

# Sol Course Proposal Review Form

Version: Nov 2021

**Reviewer Name:** Iain Murray

**Name of Proposed Course:** Computational Neuroscience

**Date of review:** 2021-11-18

**Instructions to reviewers:** please read through the course proposal and answer the reviewer questions below. Return your completed review form to [iss-bos@inf.ed.ac.uk](mailto:iss-bos@inf.ed.ac.uk) by the review deadline. If you are new to the School or to reviewing course proposals, it may help to read some of the guidance provided to course proposers, mostly included as prompts in the course proposal form itself (including links to external reference materials).

## 1 Course overview and case for support (Sec 1 of proposal)

### 1.1 Course name and acronym

Given the course description, are the name and acronym appropriate, or would you suggest any changes?

These look good.

### 1.2 Summary and Description

Do the Summary and Description make the course sound attractive, including a student-friendly overview of the learning aims, content, and style of the course, and (if need be) who the course is aimed at? Are there any issues with content or wording that you feel should be addressed?

Yes, these are accessible.

Minor: the description uses “introduced to” and “learn about” to avoid saying anything specific that students will be able to do. It could be ok to defer these to the learning outcomes, most of our existing courses just list topic content in the description. But the guidance included: *“a description of... how students... demonstrate their achievement of the learning outcomes.”*

### 1.3 Target audience and contribution to the School’s curriculum

Please comment on the case made for this course and its contribution. For example,

- Is there good evidence that it would attract students, or is otherwise necessary (e.g. strategically)?
- Do you have any concerns about how it would fit in with other courses (or even concerns about other courses that come to light here)?
- Is the description of the target audience consistent with the requested SCQF level? Are there any cohorts of students (degree programmes or years) that may not have been considered, including students from outside the School?

Note that even if a course is academically sound, BoS can still reject it if the case for support is not convincing (ie if developing and delivering the course is unlikely to be a good use of resource).

It seems likely this course will be interesting to those taking machine-learning-related courses, and cognitive science. Our cognitive-science-related offerings do seem to be depleted. *Computational Neuroscience* is also a mainstream area with multiple related faculty who can propose projects in this area.

However, I am concerned by “*CCN is increasingly moving towards specialised content in computational psychiatry*”, and the proposal to formally change this course into one on Computational Psychiatry. This change appears to be driven by making the course study the particular research interests of the course organizer, rather than covering what is most generally useful or desirable for our students in what is currently our only, or only one of two, neuroscience courses. It would be like me changing a machine learning course to be specifically on deep generative models, or simulation-based inference.

Further, I’m somewhat concerned at making CN a pre-requisite for CCN. We have very few hard pre-requisites in our course offerings, and this change risks making CCN a much smaller class. (Particularly if combined with the psychiatry change.)

#### 1.4 Learning Outcomes

Please comment on the Learning Outcomes. Questions to consider include:

- Are the verbs specific enough that it is clear what type of assessment could be used for each Learning Outcome, and what level of cognitive skill/understanding is needed (e.g., Bloom’s taxonomy low levels such as recalling or defining, medium levels such as applying or explaining, high levels such as evaluating or designing)?
- Are the Learning Outcomes appropriate to the level of the course, and at an appropriate level of generality?
- Are there any LO’s that you feel are missing, or other suggested changes?

Assessing the base of Bloom’s taxonomy with an open-book exam seems challenging—and I seems we can’t guarantee having proctored exams next year at the moment(?). I’m also slightly concerned that two learning outcomes are *Describe* and one *Explain*, mainly sounding like recall of standard material, when this is a level 11 course.

“1) *Describe fundamental concepts in neuroscience and neural computation*” sounds like it’s recalling lecture notes. Perhaps ask to at least *identify* or *select* appropriate material? Perhaps some of learning outcomes 2)–4) could be tweaked to push towards new situations, or something so that it’s clear it’s not simply recalling analysis that was done for the student in lectures or the materials. For example 3) sounds active (*compare*) but it sounds like it’s just for general standard topics, for which the comparison may have been done for them?

I may be being too picky here, but the example exam questions seem to suffer from these problems: most parts look like they wouldn’t make sense on an open-book exam, and so might be too recall heavy for a level-11 course in general?

I would cut “*in a programming language of your choice*”, so as not to restrict future coursework design. The course webpage could in future prominently display any specific programming language restrictions at the start of the course, without having to churn DPRS entries.

#### 1.5 Other comments

Do you have any other comments about anything in Section 1 of the proposal?

## 2 Course delivery, assessment, resourcing (Sec 2 of proposal)

### 2.1 Use of time

After reviewing the proposed content, use of timetabled activities, and plans for assessment, please comment on the use of time, in light of the guidance to use no more than 6-7h/week for a 10pt course, or 13-14h/week for a 20pt course, including all course activities. For example,

- Does the course appear to be keeping within those guidelines, is it over-ambitious, or is that difficult to determine based on the proposal so far (and if so, why)?
- Is the balance of activities reasonable (e.g., will students have enough self-study time outside of timetabled activities and assessment)?
- Do plans for support activities (labs, tutorials, etc) look appropriate or could they be improved?
- Are there any inconsistencies between what is stated in the text, and the “breakdown of activities” table? (This table is notoriously confusing; if you’re not sure just say so.)

