

## For discussion: do we need so many UG degrees?

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We currently have 14 four-year degrees:

- six single-honours (CS BSc and BEng, AI, SE, AI+CS, AI+SE),
- six joint (CS+Math, AI+Math, CS+Physics, CS+Electronics, CS+Mgmt, CogSci),
- and two hybrid (CS with Mgmt, SE with Mgmt).

However, many of these have very few students enrolled (see Table 1, next page), and some are arguably not well served by the expertise of our staff. In preparation for the upcoming review of our curriculum, I would like to rationalize the set of degrees we offer. Having fewer degrees would reduce considerable administrative overhead both during the curriculum review and afterward: fewer DPTs to construct, check requirements for, and maintain; less for PTs to keep track of; fewer constraints to check and satisfy when resourcing courses.

Before going further with this, I wanted to float the idea at Strategy Committee because I'm not sure if there are strong strategic reasons for some of these degrees to remain on the books, such as recruitment, national rankings, or others I'm unaware of.

The degrees that I think we should consider eliminating are:

- The "with management" degrees (CS with Mgmt, SE with Mgmt), which have hardly any students on them. We should stick to proper joint degrees or allow students enough flexibility to do outside courses on single degrees, rather than having strange hybrids like this.
- Most of the AI-based degrees. With the exception of AI&CS, these degrees (AI, AI&SE, AI&Math) have very low enrolment, and I would argue that (our own history notwithstanding) AI is generally considered a subfield of computer science, and that a degree in AI should basically contain the same foundations as a degree in computer science, just specialize in a particular way. Indeed, these degrees already overlap considerably with the CS equivalents. Of course, we need to maintain the reputation of Edinburgh for AI, but this should be done through MSc, PhD, and research. Indeed, the massive popularity of the MSc in AI suggests we have no problem with our reputation at the level where students really specialize. Details:
  - The CS+Math degree can be reviewed to ensure that it allows the same choices previously on the AI+Math degree (i.e., collapse these into one option).
  - AI&CS (unlike the others) is a fairly popular degree. Conservatively we could keep it open for students who want AI in their degree title, or could consider removing it too.
- Software Engineering [but see note below based on Perdita's feedback]. This degree is somewhat more popular, but still relatively low enrollment. The main question is whether our provision of Software Engineering courses is really sufficient to justify SE degrees. It seems students are basically getting a CS degree with a few SE courses (which should be possible anyway), and the SE options are extremely limited (see Table 2), despite ongoing efforts to recruit more teaching staff in this area. Moreover, I'm not sure the practical component is

enough to ensure “Software engineers” who can really program well... (though I’m happy to be corrected).

### Feedback

A draft of the above proposal was sent on 18 April to DoT, Perdita (for comments on SE especially) and Michael Rovatsos (for comments on AI especially).

- The general ideas were discussed with Bjoern before writing a draft; he did not have time to comment on the draft itself before sending the paper to Anda.
- Perdita pointed out that we are currently recruiting for a Chair in SE and potentially a lecturer to follow, so this might not be an ideal time to eliminate the SE degree. She agreed with the point that we do not currently have a sufficiently strong offering in SE, and the general concept of reducing the number of degrees (though actually argued for a more radical position of reducing to a single degree). Can read her feedback if asked.
- I received an automated away message from Michael so do not have comments from him at this time.

**Table 1: Enrollment across all UG students on our current set of degrees:**

Those not under consideration:

	count	percent
CS	246	0.332882
MInf	97	0.131258
BEng	68	0.092016
AICS	68	0.092016
CSMath	65	0.087957
Cog	30	0.040595
CSE1	25	0.033829
CSPhys	14	0.018945
CSMan	13	0.017591
Ord	3	0.004060

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Those to consider eliminating:

	count	percent
SE	36	0.048714
AISE	22	0.029770
AI	19	0.025710
AIMath	14	0.018945
CSwMan	13	0.017591
SEwMan	6	0.008119

## **Table 2: Software engineering provision**

We offer 10 credits of SE at level 8.

We offer 40 credits of level 9/10 SE courses, of which students must choose 30 credits in year 3:

Software Testing	10
Software Design and Modelling	20
Elements of Programming Languages	10

Students must then take at least 10 more credits of SE courses in year 4, meaning either they exhaust all possible level 9/10 courses, or are forced to take level 11 courses:

- Human-Computer Interaction
- Software Architecture, Process, and Management
- Secure Programming
- Performance Modelling
- Scalable Data Management Systems
- Formal Verification