



Oregon State University

College of Forestry

Bachelor of Science

Renewable Materials



Undergraduate Advising Guide 2017-2018

Department Office:	Advising Office:
Wood Science & Engineering	Autumn Granger
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B.S. in Renewable Materials

The sustainable economy of the future relies heavily on the use of natural materials for the products we use, the buildings we live in, and the energy we consume. You will help design the sustainable future by studying the science, business, manufacturing, aesthetics, and design of renewable materials. Renewable materials are quite diverse—including wood, bamboo, straw, hemp, cane, giant grasses, palm and many other plant based materials. Sustainably and efficiently meeting the demand for products and energy made from these materials requires innovative scientists, engineers, designers, artists, and business people who want to make a difference.

A BS degree in renewable Materials requires command of a broad range of technical, scientific, business and design skills. The curriculum is under continuous review and revision to ensure that content and learning objectives are aligned with employer expectations and advancements in the field.

With a degree in Renewable Materials you can pursue diverse and flexible career paths where you might develop new products/services, market those products/services, manage high-tech production operations, or design new and innovative products or art. Most people will change jobs several times and be expected to shoulder many different responsibilities over the course of their professional career. After successfully completing the Renewable Materials degree, you will possess a firm foundation of skills and knowledge on which to build your career.

Classes in the Department of Wood Science & Engineering are small and taught by faculty who take a personal interest in student success. Our academic advisor and faculty mentors will help you navigate your degree program and provide information on summer employment and permanent positions.

Renewable Materials Student Learning Outcomes

Demonstrate fundamental knowledge of wood and similar renewable materials that make them challenging to utilize as industrial and building materials.

Demonstrate command of renewable material moisture content and specific gravity calculations.

Demonstrate ability to find, compile, analyze and communicate technical information.

Gain familiarity with the diverse complexity of the Renewable Materials industry, and the challenges it faces with balancing business and environmental goals.

Demonstrate a combination of technical and business acumen that allows effective management of process and people.

Gain information and knowledge to become a better global citizen.

Demonstrate ability to creatively self-direct learning outcomes within the classroom environment and/or through independent undergraduate research.

Requirements for Graduation

In addition to the University and degree program requirements, Renewable Materials students meet the following requirements to graduate:

- **S/U Grading:** Students majoring in renewable Materials may not take for S/U grading (Satisfactory/Unsatisfactory) any course listed as a requirement for the major. This includes approved substitutions. Baccalaureate core courses may be taken S/U unless they are also being used to fulfill a major requirement.
- **Grades of C- or better** must be earned in all WSE, FOR, FE, NR or FES classes (or their approved substitutions).
- **Approved Work Experience:** Renewable Materials students must complete at least six months of work experience related to the major.

Work Experience Requirement

Students in Renewable Materials, Forestry, Forest Engineering, Forest/Civil Engineering, and Tourism, Recreation & Adventure Leadership must complete a minimum of six months of work experience as part of their degree requirements. The procedure for documenting completed work experience is as follows:

- 1) Students complete the Work Experience Practicum form available online: workexperience.forestry.oregonstate.edu/
- 2) Work Experience Practicum form is routed to the student's supervisor and the Department Chair (or designee) for their major, and those individuals complete the online evaluation.
- 3) Completed Work Experience Practicum Forms are reviewed and evaluated by your Academic Advisor and the experience is documented in MyDegrees.

All work experience forms should be completed at least three months prior to your expected graduation date to allow for employer evaluations and updating of your student record.

Failure to document required work experience in a timely manner could delay your graduation.

Renewable Materials Curriculum

<http://catalog.oregonstate.edu/MajorDetail.aspx?major=238&college=05>

In order to earn a BS in Renewable Materials, students must complete the following requirements:

- OSU Baccalaureate Core (“Bacc Core”)
- Renewable Materials Core
- Renewable Materials Option
- Renewable Materials Area of Concentration
- Work Experience
- Additional elective courses sufficient to accumulate a minimum of 180 total credits, of which at least 60 must be upper-division (courses numbered 300 or higher).

