1. **Title of the module**

BI643: Neuroscience

1. **School or partner institution which will be responsible for management of the module**

School of Biosciences

1. **The level of the module (e.g. Level 4, Level 5, Level 6 or Level 7)**

Level 6

1. **The number of credits and the ECTS value which the module represents**

15 credits (7.5 ECTS)

1. **Which term(s) the module is to be taught in (or other teaching pattern)**

Autumn or Spring

1. **Prerequisite and co-requisite modules**

Human Physiology and Disease I and II (prerequisite)

1. **The programmes of study to which the module contributes**

BSc Biomedical Science and related programmes (optional)

BSc Biology and related programmes (optional)

BSc Biochemistry and related programmes (optional)

1. **The intended subject specific learning outcomes.
On successfully completing the module students will be able to demonstrate:**
	1. An appreciation of the cellular and molecular complexity of the nervous system gained through knowledge of:
* how the nervous system develops
* how nerve cells communicate at synapses
	1. An understanding of the relationship between the brain and behaviour

8.3 An understanding of acquired and inherited neurological diseases

8.4 An appreciation of the significant achievements of research in neuroscience and the many unanswered questions

The above address the following programme outcomes:

BSc Biomedical Science: A1, A4, A5, A7, B1, B2

BSc Biology: A2, A3, A4, A5, A8, B1, C2

BSc Biochemistry: A3, A5, A7, A8, B1, B2

1. **The intended generic learning outcomes.
On successfully completing the module students will have developed skills in:**

9.1 Comprehending complex scientific topics

9.2 Sourcing, reading and evaluating scientific literature

9.3 Written and oral communication

The above address the following programme outcomes:

 BSc Biomedical Science: A16, B1, B2, B3, B6, C4, D1, D4, D6

 BSc Biology: B2, B3, D4, D5, D11, D12, D14

 BSc Biochemistry: A11, B1, B5, B6, C4, D1, D4, D6

1. **A synopsis of the curriculum**

The module is divided into three roughly equal sized units, each dealing with a specific aspect of neurobiology. Throughout, both the normal system and diseases and disorders that arise as a consequence of abnormalities will be covered.

**Unit 1: Development of the Nervous System**

Looks at how the complex and intricately wired nervous system develops from a simple sheet of neuroepithelial cells by addressing the cellular and molecular basis of:

 Neurulation (formation of the brain and spinal cord)

Nerve cell proliferation (Neurogenesis)

 Differentiation and survival of nerve cells

 Axon growth and guidance

 Synapse formation (Synaptogenesis)

**Unit 2: Signalling at the Synapse**

Considers the molecules and mechanisms involved in transmission of signals between nerve cells:

Neurotransmitters and neuromodulators

Molecular mechanisms of transmitter release

Neurotransmitter receptors and transporters

**Unit 3: The Brain and Behaviour**

Explores how the nervous system controls a variety of behaviours including:

 Learning and memory

Sleep and dreaming

1. **Reading List (Indicative list, current at time of publication. Reading lists will be published annually)**

*Principles of Neural Science*, Kandel, Schwartz, Jessel, Siegelbaum, Hudspeth, 5th ed (2012)

*Fundamental Neuroscience*, Squire, Berg, Bloom, du Lac, Ghosh, Spitzer, 4th ed (2012)

Research articlesavailable from Templeman Library journal collections

1. **Learning and Teaching methods**

The course material will be delivered in lectures with directed reading in support of lecture material. The workshops will focus on reading, discussion and evaluation of primary literature and will support the coursework assessment.

**Contact Hours: 24 hours**

Lectures: 20 hours (address all learning outcomes)

Workshops: 4 hours (address all learning outcomes, with particular emphasis on 9.1-9.3)

**Self-study**: **126 hours** (addresses all learning outcomes)

1. **Assessment methods.**

Assessment is by literature review, 40%, and end of year examination, 60%

The mini literature review of approximately 2000 words (40%) will assess ability to research, comprehend and present a concise and integrative review of a current topic in neuroscience (addresses all learning outcomes, particularly 8.4; 9.1-9.3)

The end of year examination (2 hr, short question/essay based, 60%) will assess knowledge, understanding and integration of module content and associated reading (addresses all learning outcomes, particularly 8.1-8.4; 9.3)

1. ***Map of Module Learning Outcomes (sections 8 & 9) to Learning and Teaching Methods (section12) and methods of Assessment (section 13)***

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Module learning outcome** |  | *8.1* | *8.2* | *8.3* | *8.4* |  |  | *9.1* | *9.2* | *9.3* |  |  |  |
| **Learning/ teaching method** | **Hours allocated** |  |  |  |  |  |  |  |  |  |  |  |  |
| Lectures  | 20 | **X** | **X** | **X** | **X** |  |  | **X** | **X** | **X** |  |  |  |
| Workshops | 4 | **X** | **X** | **X** | **X** |  |  | **X** | **X** | **X** |  |  |  |
| Self-study |  | **X** | **X** | **X** | **X** |  |  | **X** | **X** | **X** |  |  |  |
| *Literature Review* | *46* |  |  |  |  |  |  |  |  |  |  |  |  |
| *Reading and revision* | *80* |  |  |  |  |  |  |  |  |  |  |  |  |
| **Assessment method** |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Literature Review |  |  |  |  | **X** |  |  | **X** | **X** | **X** |  |  |  |
| Examination |  | **X** | **X** | **X** | **X** |  |  |  |  | **X** |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |

1. **The School recognises and has embedded the expectations of current disability equality legislation, and supports students with a declared disability or special educational need in its teaching. Within this module we will make reasonable adjustments wherever necessary, including additional or substitute materials, teaching modes or assessment methods for students who have declared and discussed their learning support needs. Arrangements for students with declared disabilities will be made on an individual basis, in consultation with the University’s disability/dyslexia student support service, and specialist support will be provided where needed.**
2. **Campus(es) or Centre(s) where module will be delivered:**

Canterbury

**FACULTIES SUPPORT OFFICE USE ONLY**

**Revision record – all revisions must be recorded in the grid and full details of the change retained in the appropriate committee records.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date approved | Major/minor revision | Start date of the delivery of revised version | Section revised | Impacts PLOs (Q6&7 cover sheet) |
| 25/10/16 | Minor | September 2015 | 10, 12-13 | No  |
|  |  |  |  |  |