Module Title and Code
PS3459 Neurological Rehabilitation

Lecturer(s)
Prof. Richard Carson

Contact Hours
One semester: 11 lectures; 114 hours independent study

ECTS Value
5 ECTS (=125 student hours)

Rationale and Aims
This module will cover approaches to meeting the needs of people with neurological disorders and progressive neurological diseases. As the production of purposeful goal directed movement pervades all aspects of behaviour, there will be a specific focus upon the physical, psychological and social consequences of movement dysfunction. The module will deal with the scientific principles underlying neurological rehabilitation, including motor control and learning. The student is also introduced to intervention strategies that are designed to maintain or re-establish functional capability, such as brain-computer interfaces, robot assisted therapy, deep brain stimulation and cortical stimulation.

For whom is the module intended?
Psychology Junior & Senior Sophister SH/TSM students and Higher Diploma in Psychology Years 1& 2 students.

How does it fit in to the academic programme?
This module provides advanced coverage of material in some of the essential aspects of the discipline of psychology and is required to be covered by the professional accreditation body, Psychological Society of Ireland.

Is it mandatory or optional?
Optional

Are there prerequisites?
Cognate foundation modules.

From a teaching point of view, what are the intentions of the lecturer?
To provide students with an in-depth understanding of neurological rehabilitation: the links between brain plasticity (i.e., anatomical, physiological and functional reorganization), adaptation and learning, and the design of interventions which meet the needs of people with neurological disorders and progressive neurological diseases.

Course Content

1: Human motor control
2: Methodologies and measurements
3: Plasticity, learning, and adaptation
4: Introduction to stroke
5: Stroke: behavioural interventions
6: Stroke: electrophysiological interventions
7: Stroke: cognitive interventions
8: Cerebral Palsy
9: Parkinson's disease
10: Multiple Sclerosis
11: Dystonia

Indicative Resources

Recommended text(s)

Carr, J.H & Shepherd, R.B. (2010) (2nd Ed.). Neurological Rehabilitation: Optimizing Motor Performance. Churchill Livingstone.

As this is an advanced research-led taught module, state-of-the-art and up-to-date journal articles from the relevant research literature will be made available throughout the module.

Learning Outcomes
On successful completion of this course, students will be able to:

On successful completion of this module, students should be able to:

- Identify and describe the scientific principles that underpin neurological rehabilitation (PO 1,2)
- Outline and critically evaluate the conceptual links between adaptation and learning governed by neural plasticity, and methods employed to remediate neurological disorders and progressive neurological diseases. (PO 2,3,5)
- Outline the key theoretical frameworks, observations and conclusions that are relevant to the study of movement dysfunction, and be able to critically analyse this knowledge within a wider socio-historical and intellectual context (PO 3,5,8)
- Describe and appraise the strengths and limitations of a variety of experimental techniques and research methodologies that are used in the domain of neurological rehabilitation (PO 3,5)

- Analyse and critically evaluate original research from a range of disciplines including the neurosciences, and cognitive science (PO 3,5)
- Discuss the ethical issues, and those relating to values and diversity of experience that are relevant to neurological rehabilitation (PO 8,9)
- Speak and write effectively in discourse concerning the subject matter of neurological rehabilitation (PO 7)

Methods of Teaching and Student Learning

The format of lectures is conventional but students are encouraged to ask questions and to engage the lecturer in discussion where practicable. Both the reduced numbers in these optional modules and the fact that the module is based in the lecturer's own area of research expertise and interest facilitates increased class discussion and debate.

Inclusive curriculum: Each lecture and any supporting and accompanying documentation is posted on our school website to facilitate independent study and self-paced learning.

Methods of Assessment

This module is assessed by continuous assessment of one report (2,500 words, 32%) and one written examination (68%) in the annual session. The exam is 2 hours 30 minutes in duration and students are required to answer two questions discursively.

It is expected that:

(i) a range of areas should be covered in addressing each question. A poor mark will be awarded to essays/answers that do not integrate a majority of the relevant topics covered in the lectures; and

(ii) responses should be critical, original and synthetic and should be based on reading beyond the lecture notes.

Students are given very detailed guidelines in their handbook as to grading criteria for degree classes.

Evaluation

All modules are evaluated by students by means of CAPSL survey requested by the School and all feedback is noted and incorporated in module design where appropriate for delivery of the module in subsequent years.

Feedback is also delivered via student representatives at the School's once a term staff-student meetings, at School Committee meetings and at the Committee for Undergraduate Teaching & Learning meetings.