

27	28	29	30	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

INSIDE VT WOOD

News From Audrey Zink-Sharp

- A special note to our staff colleagues: Happy Laboratory Employee Appreciation Day (see article on the following pages). We appreciate all that you do very much and it's absolutely true, we couldn't operate without you.
- Advising for Spring semester 2010 starts next week. There is important information for Wood Science Undergraduate Students and their faculty advisors at the end of today's Inside VT Wood. You will notice that there are some new classes being offered, some classes are being combined, and yet others are being deleted. There are also several pages of details outlining the option restructure, class changes, and a calendar of the Spring 2010 classes in Wood Science at the end of this section to help you and your advisor get started on planning your classes.

If you are currently a junior or senior, you should continue to follow the checksheet that was in place when you started with us in the Wood Science and Forest Products major but substitute in the classes that replace those that are being combined or deleted. You should also chose classes within the option you declared as your preference (Adhesion Science, Forest Products Marketing & Manufacturing, Non-timber Forest Products, Packaging Science, Manufacturing Systems, or Wood Structures and Materials). It will be very important to consult with your advisor to make the best class choices prior to registration. See either me or your advisor if you need the currently approved checksheet for your option.

For those of you that are currently freshmen and sophomores, there are new checksheets that you should start using to guide your class choices. See the last few pages of this issue for the details. Also, see you advisor next week to plan out the rest of your undergraduate class pathway. The new options available with the Wood Science and Forest Products major will be Forest Products Business, Packaging Science, Residential Wood Structures, and Wood Materials Science. As mentioned above, plan ahead and consult with your advisor to make the best choices in classes for Spring 2010 and beyond.

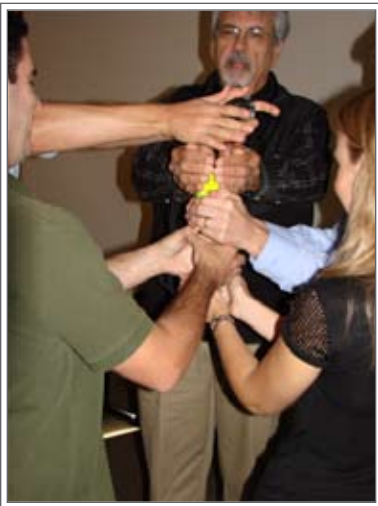
If you have any questions, you are most welcome to stop by my office at any time as well as scheduling some time with your advisor next week. We do look forward to meeting with you and assisting you in your class choices. We're here to help you with this.

- Undergraduate Scholarship Reception planned for November 11th, 2009. Our guest speaker, Stephen Smulski, Ph.D. President, Wood Science Specialists, Inc., Shutesbury, Massacheutts, will speak on "Wood Science in the Courtroom"

Lean Management Week at the Department

Faculty and students of the Department of Wood Science and Forest Products took the visit of Dr. René Aernoudts, owner of the Lean Management Institute in Driebergen, Netherlands and executive committee member of the Lean Global Network as an opportunity to focus an entire week on Lean Management practices and theory. Accompanying Dr. Aernoudts were faculty from the department (Buehlmann, Kline) as well as graduate students from the manufacturing systems team (Andersch, Fricke). Monday started with a visit to Toyota's Georgetown, KY assembly plant, a 7.5 million square foot facility employing the Toyota Production System. Toyota and its production system and philosophy was critical to the formation of the Lean movement in the 1980's and was described in great detail in Jim Womack and Dan Jones book "*The Machine that Changed the World.*"

Tuesday opened with a visit at Stanley Furniture's Stanleystown, VA factory. Stanley Furniture, one of the last remaining U.S.-based manufacturers of residential furniture has ongoing efforts to streamline their operations and has achieved remarkable savings using lean ideas. The afternoon was devoted to teaching students participating in this year's Wood Enterprise Institute (WEI) course lean principles. Students benefitted from Dr. Aernoudts global experience in applying lean ideas to problems encountered in daily activities, such as coming up with a lean product design and engineering team.



Picture 2: Gravitational pull helping team members work faster at the departmental seminar.

(Schmitt and Fricke) indicated he will be back on campus, soon. As he remarked when leaving on Friday going back to the Netherlands, not only did he truly enjoy the interactions with VT's students and faculty, but he also needs to make sure that his investment in the research done by Mathias Schmitt results in useful findings that can be used to help his clientele.



Picture 1: Toyota Production System display at Toyota's Georgetown, KY visitor center.

The department seminar on Wednesday was filled with interactions between Dr. Aernoudts, department faculty and graduate students and three visitors, Dave King, Kenny Buonaura, and Pat Stumphy from The Swan Corporation located in St. Louis, MO. The Swan Corporation is working on implementing lean into their manufacturing processes with help from the VTLean Team. Role-playing helped the seminar attendees realize the potential of lean ideas. Often, our paradigms prevent us from seeing easier, faster, and better quality solutions as was the case when a tennis ball had to be touched by all team members as fast as possible. Moving the ball from individual to individual horizontally, as done prior to using lean ideas (in this case gravitational pull), was much inferior to letting the ball drop through the palms of the team members as shown in picture 2.

Thursday morning was filled with a visit to Volvo's Dublin, VA truck assembly plant, a world-class facility practicing many lean ideas. Touring this 1.6 million square foot plant, originally started in 1975, took all morning with the remainder of the day being filled with teaching courses, meetings with faculty and graduate students.

