysis of scientific literature.
S3	Effectively communicate information using appropriate media (including video) to peers and the general public.
S4	Work both independently and collaboratively in an effective manner to deadlines.
S5	Judge research utilising experimental animal models of disease for adherence to the principles of the 3Rs (reduction, refinement and replacement).
S6	Use critical skills to evaluate and formulate hypothesis-driven research funding proposals.
S7	Appraise clinical studies for compliance with national statutory requirements, such as the Human Tissue Act 2004, and local ethical guidelines.
S8	Develop ideas and judgements regarding the development of new therapeutics for neurodegeneration through critical evaluation of appropriate literature, concepts and principles.

18. Teaching, learning and assessment

Development of the learning outcomes is promoted through the following teaching and learning methods:

The Department of Neuroscience has a proven track record in delivering postgraduate taught programmes which foster an environment with multiple opportunities for individual and group learning. However, the primary responsibility for learning lies with the student, who must be organised and self-motivated to make the most of the programme, especially with a distance learning programme. The virtual learning environment (VLE) will be the main space for learning. The contents feature will be used to create an easily navigable learning book for students, with recommended activities for each week. Collaborative activities will be held during specific weeks and other activities linked to online discussion forums so as to encourage the cohort to work through the course material in a synchronised manner. Regular contact will be maintained via online tutorials, which will be recorded for those unable to attend. The best times for online tutorials will be canvassed and the most popular

times utilised.

Diverse learning and teaching methods will be used to account for variation in learning styles and maintain student engagement. Learning activities will require students to acquire knowledge, both through reading and watching videos; investigate a topic, both individually and collaboratively using a shared proforma; discuss a topic, either in an online forum or video tutorial; or produce a piece of work. Students will produce reflective and critical written assignments, posters (both formatively in groups and individually for summative assessment), and short video recordings to develop communication and IT skills. Learners will be trained to use technologies supported by the University of Sheffield, but will be allowed to record material offline using other technologies and upload it to the VLE if they have limited internet access. Specialist software will be utilised for teaching and learning when we feel it is advantageous to do so, e.g. for neuroanatomy teaching. Such resources can be divided in to sections that can be tackled in a single or multiple sittings, and contain embedded videos describing features of dissected human brain material, snippets of factual information, interactive labelled images (both factual/informative and "drag-and-drop" for self-assessment), and multiple-choice quizzes (MCQs). Such a resource for neuroanatomy has already been made available to face-to-face MSc students to complement their learning, enabling us to gather student feedback for further development.

Feedback and contact time will be essential for student progression through the programme. Contact time will be provided through online tutorials, discussion forums and individual correspondence as and when required. MCQs will be used to provide feedback of knowledge acquisition. Individual responses to incorrect answers can be tailored to provide hints and constructive feedback, rather than just labelling an answer as incorrect. Peer assessment of formative exercises will be used throughout the programme for enhanced feedback. For example, collaborative posters produced during the pathology thread of the programme will be peer-assessed by other groups using actual marking criteria and compared with tutor marks so as to provide feedback and insight into marking criteria prior to individual summative assessment.

Opportunities to demonstrate achievement of the learning outcomes are provided through the following assessment methods:

Each of the 60 credit modules is divided into study and assessment blocks with individual and collaborative formative assessment (including peer assessment) a key component of each study block, while summative assessment is restricted to the assessment block. Diverse summative assessment methods are used, which are carefully matched to the learning outcomes. For example, assessment of Year 1 / PGCert involves reflective writing (**K1**, **S3**, **S4**), a critical writing exercise (**K3**, **S1-5**), and a poster with short oral presentation delivered via video (**K2**, **S1-4**). Summative assessment of Year 2/PGDip places research in the "real-word" scenario of research funding so students will review grant applications, present a grant application as part of a mock grant review panel, and write a hypothesis-driven research proposal based on knowledge acquired over the first two years of study (**K1-5, S1-6**).

