

Reversing the Trend: Marketing a New Undergraduate Curriculum at Auburn University, “Sustainable Biomaterials and Packaging”

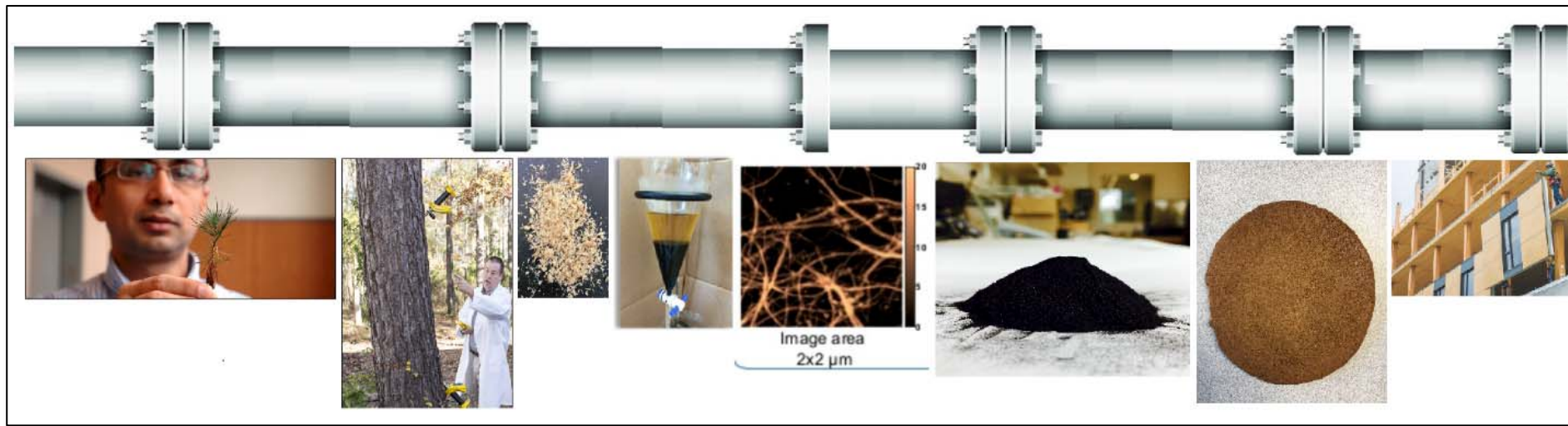
Brian K. Via, Auburn University

Director of Auburn University Forest Products Development Center

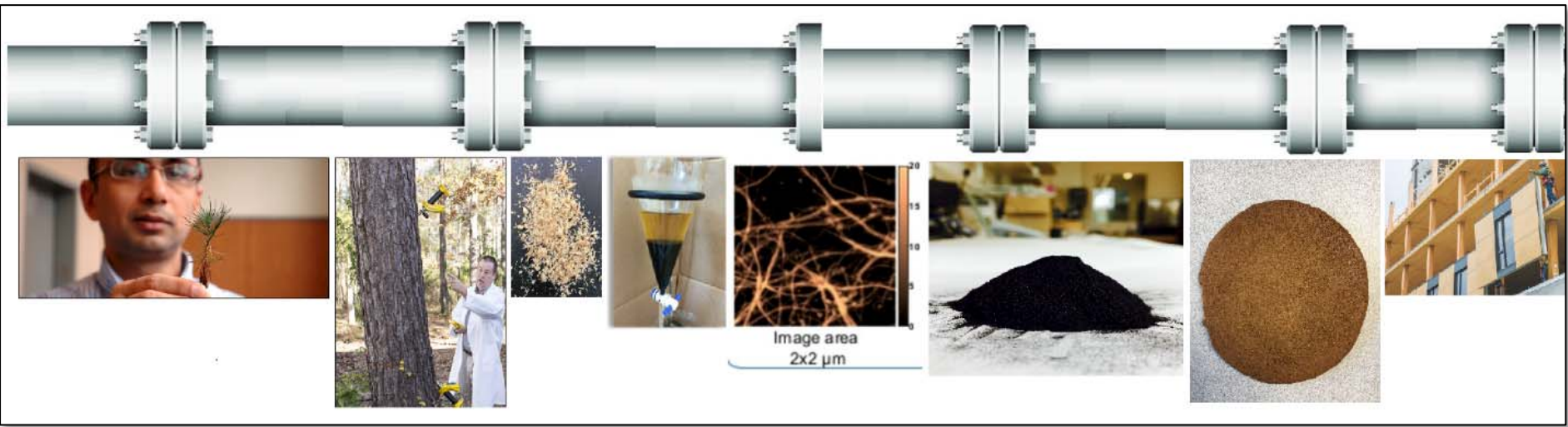
Regions Bank Professor



Undergraduate Program Possible through Strong Research Network

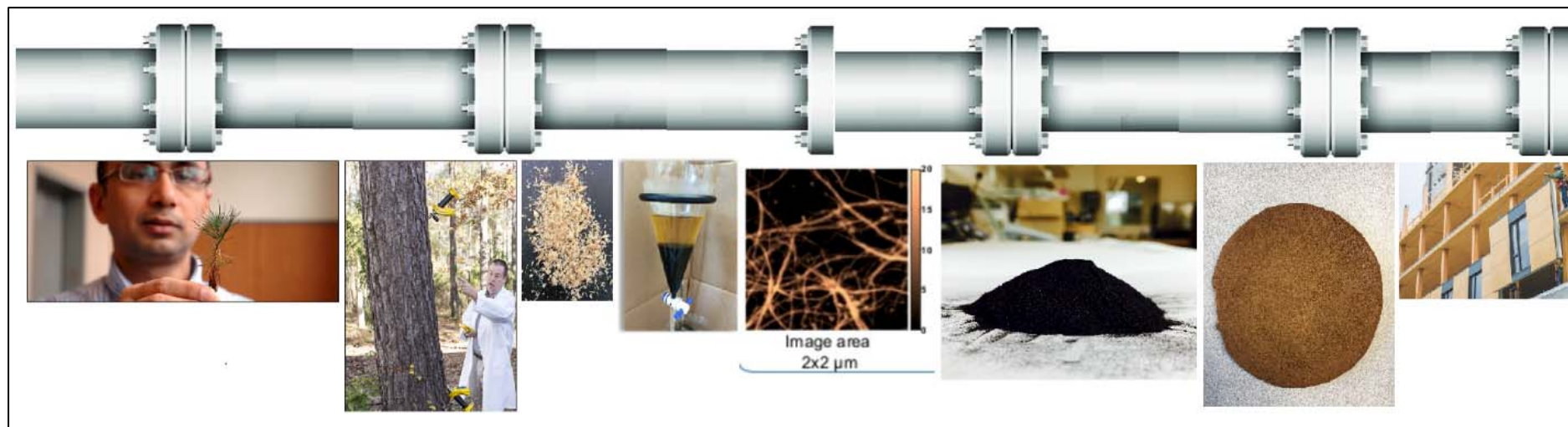


The Product



A student with a multidisiplinary background
- Not an engineer, not a business major, but a project manager

Price




May be low for out of state students from adjacent states lacking a program



Promotion

- Come See our Booth!
- Industrial Stakeholders
- Trade Shows
- Campus Wide Seminar
- Cluster Hire 2016, 2017
- International Beams
- Poster Presentations and Seminars at
 - Clemson, VT, Michigan Tech
- Website

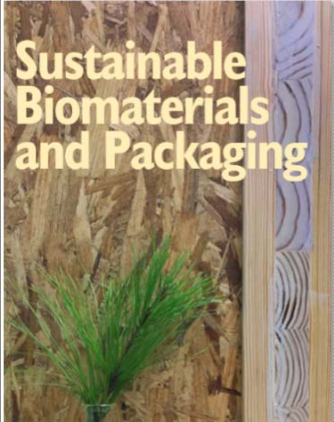


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Forest Products Development Center
 School of Forestry & Wildlife Sciences