Dr. Aernoudts, who currently is funding one graduate student's research (Schmitt on lean transformation) and is a member of two graduate students' committees

ReNew the New River Cleanup November 7th

Please join the Packaging Club and the Forest Products Club on Saturday, November 7, 2009 for the semiannual ReNew the New river clean up. The southern section between the inter-tube pickup and the railroad tracks get a lot of use over the summer and by November it is very trashy. Please take this opportunity to help clean it up.

This date is a non-football, non-family weekend, non-Halloween Saturday, so you have no excuse not to come help clean-up the New River!

A signup sheet is located in the lobby of the Brooks Center on Angie's desk.

Jim Bisha

President – Institute of Packaging Professionals at Virginia Tech

Upcoming Workshops

Workshop: International Marketing for Forest Products Industries – October 20

The Department of Wood Science and Forest Products is organizing a workshop on International Marketing for Forest Products Industries. The event is scheduled for October 20, 2009 in Princeton, WV. The workshop is sponsored by the Wood Education Research Center, Virginia Cooperative Extension, Virginia Department of Agriculture and Consumer Services, Purdue University, and Virginia Forest Products Association. This workshop is designed to assist wood products companies from primary and secondary sectors to better understand and seize exporting opportunities. Speakers will cover aspects ranging from marketing principles to logistic issues in preparation to capture international markets will. For more information go the web site http://www.woodscience.vt.edu/workshops/intl_marketing/ or contact Henry Quesada at quesada@vt.edu

Workshop: Introduction to Decision Making Techniques: Applications for Forest Products Industries – November 5

Workshop description:

Decision making techniques can be defined as a collection of qualitative and quantitative analytical tools that allows business and process managers to outline and analyze potential scenarios when searching for solutions given a specific problem or situation. The focus of decision making start with the data at the manufacturing level and how this data is collected manipulated or transform into valuable information for those who make decisions. Besides quantitative data, qualitative input should also be considered. Aspects such as legal issues, technology and human resource criteria are difficult to quantify so qualitative analysis should be brought into action to complement quantitative analysis.

This workshop will address the most important decision making techniques in the areas of financial management and operations research from a manager point of view. Participants in this workshop will learn that decision making is a multistep process that involves problem definition, model developing, data acquisition, solution development, solution testing, output analysis and solution implementation.

Participants will discover in this workshop that the successful use of decision making techniques will yield proper solutions that are precise, flexible, economic, reliable and easy to understand and implement. The majority of concepts and techniques are supported by examples and applications that use spreadsheets which can be adapted to their own business situation.

Course outline:

- Basics of decision making
- MS Excel basics
- Inventory control models
- Capital budgeting techniques
- Linear programming
- Activity based costing management
- Examples and Applications of Decision Making techniques

Location and Registration

Workshop is scheduled for November 5, 2009 from 8:30 am to 3:25 pm at the Virginia Tech National Capital Regional Campus at Falls Church, VA (<http://www.ncr.vt.edu/>). Workshop is FREE OF CHARGE but you need to RSVP before November 2, 2010. Coffee breaks and materials are provided but lunch is on your own. To register or further details please contact Henry Quesada at quesada@vt.edu

Workshop: Introduction to Business Process Management – November 19

Presented by Henry Quesada, Assistant Professor of Business Management, Department of Wood Science and Forest Products, Virginia Tech

Workshop description:

Business Process Management (BPM) is defined as an improvement framework that relies on the concept of value chain management by Michael Porter. By implementing basic principles from methodologies such as balanced scorecard, lean thinking, six sigma, total quality management, and process automation, BPM can help your organization to increase customer satisfaction levels, align your business processes with your strategy, and increase the productivity of your internal operations.

Participants in this workshop will learn what value chains are and how to recognize them within their own company. Concepts, definitions, methodologies, and information technologies that support the BPM process will be taught in this workshop. Participants will learn how to represent their value chains in the context of business process management. Also, an overview of most important requirements of BPM information technologies will be presented so participants will know what technology is most applicable to their own needs.

Course outline:

- BPM principals: The Value Chain Concept
- Process Basics
- Business Performance
- Business Improvement Frameworks
- Tools for Process Modeling
- Information Technologies for BPM
- Examples and Applications of BPM

Location and Registration

Workshop is scheduled for November 19 from 8:30 am to 4:30 pm at the Roanoke Higher Education Center <http://www.education.edu/>. Registration is \$35 and includes coffee breaks, and materials. Lunch is on your own. Please contact Henry Quesada at quesada@vt.edu for registration or further details.

Laboratory and Research Staff Contributions to University's Research Mission Recognized

To show support for the more than 600 laboratory employees at Virginia Tech, Vice President for Research Robert Walters asks that the university community consider October 14 to be Laboratory Employee Appreciation Day.

“Every principal investigator who employs lab staff knows how important it is that this work force be skilled and conscientious. But we may not take the time to express our appreciation,” Walters said. “On October 14, laboratory and research personnel have the opportunity to update their technical training. I encourage supervisors to allow staff to attend the Laboratory Technology Exhibit and Workshops – and to thank their research staff for taking this time to hone their skills — and to recognize their contribution to Virginia Tech being a comprehensive, innovative research university.”

