

Tomorrow's Scholars

Preamble

We live in extraordinary times that demand innovative educational curricula and strategies to prepare future scholars for a society marked by rapid changes in technology, globalization and ever increasing resource demands. In positioning its graduate programs for the future, Virginia Tech must successfully address a swiftly changing political, social and economic environment while establishing and maintaining excellence across its programs and securing signature “destination campus” salience for its offerings. The following key ideas are aimed at aligning the University’s curricula and student preparation with the aspiration not only to attract the very best students to Virginia Tech, but also to provide graduate students and post-doctoral scholars with an education that is unique and that positions them for leadership roles in their chosen professions.

Key Ideas and Challenges

I. Develop Interdisciplinary and Transdisciplinary Curricula and Intellectual Culture to Address Evolving Social Needs

Many of the world’s most pressing challenges, including social sustainability and resilience, ecosystem management and preservation and energy management no longer fit neatly into the subspecialized areas of inquiry that have typified graduate studies in the modern era. The subcommittee recommends the university build on existing strong disciplinary programs to develop and support appropriate interdisciplinary and transdisciplinary curricula that prepare students to work in the team-based environments that will address these vital concerns. This initiative builds upon a strength and brand in interdisciplinary graduate education that Virginia Tech has already begun to develop as reflected in emergent curricula and programs, the university’s success in obtaining NSF IGERT awards and the newly implemented IGEP program. These efforts all seek to equip students with meta-cognitive level reasoning and analytical thinking skills and incorporate career development as a central aspiration. That is, they seek to ensure that graduate students obtain not only the relevant knowledge and expertise to work in interdisciplinary environments, but also the communication skills (including pedagogical capacities) necessary for success to excel within them

This is a challenging goal and one that involves a sea change in university policies and procedures that otherwise will continue to provide incentives to faculty and their academic programs to remain in separate disciplinary silos. The subcommittee envisions a university-wide community of learning characterized by a seamless continuum of student development at the undergraduate, graduate and postdoctoral levels. We recommend that due attention be paid to ensuring that graduate and postdoctoral students receive

opportunities to develop the necessary intellectual, affective and communication capacities to work in today's collaborative and interdisciplinary environments. We also suggest that faculty roles and expectations be developed in ways that provide ongoing incentives and opportunities for the university's professors to develop the necessary capabilities to work and mentor within such contexts. The university must assume responsibility for recruiting a strong, interdisciplinary faculty and also for providing that professoriate with incentives to adopt new ways of thinking and organizing that will offer students apposite curricula and educational experience to excel in the complex environments in which they will function.

II. The Driver for Growth of Graduate Programs is Quality

Tomorrow's scholars will be attracted to study at Virginia Tech only if there is an excellent faculty in place, along with equally strong and relevant graduate programs. The philosophy of graduate education reflected in Vice President and Dean for Graduate Education Karen DePauw's "Transformative Graduate Education" initiative calls for attention to the quality of the graduate experience beyond curricular offerings, a culture of interdisciplinary collaboration and professional development opportunities. Addressing related matters of graduate student campus life, including work-life balance, stipend adequacy, suitable housing, routinely successful faculty-student relations and effective professorial mentoring, leadership opportunities, and scholarly integrity, will contribute to achieving the desired intellectual and social environment for Tomorrow's Scholars.

The subcommittee recommends the University take such steps as necessary to ensure that internationally competitive faculties staff its graduate program offerings and post-doctoral opportunities, as these will attract very strong graduate and post-doctoral recruitment pools. That dynamic in turn will ensure vigorously competitive graduate and research programs whose success will continue to attract robust enrollments of highly competitive students, while increasing opportunities for curricular innovation, enrollment growth and external support where appropriate. In other words, success will breed success.

One challenge the university must address in order to recruit and retain the best and brightest graduate students is ensuring the competitiveness of its stipends and fellowships. For example, an average doctoral student stipend in the STEM-H disciplines is \$25,000 per year, plus tuition and benefits, for four years. Given this cost structure, it appears unlikely increased sponsored research funding alone will provide sufficient funds to achieve significant growth in the graduate student population. The committee recommends this issue be examined carefully and that alternative sources of funding be explored aggressively should graduate enrollment growth ultimately be thought desirable. If a rise in graduate student population is determined to be an appropriate aspiration, the subcommittee recommends that signature programs be selected and supported in both the Blacksburg and National Capital Region campus locations that represent a cross section of existing and newly created offerings that include all colleges. A newly focused Virginia Tech should nonetheless remain a comprehensive research institution with vibrant programs and

curricula in the humanities, social sciences, engineering and natural sciences. Likewise, the subcommittee believes it important that more post-doctoral scholars pursue research at the university in pertinent fields, especially perhaps, those linked closely to the health sciences where such opportunities are both expected and commonplace. We recognize, however, that the lion's share of any increase in the number of such posts will likely arise, if at all, from increased faculty success in securing funds to support such roles. This said, well-chosen post-doctoral scholars could contribute vitally to a robust climate of research excellence in the domains in which they work.

III. Ensure Internationalized Graduate Experiences and Curricula

The subcommittee recommends the University work to ensure that all of its graduate offerings incorporate relevant understandings of ongoing economic, social and political globalization and not merely various specialized fields and curricula, as these trends are shaping ways of life for broad populations across the globe. This focus suggests an integration of these concerns into relevant programs, rather than the addition of such matters as "add-ons" to curricula already otherwise regarded as "complete."

Internationalization may include not only incorporation of relevant course material, but also the provision of opportunities to conduct research or coursework at foreign institutions or study-travel abroad programs as well. Put differently, the university should strive to ensure that its graduate students, irrespective of programmatic interest, enjoy opportunities for an internationally focused learning opportunity or set of opportunities. These will require appropriate preparation, including language facility when necessary. Faculties will need to design the various elements of pre-experience programs, whatever the specific character of the initiatives contemplated, carefully, so as to ensure integrated learning experiences.

Virginia Tech possesses a solid infrastructure and resources (research institutes, National Capital Region facilities and programs, international centers/programs, alumni, etc.) that can be leveraged to promote the visibility and impact of its graduate programs on a global scale. Along with other relevant existing professional graduate degrees and certificates, the international research and development and international research abroad graduate certificates represent additional supportive curricular steps in this direction.

Nonetheless, the university's current organizational structure and operating environment, both internal and external, present significant barriers to the development of international programs. In order to be competitive globally, Virginia Tech must become a more flexible, adaptive university whose work processes are shaped by an organizational culture that rewards imagination and risk taking and embraces continuous experimentation, change and learning.

IV. Integrate Praxis as a Crosscutting Concern

The subcommittee recommends that praxis—the act of engaging, applying, exercising, realizing, and practicing ideas—be considered a crosscutting goal for all university graduate

curricula. That is, university graduate offerings should uniformly not only equip students with relevant knowledge, but also with the reasoning and analytical capabilities that will enable them to employ that understanding to map and address complex social, scientific or technological problems collaboratively in the dynamic environments in which they occur. In our view, those contexts are likely to be unprecedentedly complex and will therefore be increasingly unlikely to yield to single-discipline perspectives. Instead, graduates will need to bring equally exceptional intellectual and communications capabilities to bear to make sense of these new environments; they will need to be able to use their knowledge in concert with others, quite literally, to make collective sense of their world and its pressing challenges. The subcommittee recommends all university graduate curricula prepare students to practice this complex art of knowledge application or contextual sensemaking.