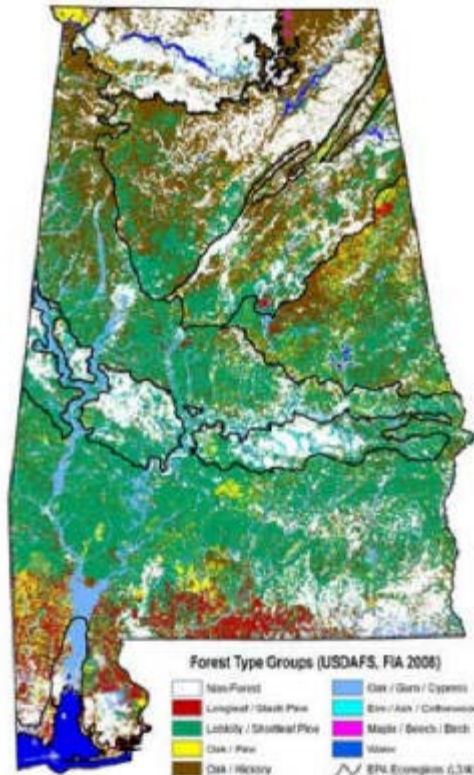
Auburn is currently proposing a new undergraduate curriculum (120 credits) pending approval by the University, Board of Trustees, and Alabama Commission on Higher Education (ACHE). This new degree will include classes from College of Engineering, College of Ag., College of Business, College of Architecture, Design, and Construction and the School of Forestry and Wildlife Sciences.

Anticipated start date will be Fall of 2018.

For more information contact:
Brian K. Via
Regions Bank
Professor & Director
brianvia@auburn.edu