Kathy Reynolds, laboratory specialist advanced with the Department of Human Nutrition, Foods, and Exercise, and a member of the Laboratory Employee Professional Development Network (LEPDN) leadership team, said “The responsibilities of laboratory and other research staff include performing experiments, collecting data for research projects, developing methods, instructing students in laboratory work, and writing reports for scientific publications.”

Linda Correll, lab facilities and resource manager at the Virginia Bioinformatics Institute, also a member of the LEPDN leadership team, noted, “The network also encompasses technical staff in areas not actually in laboratories, such as those that work in greenhouses, farm areas, and clinical areas.” She added to research staff responsibilities “maintaining laboratory instruments, maintaining animals and plants, monitoring compliance, and other special skills for the many areas of research represented at the university.”

LEPDN serves employees working in laboratory research, field research, and instructional lab units by helping to identify and promote opportunities for professional development through enhanced coordination and communication. The October 14 Laboratory Technology Exhibit and Workshops includes presentations and displays by vendors of scientific and research equipment and supplies and offers workshops on software, statistical analysis, and emerging methodologies. Graduate students and faculty members are also welcome. Learn more at the [Lab Employee Professional Network](#) site.

Changes to the Wood Science and Forest Products Major

Changes for **current juniors and seniors** graduating in the calendar years 2010 and 2011 are as follows:

1. WOOD 2784 title change to Global Forest Resource Sustainability
2. WOOD 3315 and 3316 combined into a new course, WOOD 3314 Wood Mechanics (Spring semester, 4 credits)
3. WOOD 3324 Green Building Systems, a new course (Fall semester, 3 credits)
4. WOOD 3445/3446 Wood Enterprise Institute, a new course sequence (Fall and Spring semester, 6 credits)
5. WOOD 3534 and 3544 combined into a new course WOOD 3534 Wood Products Manufacturing (Fall semester, 3 credits)
6. WOOD 4004 Senior Seminar in Forest Products Business, a new course (Spring semester, 2 credits)
7. WOOD 4445 and WOOD 4446 combined into a new course, WOOD 4444 Wood-based Composite Materials (Fall semester, 4 credits)
8. WOOD 4624 and 4634 combined into a new course WOOD 3464 Forest Products Business systems (Fall semester, 3 credits)
9. WOOD 4984 Special Study: Design of Wood Structures, a new course (Fall semester, 3 credits)

Course offerings at the undergraduate level in Wood Science and Forest Products

Title	Semester	Credit hours	Prerequisites
WOOD 2104 Principles of Packaging	F	3	-
WOOD 2124 Wood Structure and Properties	F	3	-
WOOD 2784 Global Forest Resource Sustainability	F	3	sopho. standing
WOOD 3004 Sustainable Nature-based Enterprises	F	3	-
WOOD 3224 Packaging & Materials Handling	F	3	WOOD 2104
WOOD 3324 Green Building Systems	F	3	junior standing
WOOD 3445/3446 Wood Enterprise Institute I / II	F/S	6	-
WOOD 3464 Forest Products Business Systems	F	3	junior standing
WOOD 3534 Wood Products Manufacturing	F	3	-
WOOD 4024 Packaging Dynamics for Distribution	F	3	WOOD 3224
WOOD 4444 Wood-based Composite Materials	F	4	WOOD 2124, 3314, 3434
WOOD 4984 Special Study: Design of Wood Structures	F	3	-
WOOD 1234 Intro. to Wood Science & Forest Products	S	2	-
WOOD 2554 Wood Materials Science & Techniques	S	3	WOOD 1234
WOOD 2614 Intro. to Forest Products Marketing	S	3	-
WOOD 3124 Paper & Paperboard Packaging	S	3	WOOD 2124, 3434
WOOD 3314 Wood Mechanics	S	4	WOOD 2124
WOOD 3434 Wood Chemistry, Products, & Processes	S	3	CHEM 2514
WOOD 4004 Senior Seminar in Forest Products Business	S	2	senior standing
WOOD 4224 Wood Pallet, Container, & Unit Load Design	S	3	WOOD 3534, 4124, 4315
WOOD 4714 Wood Performance in Construction	S	3	-

Changes for current freshmen and sophomores graduating in the calendar years 2012 and 2013 are as follows:

The option framework within the Wood Science and Forest Products major is being restructured. There will be 4 options from which to choose rather than the 6 previously available. The Non-timber Forest Products and the Forest Products Manufacturing options will no longer be offered. The Packaging Science option has changed course and elective requirements. The Wood Structures and Materials option is being retitled and refocused as Residential Wood Structures, and the Adhesion Science option is being retitled and refocused as Wood Materials Science. The options within the major in Wood Science and Forest Products will be Forest Products Business, Packaging Science, Residential Wood Structures, and Wood Materials Science.

