Informatics Board of Studies - Course Proposal update and change to level 10

Course title: Introduction to Computational Neuroscience
Proposer(s): Peggy Seriès
Date: March 24th 2015

1. Case for Support

⇒ Proposing that the course should now be taught

With DTC in Neuroinformatics - specific MSc courses not being taught from this year (particularly PoN (previously taught by Peggy Seriès) and NR (previously taught by Matthias Hennig)), teaching resources will be freed. We (Peggy Seriès, Matthias Hennig, Mark Van Rossum and Jim Bednar) propose to have the UG course "Introduction to Computational Neuroscience" being offered next year instead (this course has not been taught before).

⇒ Moving it to level 10

The course offers a broad description of computational neuroscience methods and applications. It uses mathematical methods that are beyond those usually taught at level 9 (we will cover basics of Bayesian modelling). Moreover, due to the recency of the field, it will describe ongoing research, at the forefront of the field. Such material was only taught at MSC level previously. The learning outcome of this course will include the ability to critically assess the validity and usefulness of computational modelling in neuroscience.

2. Updated Course descriptor

The following fields should be updated:

Other Requirements:

This course is open to all Informatics students including those on joint degrees. For external students where this course is not listed in your DPT, please seek special permission from the course organiser.

- A good mathematical background is required.
- Essential maths knowledge: Special functions log, exp are fundamental; mathematical notation (such as sums) use throughout; some calculus and basic linear algebra.
- We will use some elements of Probability theory: Random variables, expectation, joint and conditional probabilities, basic distributions.
- A basic level of programming (preferably in Matlab or Python) is assumed and not covered in lectures. The assessed assignment will involve programming in Matlab or Python.

Assessment Information

Assessment Weightings:
Written Examination: 100%
Coursework: 0%

Breakdown of Learning and Teaching Activities:

20 Lecture Hours
8 Seminar/Tutorial Hours
2 Summative assessment hours
2 Directed Learning hours
68 Independent Learning hours