Proposal: Operating Systems as Level 10

(with effect from AY 2020-21)

Sharon Goldwater, 11/4/2019 (updated with consultation responses, 24/4/2019)

Summary of proposal

I propose we re-level Operating Systems (currently Level 9) as a Level 10 course. The course descriptor should not need require any other substantive changes, as I argue below.

It's too late to introduce the Level 10 version for 19-20, but by approving and announcing it now, rising ug3 students (and PTs) will know that it will be available to them in ug4. This will permit them to make informed course choices for 19-20.

Reasons for the change

Over the last few years, we have shifted most of our ug3 courses from 10 to 20 credits. This means that most courses now include more depth than before, but also that students have much less flexibility to take lots of courses in ug3. Most courses have responded to these consequences by moving from Level 9 to Level 10, so that students can take the course in either ug3 or ug4.

In 2019-20, OS will be the only 20-credit optional ug3 course still at Level 9, and it is also very popular. This causes problems: I have heard reports of students who want to take OS in principle, but would prefer to do it in ug4 so they can prioritize other courses in areas where they want to do projects or follow-on courses. (Note that CS degree students have only 20 available credits for optional courses in S2, when OS runs.)

Academic justification

A possible concern is that moving a course from Level 9 to Level 10 requires academic justification according to SCQF Level descriptors. However, a careful read of these suggests that it is nearly impossible to discriminate between Level 9 and Level 10 at the individual course level. For example, both Levels require a critical understanding of principles, concepts, and theories of the discipline (covered by Learning Outcomes 3-4 for OS). The main differences between Levels 9 and 10 are in (a) the degree of specialized knowledge (likely covered by OS already, given its move to 10 credits), and (b) the range of knowledge and skills across the discipline that the learner commands. However, that range of knowledge is typically built up over multiple courses. Thus, it makes more sense for us to think of Level 10 characteristics accruing to the student as they complete a number of Level 10 courses, and if a course contributes to the range of specialized knowledge/skills and critical thinking that characterize Level 10, then it is reasonable to consider it a Level 10 course.

Ramifications

Course size: I expect that the enrolment of OS will drop in 19-20 when we announce this change, and bounce back the following year: fewer ug3 students will take OS than in 18-19, because some will decide to delay it, but ug4 students won't be enrolled yet. The following year, both ug3 and ug4 students will enrol. (We saw this effect when COMN shifted levels a couple of years ago.)

Prerequisites: as far as I know, there is only a single ug4 course that requires OS as a prerequisite: IoTSSC (Level 11). We could mention in the new OS course descriptor that students who want to take IoTSSC in ug4 should take OS in ug3.

Actions needed if approved

1. (ASAP) Update summary of Level 9 version to add "Starting in 2020-21, this course will run as a Level 10 course open to third- and fourth-year students."
2. (By next spring) Create new Level 10 course in EUCLID, with the same course descriptor as the current course, except for the following changes:
   a. Add to summary: "This course is a required prerequisite for the optional fourth-year course Internet of Things: Systems, Security, and the Cloud."
   b. Update prohibited combinations: remove the 10-credit version of OS (which hasn't run in several years), but add the current Level 9 20-credit version (INFR09047).
3. (Next spring) Update the summary of the Level 9 course to say "This course has been replaced by Operating Systems [new course code]".
4. (Next spring) Update DPTs with the new course.

Consultation

Document was sent on 11 Apr to: current/recent/likely future OS lecturers (Spink, O'Boyle, Leather), ug3/ug4 year organizers (Dubach, Cryan), SCAO (Gilmore), head of ICSA and others who have expressed interest in this course and/or related curriculum (Marina, Franke).

Responses were received from: O'Boyle, Gilmore, Leather. None had any objections.