Forest Products Business option

General comments:

- Reduction in minimum total credit hours from 128 to 120 credits
- Name change from Forest Products Marketing and Management to Forest Products Business
- Modification of the professional electives to allow a choice of either completion of a minor in Business, Business Leadership, Leadership (Civic Professions Tract VTCC), Economics, or Packaging Science **OR** completion of a minimum of 15 credit hours from among the courses listed on page 2 of the checksheet
- Free elective credit changed from 6 hours to 18 hours

Modifications to course listings:

- Freshman year
 - Allow either BIOL 1105 and 1115 or BIOL 1005 and BIOL 1015
 - Remove MATH 2015 and add MATH 1015
 - Remove NR 1114
- Sophomore year
 - Remove STAT 3005 and 3006 and Allow either STAT 3615 or STAT 2004
 - Allow either ECON 2005 or AAEC 1005
 - Remove PHYS 2205
 - Remove FOR 2314 and 2324
 - Remove CHEM 2514
 - Title change for WOOD2784
- Junior year
 - Remove MGT 3304
 - Remove ISE 2014
 - Remove WOOD 3315, 3316, and 3544
 - Add WOOD 3314
 - Add WOOD 3445/3446
 - Add WOOD 3464
 - Add WOOD 3534
- Senior year
 - Remove WOOD 4154, 4445, 4446 4624, and 4634
 - Add WOOD 4004
 - Add WOOD 4444

Packaging Science option

General comments:

- Reduction in minimum total credit hours from 128 to 120 credits
- Modification of the professional electives from a requirement of 15 credit hours to 6 credit hours to be chosen from the list shown on page 2 of the checksheet
- Free elective credit changed from 6 credit hours to 14 credit hours

Modifications to course listings:

- Freshman year
 - Remove MATH 2015 and add MATH 1015
 - Remove NR 1114
- Sophomore year
 - Remove STAT 3005 and 3006 and add STAT 2004
 - Add WOOD 2104
 - Remove FOR 2314 and 2324
 - Title change for WOOD 2784
- Junior year
 - Allow ECON 2005 or AAEC 1005
 - Remove MGT 3304
 - Remove WOOD 3315, 3316
 - Add WOOD 3534
 - Add WOOD 3124
 - Add WOOD 3224
 - Add WOOD 3314
 - Add FST 2014
- Senior year
 - Remove WOOD 4154, 4445, 4446 4624, and 4634
 - Add WOOD 4024, 4224, and 4444
 - Add WOOD 4004
 - Add ISE 4304
 - Add FST 4405

Residential Wood Structures option

General comments:

- Reduction in minimum total credit hours from 128 to 120 credits
- Name changed from Wood Structures and Materials to Residential Wood Structures
- Modification of professional electives from a required 15 hours to 6 credit hours chosen from the list shown on page 2 of the checksheet
- Modification of free elective credit from 3 credit hours to 16 credit hours

Modifications to course listings:

- First Year
 - Remove NR 1114
- Sophomore Year
 - Remove STAT 3005 and STAT 3006 and add STAT 3615 and STAT 3616
 - Remove FOR 2314 and FOR 2324 (NOTE: These are now added in the optional list of professional electives)
 - Title change for WOOD 2784
- Junior Year

- Add WOOD 3314
- Add AHRM 3604
- Add WOOD 3464
- Remove MGT 3304
- Remove WOOD 3315, WOOD 3316, and WOOD 3544
- Title change for WOOD 3534
- Senior Year
 - Add WOOD 4444
 - Add AHRM 4604
 - Remove WOOD 4154, WOOD 4445, WOOD 4446, WOOD 4624, WOOD 4634

Wood Materials Science option

General comments:

- Reduction in minimum total credit hours from 128 to 120 credits
- Modification of the professional electives from a requirement of 17 credit hours to 15 credit hours to be chosen from the list shown on page 2 of the checksheet
- Free elective credit changed from 5 credit hours to 15 credit hours

Modifications to course listings:

- First Year
 - Remove NR 1114
 - Remove BIOL 1105, BIOL 1115 and add BIOL 1005, BIOL 1006
 - Remove WOOD 1234
 - Add CHEM 1046
- Sophomore Year
 - Remove STAT 3005, STAT 3006 and add STAT 3615, STAT 3616
 - Remove FOR 2314, FOR 2324
 - Remove PHYS 2205 and add PHYS 2205, PHYS 2206
 - Remove CHEM 2514 and add CHEM 2535, CHEM 2536
 - Remove WOOD 2784
 - Add MSE 2034
- Junior Year
 - Add WOOD 3314
 - Add CHEM 2114
 - Title change for WOOD 3534
 - Remove MGT 3304
 - Remove WOOD 3315, 3316, and 3544 (these courses are no longer offered)
 - Remove ISE 2014
- Senior Year
 - Add WOOD 4444
 - Add BCHM 3114
 - Remove WOOD 4154, 4445, 4446, 4624, 4634

COLLEGE OF NATURAL RESOURCES
Department of Wood Science and Forest Products
Bachelor of Science
Major: Wood Science and Forest Products
Option: Forest Products Business
For students graduating in calendar year 2012

Fall Semester				Spring Semester					
Freshman Year									
BIOL	1105	Principles of Biology (CLE 4)* OR General Biology (CLE 4)	3		CHEM	1036	General Chemistry (CLE 4)	3	
BIOL	1115	Principles of Biology Lab (CLE 4) OR General Biology Lab	1		ENGL	1106	Freshman English (CLE 1)	3	
BIOL	1015				MATH	1016	Elem. Calculus w/Trig I (CLE 5)	3	
CHEM	1035	General Chemistry (CLE 4)	3		WOOD	1234	Introduction to Wood Science and Forest Products	2	
CHEM	1045	General Chemistry Lab (CLE 4)	1				Free Elective	2	
ENGL	1105	Freshman English (CLE 1)	3				CLE area 2 course	3	
MATH	1015	Elem. Calculus w/Trig I (CLE 5)	3						
			14					16	

