Department of Sustainable Bioproducts

Major Advisor: Dr. C. Elizabeth Stokes
Office: Department of Sustainable Bioproducts, Building 3, Room 3206 at 201 Locksley Way

The bioproducts industry is one of the largest economic contributors to Mississippi, as well as in the United States. Employment in timber conversion, engineered composites, pulp and paper, logging, and furniture manufacturing is widely available. Mississippi's bioproducts industry recognizes the need for well-trained employees to help increase the conversion efficiencies and alter manufacturing processes to allow compatibility with a changing raw material base. The industry and its allied disciplines are large in terms of employment in Mississippi and nationwide.

The mission of the Department of Sustainable Bioproducts is to enhance the intellectual, cultural, social, and professional development of its students by providing them with knowledge and skills needed to utilize and conserve diverse forest and other resources effectively. In this regard, the Department's primary teaching responsibility is to provide high quality educational opportunities necessary to adequately prepare students for professional and scientific careers in wood science, timber resources, and bioproduct manufacturing, along with related technology and business fields.

The Department of Sustainable Bioproducts' physical plant consists of five laboratory/office buildings and other special purpose buildings and the Franklin Center for Furniture Manufacturing and Management, with a combined floor space in excess of 90,000 square feet. These buildings house the analytical and testing equipment, laboratories, pilot plants, and support facilities required for a comprehensive research program involving wood and biobased products.

Presently, students interested in a sustainable bioproducts curriculum have the following options:

- Bachelor of Science degree in Sustainable Bioproducts, Business concentration
- Bachelor of Science degree in Sustainable Bioproducts, Science concentration

Sustainable Bioproducts Major

Students majoring in Sustainable Bioproducts will develop a strong foundation in the manufacturing of wood and fiber-based products, their physical and mechanical properties, environmental implications, marketing, sales, and trading of wood and composite materials composed of agricultural resides and other natural fibers. Besides structural materials, specialty chemicals such as polymers and adhesives from natural resources, and bioenergy such as bio-oils, alcohols, and pelletized fuels are increasingly important to sustainable industrial production. In addition to utilizing the state's timber and agricultural residues, the program seeks to increase the use life of wood and non-wood materials, and to enhance sustainability by use of preservative treatments and developing improved designs.

Sustainable Bioproducts Concentrations

Business concentration

Students majoring in Sustainable Bioproducts will develop a strong foundation in the manufacturing of wood and fiber-based products, their physical and mechanical properties, environmental implications, marketing, sales, and trading of wood and composite materials composed of agricultural resides and other natural fibers. Besides structural materials, specialty chemicals such as polymers and adhesives from natural resources, and bioenergy such as bio-oils, alcohols, and pelletized fuels are increasingly important to sustainable industrial production. In addition to utilizing the state's timber and agricultural residues, the program seeks to increase the use life of wood and non-wood materials, and to enhance sustainability by use of preservative treatments and developing improved designs.

Science concentration

Designed for students wishing to pursue a scientific research field, work for a wood products industry in research and development, or for students who intend to pursue graduate degrees in wood and biomaterials science. Students may choose to focus their elective classes on the testing of physical and mechanical properties of wood, the chemical protection of wood from biotic and abiotic stresses, environmental impacts and issues associated with treatment and disposal of wood and non-wood products, or development of engineered wood products including pelletized fuels, mass timber products, construction elements, engineered wood panels, and other wood and non-wood bioproducts. Across all areas of study, students receive training in sustainability, current industry practices, and the opportunity to interact with industry professionals.

Sustainable Bioproducts Accelerated Program (Thrive in Five)

The Department of Sustainable Bioproducts offers an Accelerated BS/MS program to highly qualified MSU undergraduates enrolled as SBP majors. Programs of this type offer students the opportunity to earn graduate credit while completing a Bachelor's program, and are offered in several departments across the university. Currently enrolled SBP undergraduates who have completed 60 credit hours toward a Bachelor's degree, and who have a GPA of 3.5 or higher for all undergraduate work may apply for the program by contacting Dr. Beth Stokes (b.stokes@msstate.edu) in the Department of Sustainable Bioproducts for further information. Undergraduates may receive dual credit for split-level courses (4000-level and 6000-

level) taken during their final year of undergraduate studies, and may choose to transition into a Master's program immediately following their Bachelor's degree, completing both programs in as few as five years in total.

