1. **Title of the module**

PHAM1087 - Advanced Neuroscience

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

Medway School of Pharmacy

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

Level 7

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

20 credits (10 ECTS)

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

Spring

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

Prerequisites:

A successful completion of all the modules from Stage 1, 2 and 3 (level 4, 5 and 6) of the MPharm programme

Co-requisite:

PHAM1125 - Preparing for Practice

PHAM1096 - Sustained Research Project

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

MPharm (Master of Pharmacy)

1. **The intended subject specific learning outcomes.
On successfully completing the module students will be able to:**
2. Critically evaluate current research and advanced scholarship in key areas of neuroscience
3. Have a critical awareness and understanding of current problems and/or new insights associated with recent advances in neuroscience research
4. **The intended generic learning outcomes.
On successfully completing the module students will be able to:**
5. Identify and resolve complex issues in the topics covered both systematically and creatively
6. Critically assess relevant scientific publications and communicate their conclusions clearly to specialist and non-specialist audiences
7. **A synopsis of the curriculum**

Molecular Pharmacology: Ion Channels as Drug Targets

* Review of the structure and function of ion channels
* Mutagenesis, molecular modelling and electrophysiology: Methods to study ligand-gated ion channels
* Biophysical studies of 5-hydroxytryptamine-3 and nicotinic acetylcholine receptors: The impact of Cys-loop receptor structure on function
* Neurosteroid action at GABAA receptors: In vitro and in vivo studies

Cellular Neuroscience: Neuronal Excitability

* The diversity and importance of ion channels in the nervous system
* Voltage-gated ion channels - structure and function
* Ion channels in health and disease
* Excitatory and inhibitory synaptic transmission
* Quantal transmission at synapses
* Regulation of intracellular calcium concentration
* Synaptic plasticity, long term potentiation (LTP) and memory

Cellular Physiology: Neurons to Behaviour (Biological rhythms)

* Introduction to the mammalian circadian rhythm
* Anatomy and neurochemical regulation found within the mammalian biological clock
* The role of melanopsin, a novel photopigment, in mediating photic information to the circadian clock
* An understanding of advanced molecular mechanisms essential for circadian clock function
* New insights in the recent discovery of peripheral clocks and the mechanisms involved in their synchronisation with the master pacemaker
* Current advances in the discovery and treatment of circadian related disorders; focusing on chrono-therapy and pharmaceutical interventions

Modern Medicine: Drug Therapy in Psychiatry

* Drug Therapy in Psychiatry
* Present an overview of the criteria employed by the pharmaceutical industry in selecting, testing and exploiting suitable novel drug targets
* Detail the integral stages involved in the flow-chart approach necessary in developing any new drug; i.e.: proof of concept work, application of appropriate disease models, drug screening, lead optimisation and final drug development
* Give an overview of which novel drugs are currently emerging in the sub-categories of antidepressants, antipsychotics and drugs for the treatment of Alzheimer’s disease and age associated cognitive decline. Drugs which are currently undergoing clinical trials, and which are likely to emerge into the clinic
1. **Reading list (Indicative list, current at time of publication. Reading lists will be published annually)**

The reading list for the module will be updated annually. Students will be directed as appropriate to primary literature and reviews available from journal collections in Kent or Greenwich and from performing online literature searches.

1. **Learning and teaching methods**

Total contact hours: 40

Private study hours: 160

Total study hours: 200

1. **Assessment methods**
	1. Main assessment methods
2. Coursework (40% of module mark):
3. Written Assignment
4. Written Examination, 2 hours (60% of module mark)
5. Professional Competency (Pass/Fail)
	1. Attendance (P/F) \*

The pass mark for this module is 50% overall. Students must pass the professional competency assessment in order to satisfactorily complete the module and to graduate with a Master of Pharmacy degree.

\* Students who fail to meet the 80% threshold attendance at all scheduled coursework sessions (i.e. workshops, laboratory sessions and seminars) will have their coursework capped to the pass mark. Students who fail to meet the 60% threshold will be deemed not to have met the learning outcomes and will fail the module.

13.2 Reassessment methods

Like for like

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* | *9.1* | *9.2* |
| **Learning/ teaching method** |  |  |  |  |
| *Private Studies* | X | X | X | X |
| *Lectures /Workshops* | X | X | X | X |
| **Assessment method** |  |  |  |  |
| *Written Assignment* | X | X | X | X |
| *Written Examination* | X | X | X | X |
| *Attendance* | X | X | X | X |

1. **Inclusive module design**

The School recognises and has embedded the expectations of current equality legislation, by ensuring that the module is as accessible as possible by design. Additional alternative arrangements for students with Inclusive Learning Plans (ILPs)/declared disabilities will be made on an individual basis, in consultation with the relevant policies and support services.

The inclusive practices in the guidance (see Annex B Appendix A) have been considered in order to support all students in the following areas:

a) Accessible resources and curriculum

b) Learning, teaching and assessment methods

1. **Campus(es) or centre(s) where module will be delivered**

Medway

1. **Internationalisation**

This module focuses on scientific developments that are occurring world-wide and across borders.

The staff involved in teaching this module have had substantial training abroad and this will further the international nature of the delivery of this module.

**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) |
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Revised FSO Jan 2018