Sophomore Year									
WOOD	2124	Wood Structure and Properties	3		WOOD	2614	Introduction to Forest Products Marketing	3	
STAT	3615	Biological Statistics OR Introduction to Statistics	3		WOOD	2554	Wood Materials Science & Technology	2	
STAT	2004				ECON	2005	Principles of Economics (CLE 3) OR Economics of the Food and Fiber System (CLE 3)	3	
WOOD	2784	Global Forest Resource Sustainability (CLE 7)	3		AAEC	1005			
CLE area 2 course			3		CLE area 6 course			1	
Free Elective			3		Professional Elective			3	
					Free Elective			3	
			15					15	

Junior Year									
WOOD	3445	Wood Enterprise Institute I	3		WOOD	3446	Wood Enterprise Institute II	3	
WOOD	3534	Wood Products Manufacturing	3		WOOD	3434	Wood Chemistry, Products, & Processes	3	
Free Elective			3		WOOD	3464	Forest Products Business Systems	3	
Professional Elective			3		WOOD	3314	Wood Mechanics	4	
CLE area 3 course (ECON 2006 <i>Principles of Economics</i> OR AAEC 1006 <i>Economics of the Food & Fiber System II</i> recommended)			3		Free Elective			2	
			15					15	

Senior Year									
WOOD	4444	Wood-Based Composite Materials	4		WOOD	4714	Wood Performance in Construction	3	
ENGL	3764	Technical Writing	3		WOOD	4004	Senior Seminar in Forest Products Business	2	
Professional Elective			3		Professional Elective			3	
Free Elective			3		Professional Elective			3	
Free Elective			3		Free Elective			3	
			16					14	
Minimum Total Credit Hours = 120									

NOTES

Professional Electives

The professional elective requirements of the *Forest Products Business* option must be satisfied using one of the following two methods:

1. Completion of a Virginia Tech minor in *Business, Business Leadership, Leadership (Civic Professions Track VTCC), Economics, or Packaging Science*.
2. Complete a minimum of 15 credit hours from among the following courses.** Compete at least one course in three of the areas.

Marketing

MKTG 3104 Marketing Management (junior standing required)
MKTG 4704 International Marketing (junior standing required, Pre. 3104)
MKTG 4554 Relationships Among Buyers and Sellers (Pre. 3104)

Management

ISE 4304 Global Issues in Industrial Management (CLE 7)
ISE 4015 Management Systems Theory, Applications and Design

Manufacturing

ME 4634 Introduction to Computer – Aided Design and Manufacturing
WOOD 2104 Principles of Packaging
WOOD 3124 Paper and Paperboard Packaging (Pre. 2124, 3434)
WOOD 3224 Packaging and Materials Handling (Pre. 2104)
WOOD 4124 Packaging Dynamics for Distribution (Pre. 3224)
WOOD 4224 Wood Pallet, Container, & Unit Load Design (Pre: 3534)

General Business

WOOD 3004 Sustainable Nature-Based Enterprises
OR
WOOD 2984 Special Study: Sustainable Green Enterprise

GEOG 2134 Geography of the Global Economy (CLE 7)
ISE 2014 Engineering Economy (Sophomore standing required)
ACIS 2115 Principles of Accounting

**Courses other than those listed will be considered. Such courses must be approved by your advisor and the WS&FP Department Head. An approved course substitution form must be submitted to the CNR Academic Programs office prior to the completion of the course.

Satisfactory Progress

By the end of the semester in which the student has attempted 60 hours (including transfer, advanced placement, advanced standing, and credit by examination), "satisfactory progress" towards a B.S. degree in the College of Natural Resources will include the following minimum criteria:

- * Having a grade point average of at least 2.0
- * Passing at least 24 semester credits that apply to the Curriculum for Liberal Education
- * Passing the required 1000-level courses in Biology, Chemistry, English, and Math

Foreign Language Requirement

A sequence of two (2) foreign language courses is required for graduation unless two (2) high school credits of the same foreign language or six (6) transfer credit hours of foreign language have been earned. These credits do not count toward graduation. See course catalog section on "Graduation Requirements."

Sequencing

Courses should be taken in the sequence shown to ensure that prerequisite requirements are met. Free and professional elective courses may have prerequisite requirements. Students should plan ahead and ensure that they have completed requisite courses.

In-major GPA computation

Includes all courses designated WOOD. The acceptable minimum is 2.0.

Overall GPA computation

The minimum overall GPA required for this degree is 2.0

COLLEGE OF NATURAL RESOURCES
Department of Wood Science and Forest Products
Bachelor of Science
Major: Wood Science and Forest Products
Option: Packaging Science
For students graduating in calendar year 2012

Fall Semester				Spring Semester				
Freshman Year								
BIOL	1105	Principles of Biology (CLE4)	3	CHEM	1036	General Chemistry	3	
BIOL	1115	Principles of Biology Lab (CLE4)	1	ENGL	1106	Freshman English (CLE1)	3	
CHEM	1035	General Chemistry (CLE4)	3	MATH	1016	Elem. Calculus w/Trig I (CLE5)	3	
CHEM	1045	General Chemistry Lab (CLE4)	1	Curriculum for Liberal Education Area 2 Elective			3	
ENGL	1105	Freshman English (CLE1)	3	Free Elective (WOOD 1234, <i>Introduction to Wood Science and Forest Products</i> , recommended)			3	
MATH	1015	Elem. Calculus w/Trig I (CLE5)	3					
			14					15