I question if 2 revision hours are necessary *in addition* to the 18 lecture hours. I didn’t seem plans for guest lectures, or any non-examinable use of those 18 hours, so they probably should include the revision hours. Semester 1 is compressed, with no half term break and a short revision period. I would avoid pushing into week 10, even for revision sessions, with a 10 credit course unless there was a break earlier.

It’s easy to drastically under-estimate the time required for programming assignments, where hours can go by debugging or solving small problems. If a programming assignment is meant to take 7.5hrs, including a report, it better be *short*. Perhaps building on lab work, so they’re in a good position to immediately try and compare something interesting without too much grunt work or debugging?

### 2.2 Assessment and feedback

Aside from the amount of time spent on assessment (discussed above), are there any other issues with the plans for assessment and feedback? For example,

- Is the number of items of assessment reasonable (normally, no more than 1 summative coursework for a 10pt course, or 2-3 for a 20pt course)?
- Is it clear which learning outcomes are assessed by each piece of assessment, and that all LOs are covered?
- Are there any concerns about whether the assessment will scale effectively if the class is larger than expected, or whether the assessment design will make it difficult to align marks with the Common Marking Scheme (e.g., due to automarking)?
- Do the plans require tight turnaround times which may not be feasible?

Having one summative assignment with unassessed labs looks like a good plan, and should mean there aren’t tight timelines.

Peer feedback doesn't necessarily reduce load on teaching support. There will need to be a plan for how this feedback will be dealt with and monitored.

As mentioned in the learning-outcomes section, I'm a little concerned with the learning outcomes and how assessable they are. Particularly if the exam is open book, it looks like several parts of those questions would be directly answered in the notes? Even if it's not open book, is that appropriate?

### 2.3 Decolonisation, inclusion, and ethics

Are you satisfied with the plans for making the course inclusive and decolonising the content and delivery (including designing for accessibility; gender, racial, cultural, and other issues)? Do you have any suggestions for improvement in these areas?

Yes.

If discussing issues in experiment design, such as diversity of animal or human participants, maybe it would make sense to make these part of a learning outcomes of the course. It could be broader than inclusion/ethics issues. But asking students to comment on an experiment design, or identify things to control for, or identify limitations of conclusions, might be a way to generate questions in novel situations. If it's not part of the learning outcomes, it's likely to get dropped.

If the course proposal does not already mention social or ethical issues related to the course topic, should these be addressed in the course somehow? This is especially relevant for 20pt courses. If so, please provide suggestions if possible. *(Note that if others agree, the proposer may be asked to modify the course description, Learning Outcomes, and/or Graduate Attributes, as appropriate.)*

N/A

### 2.4 Resource requirements and other comments

For now we will mainly have SG and/or BF evaluate the resourcing section, but if you have any comments about that, or anything else to say about Sec 2, please say so here.

No comment.

## 3 Sample course materials and publicity (Sec 3 of proposal)

Do you have any comments about this section? *(You may wish to consider whether the materials provided teach or assess the types of learning outcomes listed in Section 1.)*

Exam questions discussed earlier.

Publicity: should go in appropriate parts of MSc handbook, and MSc CogSci programme director could check. SG: I recommend that all level 11 courses are flagged to at least the MSc year coordinator, and possibly programme directors for them to publicise. Perhaps mention this procedure on form?

## 4 Requisites, timetabling, and other details (Sec 4-5 of proposal)

### 4.1 Delivery period and requisites

Do the delivery period and co-/pre-requisites present difficulties for any particular cohort of students? If so, who? (*Consider all years/degrees for whom the course is intended, both UG and PGT. Note that most PGT students will not have taken any of our UG courses, so “other requirements” or recommended prerequisites should often be used instead of required prerequisites*).

Not that I can see.

### 4.2 Other requirements

For courses open to PGT students or other courses without formal prerequisites, does the “other requirements” box provide sufficiently specific guidance about required background in mathematics, programming, or other areas, and is it reasonable to expect most target students to have this knowledge? Please highlight any concerns.

*“The mathematical level required is similar to that which would be obtained by students who did not have significant difficulties with the core Undergraduate Mathematics courses taken in the first two years of the Informatics undergraduate syllabus (i.e. ...”*

This is an awkward sentence; I suggest editing it down. I would also prefer specific skills. MSc students don't know about our first year courses. There's a lot of stuff in our courses you won't need (unless you're going to discuss null-spaces of matrices or clever integral substitution tricks?).

I'd mention programming. While our students are now all meant to be able to program, it looks like this course will attract people from other schools. Although I'd avoid mentioning a specific language, or use weasle words like "such as Python+NumPy" after any generic description.

### 4.3 Tags

If this is a level 9-10 course, do the chosen tags (Sec 5) seem appropriate? If not, please suggest changes. (SG will also review this section, in case you're not sure.)

Yes. Although it's not really an AI application, *“Unstructured data and applications”* might make the course more available to some interested students? SG can work this out...