Dear Bill and Joe,

I have reviewed the proposal for the DSCI major and the associated courses, and the Math Department supports the approval of all these initiatives. There are a few areas of possible overlap/concern that will occur to the reviewing committees, so I include remarks about each:

1. I don't know if the intention is for DSCI 101 or 102 to meet the B.S. Math requirement, but if they do then that would likely effect enrollment in our MATH 105‐106‐107 courses and possibly in MATH 243. The Math Department is not against that, but I note the issue. The B.S. requirement has never been carefully articulated, and my understanding is that it is being revised anyway, so I have no opinion on the appropriateness of these courses meeting the requirement. Overall they have very little "math" in them, although 102 has more depth in that direction and I could see it possibly meeting the spirit of the requirement.

2. The MATH/DSCI 345 course is similar to our existing MATH 343 course, and that is by design. The issue is that every "intro to stats" course ends up covering roughly the same material, but with very different depths and tools depending on the background of the intended student audience. MATH 243 is a very general stats course aimed at students with relatively little math background, and appropriate for a wide range of students including those in business and the social sciences. MATH 343 is a deeper course, intended for students who have seen differential and integral calculus but who don't necessarily have any programming experience. MATH/DSCI 345 is for students with a similar math background but quite a bit of programming experience.

I suggest UO adopt the rules that

a. students cannot get credit for both MATH 343 and MATH/DSCI 345, and
b. students who have completed MATH 461 cannot get credit for MATH/DSCI 345 (by regression)

3. The topics in DSCI 102 have a fair amount of overlap with MATH 243 (probability, distributions, confidence intervals, hypothesis tests, regression). Having reviewed the textbook, I feel that DSCI 102 is treating these topics at a substantially less sophisticated level than MATH 243, at least in terms of the mathematical content. This difference
feels appropriate for the distinction between 100- and 200-level courses.

Between the focus on data analysis in DSCI 102 and the difference in mathematical depth of the two courses, I see the content of DSCI 102 and MATH 243 as fairly different. I gave quite a bit of thought as to whether a student who has completed MATH 243 should be given credit if they then take DSCI 102. The learning outcomes of the two courses seem different enough that I don’t see a good argument for prohibiting that.

Sincerely,

Dan Dugger
Professor and Head
Department of Mathematics

On Tue, 27 Aug 2019, DSI Director wrote:

> Dear Dan and Joe,
> 
> As you know, we are in the process of creating a new undergraduate data science degree in order to capitalize on investments to the university as part of the Presidential Data Science Initiative. I believe that this program will bring synergistic gains to the entire university because it will enhance our standing as a strong research campus and help recruit increasingly qualified students. It is our expectation that the Data Science Program will recruit new students to campus, leading to a net increase in the total number and quality of students on campus, rather than being competitive with existing degrees.
> 
> At this point, we have initiated the degree approval process. The degree will at least initially sit within CAS under a new Program in Data Science, and so the degree and course approval process is moving through the CAS curriculum committee. This will ensure that the program curriculum fits within university guidelines and complements our current offerings.
> 
> Because data science is a multidisciplinary field that relies on fundamental aspects of mathematics and computer science, data science majors will be required to enroll in several courses from the Department of Mathematics and the Department of Computer and Information Science.
Additionally, five new data science courses will be developed, each of which will involve application of mathematical and computational techniques. As such, I am contacting you to ensure that the proposed Data Science Program, including degree requirements and related new course offerings, will not be seen to generate a negative impact on your department as a whole or on your existing courses. Additionally, we want to make sure that there is not significant overlap with existing MATH and CIS course offerings, or that if significant overlap exists, that we can put appropriate measures in place to ensure that student’s do not receive duplicate credit for taking multiple courses that each teach the same content.

I’m including in this email an undergraduate curriculum summary, complete with degree plan, as well as syllabi for the set of proposed new data science courses; note that some of the syllabi have edits and comments, as we are in the process of finalizing these for submission to the CAS Curriculum Committee.

Please feel free to comment on any of the offerings as well as the general degree structure. I am also happy to answer any questions that you might have.

Thanks so much for your help with this.

Bill

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William A. Cresko, Professor of Biology

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