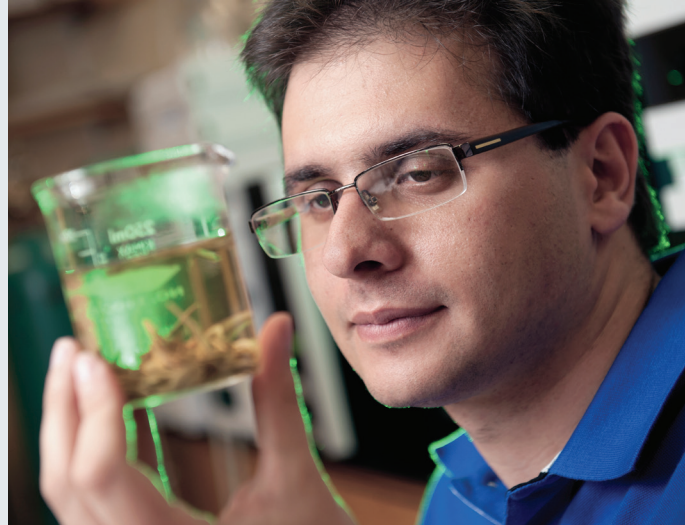


# Graduate Students

During 2012 – 2014, approximately 40 percent of the graduate students in food science and technology are working towards a doctorate degree. Additionally, approximately 40 percent of the department graduate students are from underrepresented ethnic or racial groups.



## Graduate Degree Offerings

- Ph.D. – Food Science and Technology
- M.S. – Life Sciences (Food Science and Technology)
- Online Masters in Agriculture and Life Sciences (Food safety and biosecurity concentration, non-thesis)

## Graduate Certificate Programs

The Graduate School offers graduate certificate programs that can expand your perspective.

- Graduate Teaching Scholars Program
- Future Professoriate Graduate Certificate
- Water INTERface (Interdisciplinary Graduate Education Program)

## Application Process

Find requirements and submit applications at:  
<http://graduateschool.vt.edu/admissions/applying/index.html>

## Financial Aid

Graduate students have opportunities for financial support that include tuition, a stipend, and contribution toward the university-sponsored health care plan.

"After my first visit to Virginia Tech's Food Science Department, I knew that it was my top choice for graduate school. The atmosphere was friendly and supportive, with faculty, staff and students all willing to help one another achieve their goals and expand their food science knowledge. Specialized course offerings in areas such as food packaging and sensory science, and participation with the product development team allowed me to jump into my career with confidence."

**Renee Dupell, M.S. 2011,**  
Food Scientist &  
Product Steward Analyst  
DuPont Teijin Films





# Engaging Minds To Meet Global . . . . . Food and Health Challenges

Our department is dedicated to expanding technical and professional knowledge in the field of food science. We provide enriching experiences in the classroom and laboratory, and create connections with professionals in industry, government, and academia. Students leave the program prepared for exciting and satisfying professional food science careers.

## For information about the food science and technology graduate program:

### Joseph Eifert

Graduate Program Director  
[jeifert@vt.edu](mailto:jeifert@vt.edu)

### Department Website

[www.fst.vt.edu](http://www.fst.vt.edu)

*Prospective students are encouraged to contact individual professors with matching research interests.*



Virginia Tech does not discriminate against employees, students, or applicants on the basis of age, color, disability, gender, gender identity, gender expression, national origin, political affiliation, race, religion, sexual orientation, genetic information, veteran status, or any other basis protected by law.



# GRADUATE PROGRAMS

## Department of **Food Science and Technology**







"The drive and commitment of the faculty and staff in the FST department pushed me to acquire the same drive and commitment level that I use every day with my team at YoCrunch. Their motivation and commitment to me in my graduate work has given me the tools to instill the same level of intensity in the team that works for me and with me."

**Vanessa Teter, M.S., 2006**

Manager, Product Development, The YoCrunch company

## Department of Food Science and Technology

### Research

You will be part of internationally recognized, cutting edge, industry-relevant research, engaged in the missions of protecting public health, enhancing food quality, and making technological advancements. You will apply basic science and technology disciplines (biology, chemistry, engineering etc.) for innovation in processing, preservation, packaging, distribution, and utilization of food and food products.

### Human and Agriculture Biosciences Building 1 (HABB1)

Opened in 2014, the 7,100-square foot food processing pilot plant includes pilot-scale equipment for fermentations and beverage processing, packaging technologies, and benchtop formulation development.