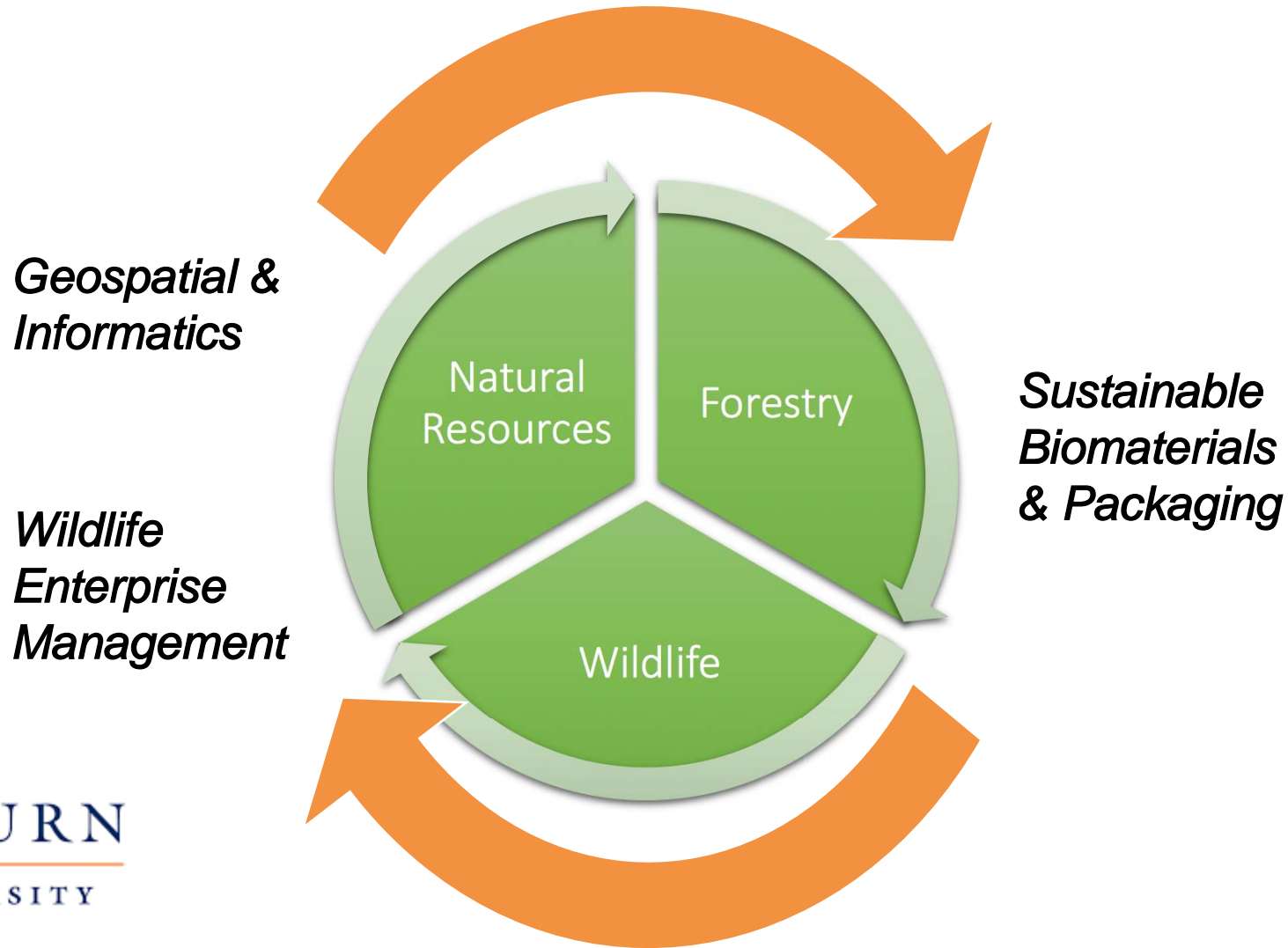



Place



- Alabama forests generate over \$21 billion in timber production & processing revenue. ([source-aces](#))
- Alabama forests provide over 122,000 jobs in timber production & processing. ([source-aces](#))
- There are 23 million acres of timberland in Alabama, accounting for 69% of the total land area in the state.
- Alabama has the third most timberland acreage in the 48 contiguous states,
- Approximately 31% of Alabama's timberland is comprised of pine plantations
- According to 2014 FIA data, the timber “growth-to-removals” ratio for softwood species is 1.48

Our Product Mix



Combining a “Push” and “Pull” Strategy



Strategic Plan: A Supply Chain Strategy

Biomass & Logistics

- Planting (Seedling)
- Feedstock Quality
- Harvesting, Transportation
- Supply Chain Management
- Distribution & Logistics

Processes & Products

- Traditional Forest Products
- Forestry Materials Packaging
- CLT, Wood Composites
- BioBased Polymers for Packaging
- Bioenergy
- Pulp & Paper for Packaging
- QC Control & Testing