19. Reference points

The learning outcomes have been developed to reflect the following points of reference:

Subject Benchmark Statements
http://www.qaa.ac.uk/AssuringStandardsAndQuality/subject-guidance/Pages/Subject-benchmark-statements.aspx

Framework for Higher Education Qualifications (2008)
http://www.qaa.ac.uk/Publications/InformationAndGuidance/Pages/The-framework-for-higher-education-qualifications-in-England-Wales-and-Northern-Ireland.aspx

University Strategic Plan
http://www.sheffield.ac.uk/strategicplan

Learning and Teaching Strategy (2016-21)
https://www.sheffield.ac.uk/staff/learning-teaching/our-approach/strategy2016-21

In addition, guidance and feedback has been received from lecturers and students on other MSc courses, including the MSc in Genomic Medicine, MSc in Clinical Neurology and MSc Translational Neuropathology, as well as from the prospective external examiner. Dr Jonathan Wood, the proposer of this course, has been a module leader on MSc programmes since 2007 and the course lead for the MSc Translational Neuroscience since 2016. During this time, feedback from students and colleagues has informed development of the course.

20. Programme structure and regulations

Students should discuss with the course team which modules are studied in Year 1 and in subsequent years.

A student will take

NEU601	F7	Introduction to Neurodegeneration	ACAD YR	60
NEU602	F7	Mechanisms of Neurodegeneration	ACAD YR	60
NEU604	F7	Novel Therapies for Neurodegeneration	AUT SEM	15
MED681	F7	Professional and Research Skills	SPR SEM	15
NEU603	F7	Literature Review	ACAD YR	30

Detailed information about the structure of programmes, regulations concerning assessment and progression and descriptions of individual modules are published in the University Calendar available on-line at http://www.sheffield.ac.uk/calendar/.

21. Student development over the course of study

The programme is designed so that students progressively achieve more advanced levels of learning and practice. In year 1, students will learn about the impact that the clinical symptoms of neurodegeneration have on patients and carers, neuroanatomy and the underlying pathological basis of neurodegeneration. They will also be introduced to the genetic factors associated with neurodegeneration, how this facilitates disease modelling, and provides insight into disease mechanisms, which are the focus of the second year of study. Students will undertake formative writing and presentation assessments during the content block prior to summative assessment in the assessment block. The course will be recruiting from a wide background knowledge and this year will equip students with the necessary background and communication skills to progress further.

In year 2, students take a content block focused on the underlying molecular and cellular mechanisms causing the major neurodegenerative disorders. Assessment will be based around grant writing and review, with a major emphasis on developing critical skills alongside scientific and lay communication skills.

In year 3, students will learn about development of new therapeutics for neurodegeneration, choose a module to enhance specific research skills, and complete a 6000 word dissertation focused on therapeutic development which is supported by one-to-one supervision.

22. Criteria for admission to the programme

Candidates for the PG Cert, PG Dip or MSc will be expected to have a good (upper second class honours or better) degree or an equivalent qualification in a relevant Science or Clinical subject. Applicants with a 2.2 will need to provide a strong supporting statement and be interviewed (in person or via video call). Candidates for whom English is not a first language and who do not hold a GCSE Grade C (or equivalent) in English, will be expected to have an IELTS (International English Language Testing System) qualification with a mean of 6.5 (with a minimum of 6.5 in listening and 6.0 in all other components).

23. Additional information

Information on the wealth and breadth of Neuroscience research at the University of Sheffield, in particular the neurodegeneration research at SITraN, can be found by browsing the following websites:

http://sitran.org/

https://www.sheffield.ac.uk/neuroscience

http://sheffieldbrc.nihr.ac.uk/

https://www.sheffieldclinicalresearch.org/about/our-directorates/neuroscience/

This specification represents a concise statement about the main features of the programme and should be considered alongside other sources of information provided by the teaching department(s) and the University. In addition to programme specific information, further information about studying at The University of Sheffield can be accessed via our Student Services web site at http://www.shef.ac.uk/ssid.