- The 2,200-square-foot food safety pilot plant is certified for use with BLS-2 human pathogens, providing a unique experiential training for pilot-scale processing with pathogens, not just surrogates.
- Aquaculture laboratories are outfitted with controlled environment recirculating aquaculture systems that range up to thousands of gallons.
- The sensory evaluation laboratory has sensory data collection software, observational cameras and multi-option booth lighting to facilitate qualitative and quantitative research on food quality, consumer behavior, and emotional response to foods.
- New research laboratories have shared equipment and laboratory support spaces. With the goal of integrated science, these workspaces create collaboration with researchers from the department as well as around campus.

### Food Science and Technology Building

Instructional facilities include:

- Newly renovated flexible classroom
- Teaching laboratories
- Packaging and processing pilot plant
- Sensory evaluation laboratory
- Product innovation spaces

Research facilities include:

- High hydrostatic pressure processing laboratory complete with Avure fully commercial 35-liter high pressure processing system
- Research winery and enology laboratory
- Food analysis and microbiology laboratories



# Graduate Research Programs

You have the opportunity to work in a variety of areas. When you apply, you can select up to three research areas of interest.

## Food Safety and Microbiology

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- Examine the role of sub-lethal stresses encountered during food processing on the survival, persistence, and virulence of food-borne pathogens
- Develop interventions to prevent food contamination by food-borne pathogens and improve recovery during pre-harvest, post-harvest, and food preparation
- Examine the effect of functional foods on the microbial ecology of gastrointestinal and food systems
- Discover novel antimicrobial compounds, extracted from natural sources, to reduce pathogenic and spoilage microorganisms in foods

## Food and Flavor Chemistry

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- Understand basic molecular reactions, flavor chemistry, food composition, component interactions, and physical properties of food systems
- Apply and characterize changes in food quality attributes, such as texture, color, flavor, and nutrition
- Characterize nano-, micro- and macro-scale molecular changes that influence food structure

## Sensory Science

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- Characterize the influence of salivary composition on flavor perception
- Evaluate consumer interactions with an emotional response to food and packaging
- Integrating physiological, neurological, and sensory methods for developing new sensory approaches

## Food Packaging, Processing and Engineering

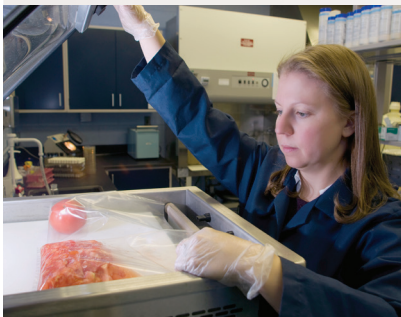
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- Develop new methods to process food products safely through thermal and aseptic processing; dehydration, and modified atmosphere packaging
- Use nondestructive evaluation methods to characterize food components
- Observe how food packaging affects the characteristics of the food
- Create new methods and unit processes for food processing and packaging

## Enology and Brewing Science

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- Develop and evaluate vineyard and orchard management, fermentation, and processing practices used in wine and hard cider production
- Determine brewing quality of Virginia grown barley and hops





## Functional Foods for Health

- Use pre- and pro-biotics to improve health including gut metabolism reduction inflammation, inhibiting pathogens, and stimulation of gut microbial activity
- Understand the influence of food and beverage fermentation processes on product quality and composition of bioactive compounds
- Analytically assess bioactive components and how they work emphasizing chemistry and biochemistry
- Characterize the influence of dietary compounds on cancer-induced taste disorders

## Aquaculture

- Advance aquaculture technologies used for producing freshwater and marine seafood
- Enhance the quality of aquaculture-produced seafood to feed the growing demand and expanding populations

## Education and Extension

- Develop interventions and educational programs to empower food handlers to use safer practices



"The graduate FST program at Virginia Tech gave me the foundational knowledge and experience to be able to pursue a career in research. Furthermore, the program's interdisciplinary focus has allowed me to be able to effectively communicate with other scientists across disciplines, which has lead me to become successful as a researcher in an environment where collaboration is essential."

**Paul Sarnoski, Ph.D., 2010**

Assistant Professor, Food Science & Human Nutrition, University of Florida

## Experiential learning opportunities contributing to Extension and outreach

- Receive industry certifications (HACCP, Better Process Control School, ServSafe)
- Work alongside food companies to solve complex food safety and quality issues
- Participate in Extension and outreach efforts addressing all food industries addressing aquaculture, enology, brewing, assisting new food entrepreneurs