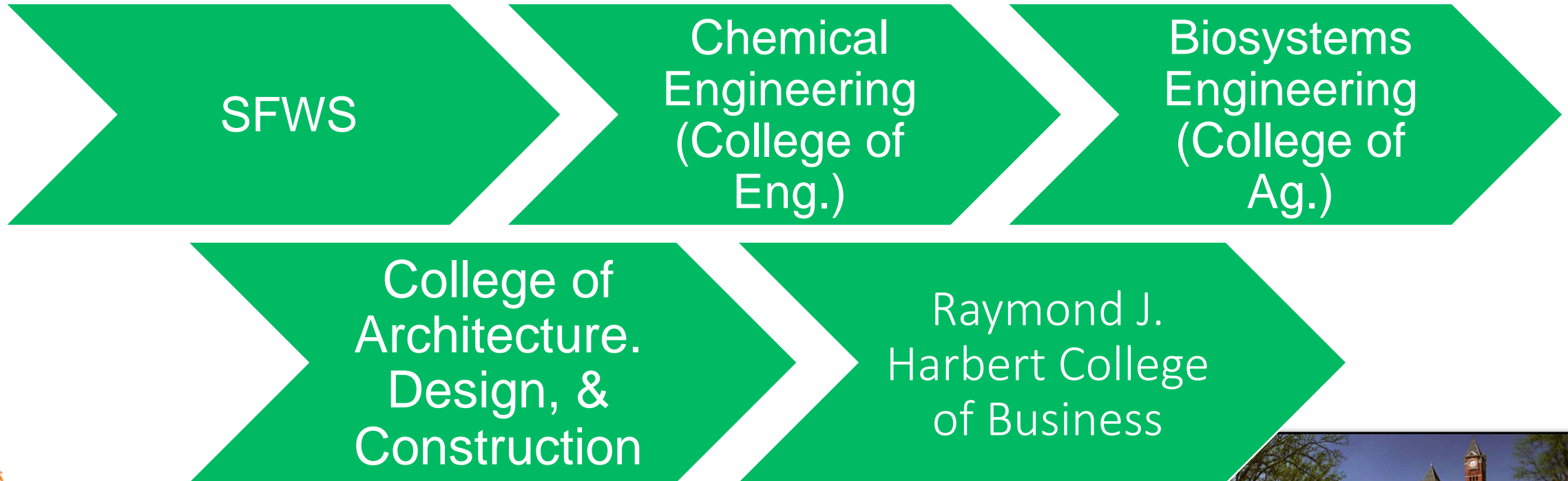
Sustainability & Business

- Marketing & Business
- LCA
- Eco-Design
- Economics
- Product Development
- Recycling



Thinking outside the Box

They said “it couldn’t be done.”



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Interdisciplinary Biomass/Logistics Team



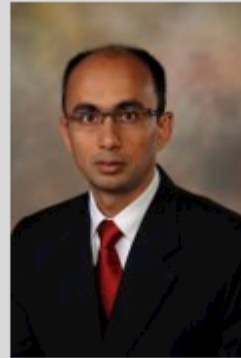
**Dr. Oladiran Fasina,
P.E.**

Dept. Bio.
Eng.
Expertise:
Biomass
Logistics



**Dr. Tom
Gallagher**
SFWS

Expertise:
Timber
Harvesting
& Analysis



**Dr. Sushil
Adhikari,
P.E.**

Dept. Bio.
Eng.

Expertise:
Bioenergy



**Dr. Mathew
Smidt**
SFWS

Expertise:
Forest
Operations &
Harvesting



**Dr. Tim
McDonald**

Dept. Bio.
Eng.

Expertise:
Biomass
Sensors










**Dr. Edmon
Perkins**

Mechanical
Engineering

Expertise:
Non-
destructive
assessment
of materials



Interdisciplinary Products & Processing Team

 <p>Dr. Brian Via SFWS</p> <p>Expertise: Forest Products, Adhesives, Composites, <u>Chemometrics</u></p>	 <p>Dr. Maria Soledad Peresin SFWS</p> <p>Expertise: Biopolymers, <u>Nanotech.</u>, Surface Chemistry, Packaging</p>	 <p>Dr. Ilari Filpponen Chemical Eng. & SFWS.</p> <p>Expertise Packaging, Wood Chemistry</p>
 <p>Dr. Maria Auad Chemical Eng.</p> <p>Expertise: Polymers and Adhesives Packaging</p>	 <p>Dr. George Cheng SFWS</p> <p>Expertise: Wood Mechanics, Physics, & LCA</p>	 <p>Dr. Zhihua Jiang Chem. Eng.</p> <p>Expertise: Pulp and paper packaging</p>
 <p>Dr. David Kennedy Architecture</p> <p>Expertise: Cross Laminated Timber</p>	 <p>Dr. Gisela Buschle-Diller <u>Biosyst.</u> Eng.</p> <p>Expertise: Polymer and Fiber Engineering</p>	



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Interdisciplinary Sustainability/Business Team



**Dr.
Daowei
Zhang**
SFWS

Expertise:
Economics



**Dr. Yaoqi
Zhang**
SFWS

Expertise:
Economics,
Management,
Marketing



**Dr.
Adam
Maggard**
SFWS.

Expertise
Forest
Systems
Mgt.



**Dr. Jeffrey
Fergus**
Materials
Eng.

Expertise:
Sustainable



**Magdalena
Garmaz**
College
Architecture,
Design

Expertise:
Design &
Sustainability



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Case Study: Sustainable Biomaterials & Packaging: VT Enrollment

2004-2015 Combined Enrollment for College of Natural Resources at Virginia Polytechnic Institute and State University

CIP	Discipline	Undergraduates											
		2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
03.0101	Natural Resources/Conservation, General			15	11	11	14	13	6	6	13	15	21
03.0301	Fishing and Fisheries Sciences and Management	49	44	41	49	41	51	64	65	53	48	49	41
03.0501	Forestry, General	74	65	54	49	50	56	75	80	102	101	109	106
03.0508	Urban Forestry	9	10	11	10	10	10	6	6	9	8	4	5
03.0509	Wood Science and Wood Products/Pulp and Paper Technology	38	7	33	27	37	20	37	48	60	74	91	130
03.0510	Forest Resources Production and Management		15	11	11	12	5	12	20	24	16		0
03.0601	Wildlife, Fish and Wildlands Science and Management	137	97	109	120	107	148	155	148	160	165	158	156
13.1202	Elementary Education and Teaching			12	8	8	6	10	5	5	7	4	5

Approximately 30% of packaging Students are minority or female

Rationale for an undergraduate program

Where is Industry Headed?