Sophomore Year								
WOOD	2124	Wood Structure and Properties	3	CHEM	2514	Survey of Organic Chem.	3	
STAT	2004	Introduction to Statistics	3	WOOD	2614	Intro Forest Prod Marketing	3	
PHYS	2205	General Physics	3	IDS	2034	Materials & Processes	3	
WOOD	2104	Principles of Packaging	3	CLE Area 2 Elective			3	
Free Elective			3	CLE Area 6 Elective			1	
				Free Elective			3	
			15					16

Junior Year								
WOOD	3534	Wood Products Manufacturing	3	WOOD	3434	Wood Chem, Products, Procs	3	
FST	2014	Intro to Food Science	2	ISE	2014	Engineering Economy	2	
WOOD	3224	Packaging & Materials Handling	3	WOOD	3124	Paper & Paperboard Packaging	3	
ECON	2005	Principles of Economics (CLE 3)	3	WOOD	3314	Wood Mechanics	4	
AAEC	1005	Economics of the Food and Fiber System (CLE 3)						
Free Elective			3	CLE Area 3 Elective			3	
			14					15

Senior Year								
WOOD	4024	Packaging Dynamics for Distribution	3	WOOD	4224	Wood Pallet, Container & Unit Load Design	3	
WOOD	4444	Wood Based Composite Materials	4	WOOD	4004	Senior Seminar in Forest Products Business	3	
ENGL	3764	Technical Writing	3	ISE	4304	Global Issues in Industrial Management (CLE 7)	3	
FST	4405	Food Processing	4	Free Elective			2	
Restricted Elective			3	Restricted Elective			3	
			17					14

Minimum Total Credit Hours for Graduation = 120

NOTES

Restricted Electives

Complete 6 credit hours from among the following courses:

WOOD 3445 Wood Enterprise Institute I
WOOD 3446 Wood Enterprise Institute II
WOOD 3464 Forest Products Business Process Systems
ME 4634 Introduction to Computer – Aided Design and Manufacturing
ISE 4015 Management Systems Theory, Applications and Design

It is recommended that free electives also be chosen from the above list

Satisfactory Progress

By the end of the semester in which the student has attempted 60 hours (including transfer, advanced placement, advanced standing, and credit by examination), “satisfactory progress” towards a B.S. degree in the College of Natural Resources will include the following minimum criteria:

- * Having a grade point average of at least 2.0
- * Passing at least 24 semester credits that apply to the Curriculum for Liberal Education
- * Passing the required 1000-level courses in Biology, Chemistry, English, and Math

Foreign Language Requirement

A sequence of two (2) foreign language courses is required for graduation unless two (2) high school credits of the same foreign language or six (6) transfer credit hours of foreign language have been earned. These credits do not count toward graduation. See course catalog section on “Graduation Requirements.”

Sequencing

Courses should be taken in the sequence shown to ensure that prerequisite requirements are met. Free and professional elective courses may have prerequisite requirements. Students should plan ahead and ensure that they have completed requisite courses.

In-major GPA computation

Includes all courses designated WOOD. The acceptable minimum is 2.0.

Overall GPA computation

The minimum overall GPA required for this degree is 2.0

COLLEGE OF NATURAL RESOURCES
Department of Wood Science and Forest Products
Bachelor of Science
Major : Wood Science and Forest Products
Option: Residential Wood Structures
For students graduating in calendar year 2012

Fall Semester				Spring Semester			
First Year							
BIOL	1105	Principles of Biology (CLE4)	3	CHEM	1036	General Chemistry	3
BIOL	1115	Principles of Biology Lab (CLE4)	1	ENGL	1106	Freshman English (CLE1)	3
CHEM	1035	General Chemistry (CLE4)	3	MATH	2015	Elem. Calculus w/Trig II (CLE5)	3
CHEM	1045	General Chemistry Lab (CLE4)	1	WOOD	1234	Introduction to Wood Science	2
ENGL	1105	Freshman English (CLE1)	3	CLE area 2 course			3
MATH	1016	Elem. Calculus w/Trig I (CLE5)	3	Free elective			2
			14				16

Sophomore Year							
PHYS	2205	General Physics	3	CHEM	2514	Survey of Organic Chemistry	3
STAT	3615	Biological Statistics	3	STAT	3616	Biological Statistics	3
WOOD	2124	Wood Structure and Properties	3	WOOD	2554	Wood Materials Science & Techniques	2
WOOD	2784	Global Forest Resource Sustainability (CLE7)	3	WOOD	2614	Introduction to Forest Products Marketing	3
CLE area 2 course			3	CLE area 3 course			3
				CLE area 6 course			1
			15				15

Junior Year							
AAEC	1005	Economics of the Food & Fiber System (CLE3)	3	WOOD	3434	Wood Chemistry, Products, & Processes	3
WOOD	3534	Wood Products Manufacturing	3	WOOD	3314	Wood Mechanics	4
WOOD	3324	Green Building Systems	3	ISE	2014	Engineering Economy	2
AHRM	3604	Housing and the Consumer	3	WOOD	3464	Forest Products Business Systems	3
Free Elective			3	Free Elective			3
			15				15