Renewable Materials Core (choose one course per category)

Course Number	Credits	Course Name
CH 121	5	General Chemistry
CH 122	5	*General Chemistry
FOR 112	3	Computing Applications in Forestry
ST 351	4	Introduction to Statistical Methods
ST 352	4	Introduction to Statistical Methods
WSE 111	2	Renewable Materials for a Green Planet
WSE 210*	4	*Renewable Materials Technology and Utilization
WSE 320	3	Anatomy of Renewable Materials
WSE 321	3	Chemistry of Renewable Materials
WSE 322	4	Physical and Mechanical Properties of Renewable Materials
WSE 324	3	Renewable Materials Laboratory
WSE 455	4	Marketing and Innovation in Renewable Materials
WSE 465	2	Renewable Materials Manufacturing Experience
WR 121	3	*English Composition
WR 214 or WR 327	3	*Writing in Business *Technical Writing
COMM 111 or COMM 114	3	Public Speaking Argument & Critical Discourse

* Baccalaureate Core Course

Art and Design Option

The Art and Design option prepares students to engage with renewable materials on an aesthetic level, whether as interior designers, fine artists, or entrepreneurs. Students will gain an in-depth knowledge of renewable materials and how those materials can function visually within the human space. In addition to the aesthetic aspect, students will gain an understanding of green building materials and green architecture. Students in the A&D option may also earn a Visual Arts minor by completing 31 credits of applicable course work.

Art and Design Core

Course	Credits	Course Name
ART 115	4	Foundations: 2-D
ART 117	4	Foundations: 3D
ART 121	4	Foundations: Computers in Visual Arts
ART 131	4	Foundations: Drawing
ART 206	3	*Introduction to Art History – Western
ART 234	4	Drawing II/Figure
ART 263	4	Digital Photography
ART 291	4	Sculpture I
ART 331	4	Drawing Concepts
MTH 111	4	*College Algebra
MTH 245	4	*Mathematics for Management, Life, and Social Sciences
WSE 266	3	*Industrial Hemp
WSE 392	3	*Bamboozooza: The Fascinating World of Bamboo
WSE 414	3	^Art and Design Capstone
WSE 461 or WSE 462	4	Manufacturing with Renewable Materials I or Manufacturing with Renewable Materials II
WSE 465	2	Renewable Materials Manufacturing Experience
WSE 471 or WSE 475	3-4	Renewable Materials in Building Construction or Environmental Assessment of Building Materials

* Baccalaureate Core Course (BCC)

^ Writing Intensive Course (WIC)

Area of Concentration:

Your Area of Concentration should include 30 total credits. Of those 30 credits:

- 12 credits must be upper division studio credits (300- 400 level)
- 12 credits must be from the list of Restricted Electives:
 - ART 101. *Introduction to the Visual Arts (4)
 - ART 204. *Introduction to Art History – Western (3)
 - ART 205. *Introduction to Art History – Western (3)
 - ART 208. *Introduction to Asian Art (3)
 - ART 215. Color in the Visual Arts (4)
 - ART 310. *Early Chinese Art and Archaeology (3)
 - ART 311. *Late Chinese Art and Culture (3)
 - ART 313. *Art of Japan (3)
 - ART 351. Installation (4)
 - ART 367. *History of Design (3)
 - FES 341. Forest Ecology (3)
 - WSE 350. Wood Machining (3)
 - WSE 351. Advanced CAD (3)
 - WSE 450. Entrepreneurial Product Development I (3)
 - WSE 499. Special Topics [*Peru Study Abroad*] (6)
- The remaining 6 credits can be of your choosing, but should pertain to Art & Design

Sample Course Plan – RM with Art & Design Option

This is a sample schedule. Actual schedules will vary from student to student based upon factors such as math placement and course availability. Students are strongly encouraged to create a personalized plan with their academic advisor. *Courses that fulfill Baccalaureate Core requirements are italicized.*