Donation of Used Thermal Analysis Equipment

Sustainable Biomaterials & Packaging Equipment



Thermal Gravimetric Analysis (TGA)



TGA + Infra Red Spectrometer



Differential Scanning Calorimeter (DSC)



Thermo-mechanical analysis

Proposed Undergraduate Curriculum

Auburn University

School of Forestry and Wildlife Sciences
Sustainable Biomaterials and Packaging (BIOP) Degree

NAME:

ID#:

FRESHMAN

FALL				SPRING			
<i>ENGL</i>	<i>1100</i>	<i>English Composition I</i>	<i>3</i>	<i>ENGL</i>	<i>1120</i>	<i>English Composition II</i>	<i>3</i>
<i>BIOL</i>	<i>1020</i>	<i>Principles of Biology</i>	<i>3</i>	<i>BIOL</i>	<i>1030</i>	<i>Organismal Biology</i>	<i>3</i>
<i>BIOL</i>	<i>1021</i>	<i>Principles of Biology Lab</i>	<i>1</i>	<i>BIOL</i>	<i>1031</i>	<i>Organismal Biology Lab</i>	<i>1</i>
<i>MATH</i>	<i>1130</i>	<i>Pre-Calculus Trig or Higher</i>	<i>3</i>	<i>STAT</i>	<i>2510</i>	<i>Stats for Biological and Health Sciences</i>	<i>3</i>
<i>CORE</i>	<i>HIST</i>	<i>History¹</i>	<i>3</i>	<i>CORE</i>	<i>SOC</i>	<i>History or Social Science¹</i>	<i>3</i>
<i>INDD</i>	<i>1120</i>	<i>Industrial Design in Modern Society</i>	<i>3</i>	<i>CORE</i>	<i>SOC</i>	<i>Social Science</i>	<i>3</i>
			<i>16</i>				<i>16</i>

SOPHOMORE

FALL				SPRING			
<i>CHEM</i>	<i>1030</i>	<i>Fundamental Chemistry I</i>	<i>3</i>	<i>CHEM</i>	<i>1040</i>	<i>Fundamental Chemistry II</i>	<i>3</i>
<i>CHEM</i>	<i>1031</i>	<i>Fundamental Chemistry I Laboratory</i>	<i>1</i>	<i>CHEM</i>	<i>1041</i>	<i>Fundamental Chemistry II Laboratory</i>	<i>1</i>
<i>BIOP</i>	<i>2120</i>	<i>Frontiers of Sustainable Materials^(M)</i>	<i>3</i>	<i>MKTG</i>	<i>3310</i>	<i>Principals of Marketing</i>	<i>3</i>
<i>ECON</i>	<i>2020</i>	<i>Principals of Microeconomics</i>	<i>3</i>	<i>SUST</i>	<i>2000</i>	<i>Introduction to Sustainability</i>	<i>3</i>
<i>CORE</i>	<i>LIT</i>	<i>Literature¹</i>	<i>3</i>	<i>CORE</i>	<i>HUM</i>	<i>Literature or Humanities¹</i>	<i>3</i>
<i>COMM</i>	<i>1000</i>	<i>Public Speaking</i>	<i>3</i>	<i>CORE</i>	<i>ARTS</i>	<i>Fine Arts</i>	<i>3</i>
			<i>16</i>				<i>16</i>

