Executive Summary

Proposal for Bachelor of Science in Sustainable Biomaterials and Innovation

Virginia Tech requests approval for a new Bachelor of Science (B.S.) degree in Sustainable Biomaterials and Innovation to commence in the fall semester of 2013. The B.S. degree in Sustainable Biomaterials and Innovation will be unique in the Commonwealth and will rely on the use of innovation theory to catalyze education efforts in both sustainability and biomaterials under a new educational option. The goal of this program will be to provide students with the understanding for transforming traditional biomaterials production methods, building construction methods, and current business management practices into lasting and value-added solutions for the benefit of human society and the environment.

This degree will serve the needs of Virginia and the $25.2 Billion forest products industry in the Commonwealth, as this industry seeks to adopt sustainable solutions because this approach permits conservation of the resource and is compatible with a growing national demand for renewable, green materials. In addition, the intent is for this degree to provide students with a national and global perspective on the use of sustainable biomaterials including wood for structural and consumer products.

The proposed degree program will permit students to create, convey, and apply knowledge to expand their personal growth, advance social and community development, foster economic competitiveness, and improve quality of life through a focused curriculum in the development and use of sustainable materials, innovations in housing, and entrepreneurial activities. Graduates from the proposed degree will be proficient in the high-demand field of sustainable biomaterials and will provide an exceptional talent pool to sustain a vibrant Virginia economy. Advancing community development, improving the quality of life, and fostering economic competitiveness are embodied within the Sustainable Biomaterials and Innovation degree and the goals are consistent with Virginia Tech’s current mission statement.

The curriculum for the B.S. in Sustainable Biomaterials and Innovation will require completion of 120 credit hours that includes satisfying the University’s Curriculum for Liberal Education requirements (36 credits), the Sustainable Biomaterials and Innovation core requirements (30 credits), and selected track course credits (ranging from 16 - 19 credits). The remaining 35-38 hours are free electives.

The Sustainable Biomaterials and Innovation degree will require eight SBIO courses that currently exist at Virginia Tech.

- SBIO 1234 Introduction to Wood, Design and Craftsmanship (3 credits)
- SBIO 2124 Structure and Properties of Sustainable Biomaterials (3 credits)
- SBIO 3004 Sustainable Nature-based Enterprise (3 credits)
- SBIO 3445-3446 Entrepreneurial Wood Design & Innovation (two 3-credit courses in sequence)
- SBIO 3454 Society, Sustainable Biomaterials, and Energy (3 credits)
- SBIO 4715-4716 Wood House (two 3-credit courses in sequence)
In addition, STAT 3615-3616 Biological Statistics (3 credits) is required as part of the core.

Students in the degree will select one of four unique tracks to provide focus and permit individualized experience in:

- Sustainable Enterprise (18 credits)
- Creating Sustainable Society (18 credits)
- Design and Craftsmanship (16 credits)
- Sustainable Residential Structures (19 credits)

Students will take 16-19 credits of coursework in the tracks, working with their departmental advisor to select the track that best fits their area of interest. Free elective courses are intended to enhance the student’s educational experience.

No special admissions for this program are required beyond those for admission to Virginia Tech.

Faculty for the new degree in Sustainable Biomaterials and Innovation are housed within the existing Department of Sustainable Biomaterials.

The program will be coordinated within the Department of Sustainable Biomaterials by faculty members, the Associate Department Head and the Department Head, all of whom are faculty members at Virginia Tech. These individuals will coordinate the academic program, advise students and teach classes. The faculty members of the department have a long history of coordination with industry and businesses in allied fields, and external support for this degree program is strong. The Department Head and Associate Department Head will coordinate academic offerings and advising. Hands-on courses and labs will help to guide the student’s educational experience in this degree. Guest lectures from regional and national business and industry leaders in the SBIO classes will further enhance the educational experience for students.

The B.S. in Sustainable Biomaterials and Innovation degree program is projected to enroll 76 students by the fifth year after the first class is admitted.

The B.S. in Sustainable Biomaterials and Innovation will position graduates to address important, societal and industry needs over the next 50 years. Graduates will be leaders in industry, government and academia both regionally and nationally. The degree will prepare students to analyze and respond to many of today’s pressing global resource issues, ranging from the efficient and wise use of natural resources for shelter, materials and energy, to how the world addresses the demand for products made from non-sustainable and non-renewable sources, and how future generations address sustainable biomaterials life-cycle issues from environmental, economic, and social perspectives.