

Undergraduate Research Opportunity – Spring 2022

The Department of Forest Resources and Environmental Conservation at Virginia Tech is seeking a small group of undergraduate students (6) to conduct research regarding forest residue feedstock availability, processing logistics, and delivery cost. Students will work collaboratively as a team along with other student teams from West Virginia University, Penn State University, and the State University of New York to complete a design project focused on designing, citing, and supplying a renewable energy-based biochar facility in the region.

Specifically, the project focuses on advancing the biomass and bioproducts industries by improving feedstock production and harvesting logistics in the Mid-Atlantic region of the U.S. The project involves a collaboration between the four universities, the USDA Forest Service, and the US Department of Energy. Interested students should have an interest in renewable energy, field data collection, analysis, and reporting.

Eligible Majors: Students from any major in the FREC or SBIO departments

Class Level: Senior status is preferred but exceptional juniors will also be considered

Credit Hours: 1 to 3 based on student needs and level of participation

Credit Level: FREC 4994 Undergraduate Research

Semester and Modality: Spring 2022 – Combination of in-person and online meetings

Instructor: Dr. Chad Bolding (bolding@vt.edu). Please contact for more information.

Example Project Plan Required for the Research Request:

Project Title: Feedstock Availability, Logistics, and Costs to Supply a Biochar Facility

Scope of Project: Students will work collaboratively as a team along with other student teams from West Virginia University, Penn State University, and the State University of New York to complete a design project focused on designing, citing, and supplying a renewable energy-based biochar facility in the region.

Research Objectives: 1) Determine the adequacy of supply of forest residue feedstock in the region, 2) Determine harvesting and processing costs of raw material, 3) Determine delivery logistics, costs, and profitability of forest residues

Research Methods: 1) Conduct a resource availability study along with in-field forest inventory data collection, 2) Apply harvesting cost and processing models along with research findings to estimate in-woods harvesting costs, 3) Evaluate transportation logistics of raw material to proposed facility locations and determine cost effective solutions

Expected Outcomes: Completed design project report that can be incorporated in the collaborative master design plan for the facility proposal