Proposed Undergraduate Curriculum

				JUNIOR			
				FALL		SPRING	
<i>SCMN</i>	<i>3150</i>	<i>Management of Business Process</i>	<i>2</i>	<i>BIOP</i>	<i>4060</i>	<i>Economics of Bioproducts and Packaging(M)</i>	<i>3</i>
<i>BIOP</i>	<i>3390</i>	<i>Intro to Forest Products and Packaging(M)</i>	<i>3</i>	<i>BIOP</i>	<i>4070</i>	<i>Performance & Durability of Product & Packaging(M)</i>	<i>3</i>
<i>BIOP</i>	<i>3391</i>	<i>Forest and Manufacturing Operations(M)</i>	<i>1</i>	<i>BIOP</i>	<i>4080</i>	<i>Business Management for Products(M)</i>	<i>3</i>
<i>BIOP</i>	<i>4050</i>	<i>Biomass Processing Chemistry(M)</i>	<i>3</i>	<i>MKTG</i>	<i>4340</i>	<i>Marketing and New Product Development</i>	<i>3</i>
<i>MATL</i>	<i>2220</i>	<i>Materials and the Environment or Mineral Resources: Processes and Availability</i>	<i>1</i>	<i>BIOP</i>	<i>4360</i>	<i>Sustainable Biomaterials Trade and Marketing (M)</i>	<i>3</i>
	<i>2230</i>						
			<i>10</i>				<i>15</i>
				SENIOR			
				FALL		SPRING	
<i>BIOP</i>	<i>4830</i>	<i>Sustainability and Life Cycle Assessment (M)</i>	<i>3</i>	<i>BIOP</i>	<i>4800</i>	<i>Biopolymers for Biomaterials & Packaging(M)</i>	<i>3</i>
<i>BIOP</i>	<i>5250</i>	<i>Wood Composites for Biomaterials & Packaging(M)</i>	<i>3</i>	<i>BIOP</i>	<i>4410</i>	<i>Biomaterials Product Development I(M)</i>	<i>3</i>
	<i>3530</i>			<i>SCMN</i>	<i>5720</i>	<i>Quality and Process Improvement</i>	<i>3</i>
<i>BSEN</i>		<i>Ag. Production & Processing Facility Tech.</i>	<i>3</i>	<i>BSEN</i>	<i>4240</i>	<i>Fundamentals Bulk Solid Behavior & Processes</i>	<i>3</i>
<i>BIOP</i>	<i>4400</i>	<i>Biomaterials Product Development (M)</i>	<i>1</i>			<i>Elective</i>	<i>3</i>
<i>ENVD</i>	<i>4010</i>	<i>Elements of Design Thinking and Communication</i>	<i>3</i>				
<i>BIOP</i>		<i>Elective</i>	<i>3</i>				
			<i>16</i>				<i>15</i>

Brochure at Booth. See you Fall 2018!

About Auburn University

For 25 consecutive years, Auburn has been a fixture on *U.S. News & World Report's* list of the top 50 public universities in the country. Auburn's academic offerings are outstanding, and its students benefit tremendously from the academic and social support provided by the university. The university fosters a unique atmosphere and cultivates a connection between students and the campus community, a feeling that has been described as just like home for more than 160 years.

A personal approach

SFWS students enjoy a low faculty-to-student ratio, and they are afforded numerous hands-on and experiential learning opportunities. In addition, students are supported by dedicated professional advisors and glean knowledge from world-class faculty members, who are committed to helping students build a solid foundation for a successful career.

An industry authority

With nine research centers and faculty from around the world, SFWS is a nexus of industry knowledge and experience. Our areas of research and expertise include climate change, water resources, urban-rural interface, ecosystems, invasive species, applied economics, and the interaction of the natural world—both plant and animal—with human civilization.

Opportunities for financial aid

In addition to university-wide financial aid, SFWS offers several competitive scholarships to talented and motivated students. Historically, every SFWS student who qualifies and applies receives aid at some level.

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Sustainable Biomaterials & Packaging

Careers in Logistics and Development of Bio-based Products

THIS IS MAKING AN IMPACT.
THIS IS A SUSTAINABLE FUTURE.

THIS IS AUBURN.

For more information, email workingwithnature@auburn.edu.

[ausfws](#) [@ausfws](#) [@ausfws](#) [auburn.edu/sfws](#)

AUBURN UNIVERSITY
SCHOOL OF FORESTRY AND WILDLIFE SCIENCES

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