

Academic Programs Committee, Subcommittee A
Resolution on Proposal for Master's in Interdisciplinary Data Science (MIDS)

On Wednesday, November 9, 2016, Subcommittee A of the Academic Programs Committee (APC) met with Thomas Nechyba of the Social Science Research Institute (SSRI) and Robert Calderbank of the Information Initiative at Duke (iiD) to discuss the proposal for the creation of a new MS degree in Interdisciplinary Data Science (MIDS), which would be run jointly by SSRI and iiD. The proposal incorporates feedback from previous reviews by the Masters Advisory Council (MAC) and the Executive Committee of the Graduate Faculty (ECGF), which the APC also reviewed.

Preamble

APC is impressed by the proposal and enthusiastic about the program, both in terms of the intellectual content of its curriculum and the way in which the program would serve as a nexus for intellectual engagement across the university.

The proposal paints a compelling picture of data science as an emerging field that requires a combination of very different sorts of expertise—not just the ability to “marshal, analyze, and visualize” data, but also to collaborate and communicate across disciplinary boundaries—that are brought together and coordinated in team-based effort. The proposed curriculum flows directly from this vision of what “data science” is and can be, with the combination of a year-long Core Curriculum, shared year-long seminar, electives, and immersive team-based capstone project. We anticipate that students from diverse disciplinary backgrounds would find this pedagogical model to be exciting and valuable.

The MIDS program also holds the promise of building intellectual connections across campus, both at the institutional level as MIDS helps catalyze relationships between SSRI/iiD and departments/schools, and at the individual level as faculty drawn to engage with MIDS capstone projects forge lasting intellectual connections. The Data+ summer program (run by iiD) provides encouraging evidence that there is strong untapped demand for such collaboration, as well as substantial potential for support from corporate and non-profit partners.

Resolution

APC supports the creation of the MIDS program.

Several comments and suggestions emerged from the committee's discussion; see the numbered paragraphs below. These suggestions were shared with MIDS and successfully incorporated into a new draft of the proposal, as shared with APC on December 4, 2016.

1. *Revenue-sharing model.* The proposal envisions a mutually-beneficial financial arrangement between MIDS and other departments that offer electives taken by MIDS students. The proposal focuses on one particular financial model as an example—the idea that other departments could be paid \$4,000 per seat that is filled by a MIDS student. We agree that the principle of mutual benefit is powerful and attractive. As recognized in the proposal, however, there are different sorts of financial models that could be used to ensure that other departments benefit from engaging with MIDS through their elective offerings. The proposal’s particular emphasis on a per capita financial model raises some concerns by creating the potential for a perverse incentive whereby departments could increase class sizes for financial rather than pedagogical reasons. We suggest that the proposal be modified to emphasize the broader point about the need for mutually-beneficial financial arrangements and to be clearer that SSRI/iiD is open to multiple models, depending upon what works best for other departments and the university as a whole. There are several existing models and ample precedent for such arrangements at Duke.

2. *Ethics.* As personally-identifiable data becomes more readily available, ethical questions about how data ought or ought not to be gathered, used, and communicated are likely to emerge as first-order concerns for personal privacy and public policy. We encourage SSRI and iiD to consider ways to weave issues related to the ethics of marshaling, analyzing, and visualizing data into the curriculum—not just as a matter of satisfying legal/institutional rules, but also as a guiding principle and source for rich debate. We see potential for MIDS to be a leader on this front among other data-science programs.

3. *Women and underrepresented minorities.* We were impressed by the strong interest in Data+ among women, who comprise about half of the applicant pool and about half of all participants. We also appreciate that the leaders of the MIDS program plan to attract women and underrepresented minorities by building pipeline relationships with HBCUs, advertising the program through professional channels that target women and underrepresented minorities, etc. We suggest that the program evaluate the success of these efforts during the first few years to identify what works best.

4. *Program vision and first-year admission priorities.* With a new program like this, it can be hard to predict exactly what sort of students are going to contribute most importantly to its success. Bearing this in mind, the proposal leaves open many possibilities about what MIDS students might look like: perhaps working professionals or perhaps newly-minted college grads; perhaps mostly domestic or perhaps mostly international; perhaps from social science or perhaps from medicine or the natural sciences; and so on. We agree that it is important to retain flexibility and observe what demand actually develops, and then adjust accordingly. But there is also a benefit to articulating admission priorities—what sorts of students or mixes of students would be ideal in terms of achieving the program’s vision. Failing to do so could lead to missed opportunities if the first set of enrolled students is less than ideal and creates a “path-dependence” whereby the faculty who are drawn (or not drawn!) to work with those

students then establish a tone or set of institutional relationships that will endure in future years of the program.

5. *Flexibility in length of degree.* The proposal envisions giving students the flexibility to stay for a fourth semester (at a much reduced tuition rate), which will allow interested students to invest more time in their degree. Students who take advantage of this 4th-semester option will gain valuable experience and add to the intellectual environment, making this a worthwhile option to offer. Less clear is the rationale for allowing students to complete the degree in 12 months. Students who follow the 12-month track will have to overload on electives while they take the Core Curriculum, giving them less time to engage deeply with their fellow students and in their capstone projects. The availability of the 12-month option could therefore potentially detract from the intellectual environment of the program. The MIDS leadership understands these concerns and expressed in our conversation an expectation that the 12-month track would be restricted to exceptional situations. We suggest clarifying more in the proposal what sort of students would be expected to follow this track and how that will benefit other students in the program.

6. *Visa complications for international students.* Another complication arises in that international students' visas are timed to the exact length of their program; so, for instance, a student who gets an 18-month visa would not be able to stay for the fourth semester. Moreover, each length of program may need to be separately approved and tracked by Homeland Security. Fuqua recently navigated this set of issues when getting approval for the MQM program and administrators there could likely provide useful guidance.

7. *Suggested additions to the draft of the proposal.* APC is grateful for the thoroughness and thoughtfulness of the proposal and the detailed written responses that were provided to our initial discussion-framing questions. As a last suggestion, it could be valuable to embed some of those responses more prominently within the proposal itself, notably on:

- (i) the key limits on program growth and the conditions under which MIDS might scale to be significantly larger (answer to APC discussion question #3);
- (ii) the potential for community partnerships and “standing labs” (answer to #4); and
- (iii) how the success of the program can be evaluated by looking at three key markers: quality of applicants, quality of placements, and amount and diversity of department and school engagement across campus (answer to #13).

Vote: 10 approve; two did not respond