

APC Discussion of the Materials Science and Engineering Program Proposal April 19, 2017

I. Introduction

A. Overview:

On April 19, 2017, members of Sub-Committee B of the Academic Programs Committee (APC) met with Adrienne Stiff-Roberts, Associate Professor, Electrical and Computer Engineering and Stephen Craig, William T. Miller Professor and Chair, Department of Chemistry to discuss the proposal to create a multidisciplinary graduate degree program between the Pratt School of Engineering and Trinity College of Arts & Sciences. The committee read and reviewed the proposal and the discussion points and resolution from the Executive Committee of the Graduate Faculty for review.

B. Summary of APC Discussion

The following questions and concerns were discussed:

The proposal outlines two phases of the development of the master's program. What if phase I does not work? Phase I of the program refers to a master's program; Phase 2 pertains to the PhD program. The idea is that the master's program will provide sufficient revenue to support PhD students in steady state. For PhD students, generating fellowships is an issue, so the goal is to obtain external support to provide fellowships (from government or private sources). The PhD program will need some initial support (to derive from master's program profits) to get started; after this initial phase, the PhD program should be able to support itself through fellowships and grants. The amount needed to jumpstart the PhD program is not large and should be generated by the master's program. And if funds are not available, Phase 2 will be delayed. It was also noted that the success of the master's program will be driven by student quality and job placement.

The master's program is part of the funding model for the PhD program. Are career services provided (for the master's program)? Pratt and Duke career services are prepared to support these students. The university career office has provided information on many resources that are available. In addition, industry visits are being planned as part of the program structure.

Ramping up the PhD – offering a graduate certificate rather than getting existing PhDs to switch
A committee member asked about the viability of offering a certificate, rather than having PhD students switch into the program. The proposers noted a graduate certificate does have a (separate) place in the course of study, but they do not think it is needed (or properly serves) as an alternative to having PhD students move into this new program.

The program is at the mercy of some departments to offer some of the stated courses – how will this arrangement be assured? Chemistry, MEMS, ECE, and possibly Physics are the units most likely to be involved in providing certain required courses. The courses in question have been taught for a long time, and there is a core set of faculty dedicated to this program. It is unlikely these courses will not be offered. That said, the proposed structure offers a backup as there will

be added faculty to teach these courses. Compensation for a Director of Graduate Studies is also included in the budget.

Does there appear to be demand for the master's and PhD programs? There is broad demand for these programs, but not specifically at Duke as Duke does not offer the degrees. The current course track at Duke is not compatible with how Duke students envision themselves and the careers they want to pursue. Developing these programs will meet the needs of current Duke students and help recruit additional students to campus.

Are the scholarships linked to the tuition as the estimates in the program seem small? (15-20% is usual.) Half a year or full year tuition or top up stipends could be offered based upon the resources available.

II. Resolution

The committee recommends the following:

- 1) Memos of Understanding should be drafted between Pratt/A&S and the individual departments offering the required courses to ensure the necessary courses will be offered in the long term.
- 2) Details of scholarship funding, particularly around needs for diversity recruiting, should be included in the proposal.
- 3) While the proposal is well written and addresses the major questions, the Academic Council may want the materials presented in a different format. The ECGF and APC leadership are working on an outline to which proposals should adhere. Once finalized, it will be shared with Professors Stiff-Roberts and Craig so that the version of the proposal submitted to the Academic Council is in the proper format. The new format may well require more detailed information about some of the topics raised in this report (e.g., evidence of market demand), as well other items.
- 4) The proposal was developed from faculty interest, not from the administration; consequently, the proposal should include a description of how the faculty will benefit from the creation of the program.
- 5) The proposal should be clearer about 9-month and 12-month funding for students. While materials science is strong at Duke, the momentum must be maintained. Some key faculty appointments are needed. Materials science needs to identify where Duke can excel and maximize those areas.
- 6) The proposal should clearly describe how the program is supported internally. The schools should provide the infrastructure for the program, so the proposal should state what each school will provide in terms of revenue support, etc.
- 7) This program has taken 18 months to develop during which time leadership has changed. Faculty support of the program is necessary and should be described in the proposal.

III. Second APC Discussion on September 6, 2017

The MSE proposal was revised to address the APC questions put forward in section II and a second APC discussion on the proposal took place on September 6, 2017. The general consensus

of the committee is that all pertinent points raised in section II have been addressed to the satisfaction of the committee and that its approval is recommended.

IV. Vote:

Approved – 21; abstained – 4; did not vote - 4