Executive Summary

**Proposal for Bachelor of Science in Packaging
Systems and Design**

Virginia Tech requests approval for a new Bachelor of Science (B.S.) degree in Packaging Systems and Design to commence in the fall semester of 2013. The B.S. degree in Packaging Systems and Design will be unique in the Commonwealth and will meet a growing demand for education in the area of packaging science which is being driven both by societal needs for environmentally sound packaging and by industrial growth. Packaging is currently the third-largest industry in the United States and the need for well-educated graduates is particularly strong in states like Virginia that serve as international transportation hubs.

This degree will serve the needs of Virginia and the global $420 Billion packaging industry. The B.S. program in Packaging Systems and Design will prepare students for careers in industries producing and utilizing packaging materials of all types. Graduates from the program will serve regional, national and global community needs, as well as the multibillion-dollar international industry. Packaging is an essential part of industrialized economies and it functions to protect, preserve and facilitate the transport of products while aiding marketing. Several packaging industry partners are strongly supportive of the development of this degree at Virginia Tech.

Graduates from the Packaging Systems and Design degree program will have the capability to optimize packaging processes, to design environmentally-appropriate packaging systems as part of the entire packaging life cycle chain, and to develop the next generation of advanced packaging technologies. Demand and necessity for packaging materials and services related to virtually all industrial sectors dictates that graduates in this field also must play key roles in interfacing with many industries. We anticipate that offering this degree at Virginia Tech will permit residents of the Commonwealth to take advantage of education in this field without having to travel to out-of-state universities, and in-turn, our program will attract out-of-state students.

The curriculum for the B.S. in Packaging Systems and Design will require completion of 120 credit hours that includes satisfying the University's Curriculum for Liberal Education requirements (36 credits), core requirements in Packaging Systems and Design (42 credits), courses in statistical analysis (3 credits), writing skills (3 credits), and chemical and physical sciences (6 credits). The remaining 30 hours are free electives.

The Packaging Systems and Design degree will require 12 SBIO courses specifically related to the field of packaging that are currently approved at Virginia Tech.
- SBIO 2104 Principles of Packaging (3 credits)
- SBIO 2114 Packaging Law and Regulation (3 credits)
- SBIO 2124 Structure and Properties of Sustainable Biomaterials (3 credits)
- SBIO 2384 Behavior of Sustainable Biomaterials (3 credits)
- SBIO 2614 Introduction to Forest Products Marketing (3 credits)
- SBIO 3124 Paper and Paperboard Packaging (3 credits)
- SBIO 3214 Food and Health Care Packaging (3 credits)
- SBIO 3224 Packaging Distribution Systems (3 credits)
- SBIO 3284 Packaging Polymers and Production (3 credits)
- SBIO 4024 Packaging Design for Global Distribution (3 credits)

- SBIO 4054 Packaging Systems Design Practicum (3 credits)
- SBIO 4224 Wood Pallet, Container & Unit Load Design (3 credits)

The course content for the degree includes critical content from the fields of industrial engineering, industrial design, chemistry, material science, and marketing. Providing the opportunity to gain hands-on experience in various packaging areas is an essential part of the proposed degree program. Students are encouraged to obtain experience either through activities sponsored by the Center for Packaging and Unit Load Design within the Department of Sustainable Biomaterials (a Center that has existed for 30 years at Virginia Tech and provides infrastructure support for the developing degree program) and/or related summer fellowships, internships and student club activities.

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

Faculty for the new degree in Packaging Systems and Design 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 in the SBIO-Packaging Systems and Design classes by regional and national business and industry leaders will further enhance the educational experience for students.

Other packaging programs in the country have undergraduate enrollments ranging from 200 to 500 students. The B.S. in Packaging Systems and Design degree program is projected to enroll 80 students by the fifth year after the first class is admitted.

The B. S. degree in Packaging Systems and Design will focus on the multidimensional aspects of packaging technology required to meet societal expectations and address the diverse needs of an industry that has many unique and niche markets. The success of other academic degree programs in the field has been demonstrated by universities in five other states. Virginia has perhaps one of the greatest needs for packaging graduates because of the Commonwealth's strong industrial base, its geographic positioning as a transportation hub, and its status with major shipping port cities on the eastern seaboard. A workforce trained to understand highly advanced packaging technologies is necessary to support industries that have developed around this hub. Implementation of this B.S. degree program would move the Commonwealth into the educational forefront of this vital and expanding field.