Senior Year							
WOOD	4444	Wood-Based Composite Materials	4	WOOD	4714	Wood Performance in Building Construction	3
WOOD	4984	Special Study: Design of Wood Structures	3	AHRM	4604	Housing Energy and Environment	3
ENGL	3764	Technical Writing	3				
Professional Elective			3	Professional Elective			3
Free Elective			2	Free Elective			3
				Free Elective			3
			15				15
Minimum Total Credit Hours for Graduation = 120							

NOTES:

Professional Electives - In addition to the courses listed above, students pursuing the Residential Wood Structures option must select **6 credits** from the following courses:

Course	Title	Credits	Semester
AHRM 2604	House Planning ^a	2	Fall
AHRM 2624	House Planning Lab ^a	1	Fall
AHRM 2675	Residential Property Management	3	Fall/Spring
AHRM 2676	Residential Property Management II	3	Spring
FOR 2314	Forest Biology and Dendrology ^b	2	Fall
FOR 2324	Dendro Lab ^b	1	Fall
GEOG 3244	The U.S. City	3	Spring
GEOG 3464	Appalachian Communities	3	Fall

^a AHRM 2604 and AHRM 2624 must both be taken for a total of 3 credits.

^b FOR 2314 and FOR 2324 must both be taken for a total of 3 credits.

Satisfactory Progress

By the end of the semester in which the student has attempted 60 hours (including transfer, advanced placement, advanced standing, and credit by examination), "satisfactory progress" towards a B.S. degree in the College of Natural Resources will include the following minimum criteria:

- * Having a grade point average of at least 2.0
- * Passing at least 24 semester credits that apply to the Curriculum for Liberal Education
- * Passing the required 1000-level courses in Biology, Chemistry, English, and Math

Foreign Language Requirement

A sequence of two (2) foreign language courses is required for graduation unless two (2) high school credits of the same foreign language or six (6) transfer credit hours of foreign language have been earned. These credits do not count toward graduation. See course catalog section on "Graduation Requirements."

Sequencing

Courses should be taken in the sequence shown to ensure that prerequisite requirements are met. Free and professional elective courses may have prerequisite requirements. Students should plan ahead and ensure that they have completed requisite courses.

In-major GPA computation

Includes all courses designated WOOD. The acceptable minimum is 2.0.

Overall GPA computation

The minimum overall GPA required for this degree is 2.0

COLLEGE OF NATURAL RESOURCES
Department of Wood Science and Forest Products
Bachelor of Science
Major: Wood Science and Forest Products
Option: Wood Materials Science
For students graduating in the calendar year 2012

Fall Semester				Spring Semester			
Freshman Year							
CHEM	1035	General Chemistry (CLE4)	3	CHEM	1036	General Chemistry (CLE4)	3
CHEM	1045	General Chemistry Lab (CLE4)	1	CHEM	1046	General Chemistry Lab (CLE4)	1
BIOL	1005	General Biology (CLE4)	3	BIOL	1006	General Biology (CLE4)	3
MATH	1016	Elem. Calculus w/Trig I (CLE5)	3	MATH	2015	Elem. Calculus w/Trig II (CLE5)	3
ENGL	1105	Freshman English (CLE1)	3	ENGL	1106	Freshman English (CLE1)	3
CLE area 2 Elective			3	Free Elective (WOOD 1234, recommended)			3
			16				16

Sophomore Year							
STAT	3615	Biological Statistics	3	STAT	3616	Biological Statistics	3
PHYS	2205	General Physics	3	PHYS	2206	General Physics	3
CHEM	2535	Organic Chemistry	3	CHEM	2536	Organic Chemistry	3
WOOD	2124	Wood Structure and Properties	3	WOOD	2554	Wood Materials Science & Tech.	2
MSE	2034	Elements of Materials Engineering	3	CLE area 2 Elective			3
				Free Elective			3
			15				17

Junior Year							
WOOD	3534	Wood Products Manufacturing	3	WOOD	3434	Wood Chemistry, Products & Processes	3
ENGL	3764	Technical Writing	3	WOOD	3314	Wood Mechanics	4
CLE area 3 Elective			3	CLE area 3 Elective			3
CLE area 6 Elective			1	CLE area 7 Elective			3
Professional Elective			3	Professional Elective			3
Free Elective			3				
			16				16

Senior Year							
WOOD	4444	Wood-based Composite Materials	4	WOOD	4714	Wood Performance in Construction	3
BCHM	3114	Biochemistry for Biotechnology	3	Professional Elective			3
Professional Elective			3	Free Elective			3
Professional Elective			3	Free Elective			3
			12				12

Minimum Total Credit Hours for Graduation = 120

NOTES:

Professional Electives - In addition to the courses listed above, students pursuing the Wood Materials Science option must select **15 credits** from the following courses and focused tracts. Courses may be chosen within one tract or from each.

Chemistry – Choosing courses from this tract could lead to a chemistry minor. Consult with your advisor for course selection.