Sustainable Bioproducts Minor

A Sustainable Bioproducts minor is available to non-majors to provide students with the knowledge of wood products, and bio-based composites, polymers, chemicals and fuels. The courses focus on material properties, environmental issues, and manufacturing principles, as well as their marketing and sales. The topics complement many fields that deal with natural materials: construction, design, business and production management, and scientific fields such as chemistry, engineering, environmental science, and biotechnology. A minor in Sustainable Bioproducts will also provide non-major students an excellent background for entering a graduate degree program in Sustainable Bioproducts. Academic advising is available in the Department of Sustainable Bioproducts located at 201 Locksley Way. A total of 18 hours is required to obtain a Sustainable Bioproducts minor.

English (General Education)		
EN 1103	English Composition I	3-4
or EN 1104	Expanded English Composition I	
EN 1113	English Composition II	3
or EN 1173	Accelerated Composition II	
Fine Arts (General Education)		
Any General Education Fine Arts course		3
Natural Sciences		
BIO 1134	Biology I	4
BIO 1144	Biology II	4
Additional Science		
CH 1213	Chemistry I	3
or CH 1234	Integrated Chemistry I	
CH 1223	Chemistry II	3
or CH 1244	Integrated Chemistry II	
Math (General Education)		
MA 1313	College Algebra	3
MA 1323	Trigonometry	3
ST 2113	Introduction to Statistics	3
or ST 3123	Introduction to Statistical Inference	
or BQA 2113	Business Statistical Methods I	
Humanities (General Education)		
Any Gen Ed Humanities courses		6
Social/Behavioral Sciences (General Education)		
Any General Education Social/Behavioral Sciences course		3
Choose one of the following Economics courses:		3
AEC 2713	Introduction to Food and Resource Economics	
or EC 2113	Principles of Macroeconomics	
or FO 4113	Forest Resource Economics	
Oral Communicaton Requirement		
CO 1003	Fundamentals of Public Speaking	3
or CO 1013	Introduction to Communication	
Writing Requirement		
AELC 3203	Professional Writing in Agriculture, Natural Resources, and Human Sciences	3
or MGT 3213	Organizational Communications	
or BIO 3013	Professional Writing for Biologists	
Major Core Courses (Required)		
SBP 1001	Undergraduate Seminar	1
SBP 1103	Introduction to Sustainable Bioproducts	3
SBP 2012	Introduction to Bioproduct Industries	2
SBP 2123	Materials and Processing of Structural Bioproducts	3
SBP 3113	Physics of Biomaterials	3
SBP 3123	Biomass to Bioproducts	3

SBP 4013	Wood Anatomy	3
SBP 4243	Sustainable Bioproducts	3
SBP 4313	Bioproducts and the Environment	3
SBP 4443	Capstone Sustainable Bioproducts	3
Major Courses Professional Electives		**9-11**
SBP 3133	Mechanics of Biomaterials	
SBP 3143		
SBP 4000	Directed Individual Study	
SBP 4023	Lignocellulosic Biomass Chemistry	
SBP 4113	Adhesives and Biocomposites	
SBP 4123	Lumber Manufacturing	
SBP 4133	Biorefinery Processes	
SBP 4144		
SBP 4153	Biomass Products Manufacturing	
SBP 4213	Deterioration and Preservation of Biomaterials	
SBP 4253	Quantitative Methods in Sustainable Bioproducts	
SBP 4263	Furniture Design and Fabrication	
SBP 4353	Forest Products Marketing	
SBP 4450	Undergraduate Research in Sustainable Bioproducts	
Concentration Courses		**24**
Business Concentration		
SBP 4253	Quantitative Methods in Sustainable Bioproducts	
SBP 4353	Forest Products Marketing	
AEC 2713	Introduction to Food and Resource Economics	
EC 2113	Principles of Macroeconomics	
EC 2123	Principles of Microeconomics	
MKT 3013	Principles of Marketing	
FO 4113	Forest Resource Economics	
FO 4323	Forest Resource Management	
Science Concentration		
SBP 3133	Mechanics of Biomaterials	
SBP 4023	Lignocellulosic Biomass Chemistry	
SBP 4113	Adhesives and Biocomposites	
CH 2503	Elementary Organic Chemistry	
CH 2501	Elementary Organic Chemistry Laboratory	
BIO 3304	General Microbiology	
BCH 4013	Principles of Biochemistry	
EPP 3124	Forest Pest Management	
Professional Electives		**6**
Choose any class that is 3000 level or above from the following subjects: ABE, AEC, ARC 2713, BCH, BCS, BIO, BIS, BL, CE, CH, EC, EE, EG, EM, EPP, FIN, FO, GR, IE, TKI, LA, MGT, MKT, MA, ME, NREC, PH, PS, PSS, SBP, ST, WFA		18
Free Electives		**6**
Total Hours		**124**