B.S. in Renewable Materials Art & Design Option | 2017-2018

	Fall		Winter		Spring	
First Year	<i>MTH 111: College Algebra</i> CH 121: General Chemistry I ART 115: Foundations 2-D <i>WR 121: English Composition</i>	4 5 4 3	MTH 245: Math for Mgmt, & Life Sci. <i>CH 122: General Chemistry II</i> WSE 111: RM for a Green Planet ART 117: Foundations 3-D	4 5 2 4	FOR 112: Computing Apps in Forestry <i>HHS 231: Lifetime Fitness</i> ART 121: Computers in Visual Arts <i>PAC: Physical Activity Course</i> <i>Difference, Power, Discrim Bacc Core</i> Free elective	3 2 3 1 3 3
	Total Credits	16	Total Credits	15	Total Credits	15
Second Year	<i>FES 240: Forest Biology or BI 101 or BI 211: General Biology</i> <i>WR 214: Business Writing or WR 327 Technical Writing</i> ART 131: Drawing I ST 351: Intro to Statistical Methods	4 3 4 4	<i>WSE 210: RM Tech @ Utilization</i> ART 234: Drawing II/Figure ST 352: Statistical Methods II Restricted Elective	4 4 4 3	<i>COMM 111: Public Speaking or COMM 114: Argument @ Discourse</i> ART 263: Digital Photography <i>Cultural Diversity Bacc Core</i> ART 291: Sculpture I	3 3 3 4
	Total Credits	15	Total Credits	15	Total Credits	14
Third Year	WSE 320: Wood Anatomy WSE 321: Chemistry of RM WSE 455: Marketing & Innov in RM Restricted Elective Free Elective	3 3 4 3 3	ART 206: Art History - Western WSE 322: Phys & Mech Prop of RM <i>WSE 392: Bambooolooza</i> Restricted Elective Free Elective	3 3 3 3 4	ART 331: Drawing Concepts WSE 324: RM Laboratory ART 351: Installation Restricted Elective	4 3 4 3
	Total Credits	15	Total Credits	16	Total Credits	14
Fourth Year	WSE 461: Manufacturing with RM or WSE 462-offered winter quarter UD Art Studio course Area of Concentration Elective WSE 465: RM Manufacturing Exper. Free Elective	4 3 3 2 3	<i>WSE 414: Art @ Design Capstone</i> WSE 475: Env. Assmt of Building Mat. (or WSE 471 offered spring quarter) UD Art Studio Course Area of Concentration Elective Free Elective	3 3 3 3 3	<i>WSE 266: Industrial Hemp</i> UD Art Studio Course <i>Contemporary Global Issues Bacc Core</i> Free Elective Free Elective	3 3 3 3 3
	Total Credits	15	Total Credits	15	Total Credits	15

Marketing and Management Option

The Marketing & Management option provides students with the skills to manage organizations to be competitive in the global renewable materials marketplace or develop innovative and effective marketing programs for green products.

Completion of the Management and Marketing option (and meeting additional grade requirements of the College of Business) will fulfill the requirements for a transcript-visible Business and Entrepreneurship minor.

Marketing & Management Core

Course	Credits	Course Title
BA 211	4	Financial Accounting
BA 213	4	Managerial Accounting
BA 230	4	Business Law
BA 260	4	Introduction to Entrepreneurship
BA 351	4	Managing Organizations
BA 360	4	Introduction to Financial Management
BA 390	4	Marketing
ECON 201	4	*Introduction to Microeconomics
ECON 202	4	*Introduction to Macroeconomics
FES 241	3	Dendrology
FES 240 or BI 101 or BI 211	4	*Forest Biology *General Biology *Principles of Biology
FOR 111	3	Introduction to Forestry
MTH 111	4	*College Algebra
MTH 241	4	*Calculus for Management and Social Science
WSE 453	3	^Global Trade in Renewable Materials
WSE 461	4	Manufacturing with Renewable Materials I
WSE 462	4	Manufacturing with Renewable Materials II
WSE 471	3	Renewable Materials in Building Construction
WSE 473	3	Bioenergy and Environmental Impact

* Baccalaureate Core Course (BCC)

^ Writing Intensive Course (WIC)

Area of Concentration:

Your area of concentration should include a total of 24 credits. Of those 24 credits:

- 20 credits must be upper-division (300-400 level)
- 12 credits must be from the list of restricted electives
 - AEC/ECON 352. *Environmental Economics and Policy (3)
 - BA 357. Operation Management (4)
 - BA 458. Innovation and New Product Development (4)
 - BA 460. Venture Management (4)
 - ECON 340. International Economics (4)
 - MGMT 364. Project Management (4)
 - MGMT 452. Leadership (4)
 - MRKT 396. Fundamentals of Marketing Research (4)
 - MRKT 497. Global Marketing (4)
 - COF Study Abroad courses, various (6)

Sample Course Plan - RM with Marketing & Management Option

This is a sample schedule. Actual schedules will vary from student to student based upon factors such as math placement and course availability. Students are strongly encouraged to create a personalized plan with their academic advisor. *Courses that fulfill Baccalaureate Core requirements are italicized.*