CHEM 2114 Analytical Chemistry (Pre: CHEM 1036 or 1056)
CHEM 2124 Analytical Chemistry Lab (Pre: CHEM 1046 or 1066)
CHEM 4514 Green Chemistry (Pre: CHEM 2536 or 2566)
CHEM 4534 Organic Chemistry of Polymers (Pre: 2536 or 2566)
CHEM 4615 Physical Chemistry Life Sciences (Pre: One year of chemistry, physics, and calculus)
CHEM 4634 Polymer and Surface Chemistry (Pre: 3615 or 4615)

Biology/Biochemistry/Bio-based Materials

BIOL 2104 Cell and Molecular Biology (Pre: BIOL 1005 or 1105, 1006 or 1106, CHEM 1016 or 1036 or 1056)
BIOL 3774 Molecular Biology (Pre: 2104 or ALS 3104)
BCHM 2144 Organic Biochemistry (Pre: CHEM 2535 or 2565, Co: CHEM 2536, 2666)
BCHM 4115-4116 General Biochemistry (Pre: CHEM 2536 for 4115; 4115 for 4116)
CHE 2114 Mass and Energy Balance (Pre: CHEM 1035 or 1015 or 1074 or 1055, MATH 1206)
CHE 2164 Chemical Engineering Thermodynamics (Pre: CHE 2114, Co: CHEM 3615)
CHE 4214 Introduction to Polymer Materials (Pre: CHEM 2536, CHE 2164)
FOR 2314 Forest Biology and Dendrology (Pre: BIOL 1006 or 1106)
FOR 2324 Dendrology Laboratory

Satisfactory Progress

By the end of the semester in which the student has attempted 60 hours (including transfer, advanced placement, advanced standing, and credit by examination), “satisfactory progress” towards a B.S. degree in the College of Natural Resources will include the following minimum criteria:

- * Having a grade point average of at least 2.0
- * Passing at least 24 semester credits that apply to the Curriculum for Liberal Education
- * Passing the required 1000 and 2000-level courses in Biology, Chemistry, English, and Math

Foreign Language Requirement

A sequence of two (2) foreign language courses is required for graduation unless two (2) high school credits of the same foreign language or six (6) transfer credit hours of foreign language have been earned. These credits do not count toward graduation. See course catalog section on “Graduation Requirements.”

Sequencing

Courses should be taken in the sequence shown to ensure that prerequisite requirements are met. Free and professional elective courses may have prerequisite requirements. Students should plan ahead and ensure that they have completed requisite courses.

In-major GPA computation

Includes all courses designated WOOD. The acceptable minimum is 2.0.

Overall GPA computation

The minimum overall GPA required for this degree is 2.0

Spring 2010 Wood Science and Forest Products Teaching Schedule

Time	Monday	Tuesday	Wednesday	Thursday	Friday
8:00	WOOD 4224 Pallet and Container Design, Hagedorn, 213 JCH, (8:00 – 8:50)	WOOD/CHEM 5424 Polysaccharide Chemistry, Edgar, 317A JCH, (8:00 – 9:15) WOOD 3124 Paper and Paperboard Packaging, Hagedorn 132 JCH, (8:00 – 9:15)	WOOD 4224 Pallet and Container Design, Hagedorn, 213 JCH, (8:00 – 8:50)	WOOD/CHEM 5424 Polysaccharide Chemistry, Edgar, 317A JCH, (8:00 – 9:15) WOOD 3124 Paper and Paperboard Packaging, Hagedorn, 132 JCH, (8:00 – 9:15)	
9:00	WOOD 3314 Wood Mechanics, Hindman, 317 JCH, (9:05 – 9:55)	WOOD 4714 Wood Performance Construction, Loferski, 317A JCH, (9:30 – 10:45)	WOOD 3314 Wood Mechanics, Hindman, 317 JCH, (9:05 – 9:55)	WOOD 4714 Wood Performance Construction, Loferski, 317A JCH, (9:30 – 10:45)	
9:30		WOOD 3446 Wood Enterprise Institute, Kline, 102 Brooks, (9:30 – 10:20)		WOOD 3446 Wood Enterprise Institute, Kline, 102 Brooks, (9:30 – 10:20)	
10:00	WOOD 3434 Wood Chemistry, Products, and Processes, Roman, 213 JCH, (10:10 – 11:00)		WOOD 3434 Wood Chemistry, Products, and Processes, Roman, 213 JCH, (10:10 – 11:00)		WOOD 3434 Wood Chemistry, Products and Processes, Roman, 213 JCH, (10:10 – 11:00)
10:30					
11:00	WOOD 3464 Forest Products Business Systems, Quesada, 213 JCH, (11:15 – 12:30)		WOOD 3464 Forest Products Business Systems, Quesada, 213 JCH, (11:15 – 12:30)		WOOD 3464 Forest Products Business Systems, Quesada, 213 JCH, (11:15 – 12:30)
11:30					
12:00					
12:30		WOOD 2554 Wood Materials Science and Techniques, Renneckar, 132 JCH, (12:30 – 1:20)		WOOD 2554 Wood Materials Science and Techniques Renneckar, 102 Brooks, (12:30 – 3:15)	
1:00	WOOD 2614 Introduction to Forest Products Marketing, Bush, 317A JCH, (1:25 – 2:15)		WOOD 2614 Introduction to Forest Products Marketing, Bush, 317A JCH, (1:25 – 2:15)		
1:30					
2:00	WOOD 5614 Forest Products Marketing and Management, Bush, 213 JCH, (2:30 – 3:45)		WOOD 5614 Forest Products Marketing and Management, Bush, 213 JCH, (2:30 – 3:45)		
2:30		WOOD 1234 Intro to Wood Science and Forest Products, Loferski, 212 JCH, (3:30 – 4:20)		WOOD 1234 Introduction to Wood Science and Forest Products, Loferski, 102 Brooks, (3:30 – 6:15)	
3:00					
3:30					
4:00					
4:30					
5:00					