B.S. in Renewable Materials Marketing & Management Option | 2017-2018

	Fall		Winter		Spring	
First Year	MTH 111: <i>College Algebra</i> CH 121: General Chemistry I FOR 111: Intro to Forestry COMM 111: <i>Public Speaking</i> or COMM 114: <i>Argument</i>	4 5 3 3	MTH 241: <i>Calc for Mgmt @ Soc Sci</i> CH 122: <i>General Chemistry II with lab</i> WSE 111: RM for a Green Planet FOR 112: Computing Apps in Forestry	4 5 2 3	PAC: <i>Physical Activity Course</i> HHS 231: <i>Lifetime Fitness</i> ECON 201: <i>Principles of Microecon.</i> FES 241: Dendrology WR 121: <i>English Composition</i> Free Elective	1 2 4 3 3 3
	Total Credits	15	Total Credits	14	Total Credits	16
Second Year	FES 240: <i>Forest Biology</i> or BI 101 or BI 211: <i>General Biology</i> ECON 202: <i>Principles of Macroecon</i> ST 351: Intro to Stat Methods I BA 211: Financial Accounting	4 4 4 4	WSE 210: <i>RM Tech @ Utilization</i> ST 352: Intro to Stat Methods II BA 230: Business Law I BA 213: Managerial Accounting	4 4 4 4	WR 214: <i>Business Writing</i> or WR 327: <i>Technical Writing</i> BA 260: Intro to Entrepreneurship <i>Western Culture Bacc Core</i> <i>Cultural Diversity Bacc Core</i> Free Elective	3 4 3 3 3
	Total Credits	16	Total Credits	16	Total Credits	16
Third Year	WSE 320: Wood Anatomy WSE 321: Chemistry of RM BA 351: Managing Organizations Restricted Elective	3 3 4 4	WSE 322: Phys & Mech Prop of RM BA 360: Intro to Financial Mgmt Restricted Elective <i>Literature @ Arts Bacc Core</i>	3 4 4 3	WSE 324: Renewable Materials Lab BA 390: Marketing Restricted Elective UD Area of Concentration course	3 4 4 3
	Total Credits	14	Total Credits	14	Total Credits	14
Fourth Year	WSE 465: RM Manufacturing Exp. WSE 461: Manufacturing with RM I WSE 455: Marketing & Innov in RM <i>Difference, Power, Discrim Bacc Core</i> UD Area of Concentration course	2 4 4 3 3	WSE 462: Manufacturing with RM II <i>WSE 453: Global Trade in RM</i> <i>Global Issues Bacc Core</i> UD Area of Concentration course	4 3 3 3	WSE 471: RM in Building Construction WSE 473: Bioenergy & Env. Impact <i>Science, Technology, Society Bacc Core</i> Area of Concentration Course Free Elective	3 3 3 3 4
	Total Credits	16	Total Credits	13	Total Credits	16

Science and Engineering Option

This is a flexible, math- and science-intensive option that allows students to design a personalized curriculum that opens doors to jobs that solve complex problems, create efficiencies, foster intelligent use of renewable materials, or to graduate school.

Science & Engineering Core

Course	Credits	Course Title
BA 215	4	Fundamentals of Accounting
BA 230	4	Business Law I
CH 123	5	*General Chemistry
ECON 201	4	*Introduction to Microeconomics
ECON 202	4	*Introduction to Macroeconomics
FES 241	3	Dendrology
FES 240 or BI 101 or BI 211	4	*Forest Biology *General Biology *Principles of Biology
FOR 111	3	Introduction to Forestry
MTH 251	4	*Differential Calculus
MTH 252	4	Integral Calculus
MTH 254	4	Vector Calculus I
PH 211	4	*General Physics with Calculus
PH 212	4	*General Physics with Calculus
PH 213	4	*General Physics with Calculus
WSE 453	3	^Global Trade in Renewable Materials
WSE 461	4	Manufacturing with Renewable Materials I
WSE 462	4	Manufacturing with Renewable Materials II
WSE 471	3	Renewable Materials in Building Construction
WSE 473	3	Bioenergy and Environmental Impact

* Baccalaureate Core Course (BCC)

^ Writing Intensive Course (WIC)

Area of Concentration:

Your area of concentration should include 27 total credits, 12 of which should be upper-division (300-400 level classes). Many students opt to complete a minor as their area of concentration in this option, however, you are free to design your area of concentration any way you wish (a selection of individual classes around a theme vs. an OSU approved minor).

Sample Course Plan – RM with Science & Engineering Option

This is a sample schedule. Actual schedules will vary from student to student based upon factors such as math placement and course availability. Students are strongly encouraged to create a personalized plan with their academic advisor. *Courses that fulfill Baccalaureate Core requirements are italicized.*

B.S. in Renewable Materials Science & Engineering Option | 2017-2018

	Fall		Winter		Spring	
First Year	MTH 251: <i>Differential Calculus</i> CH 121: General Chemistry I FOR 111: Intro to Forestry COMM 111: <i>Public Speaking</i> or COMM 114: <i>Argument</i>	4 5 3 3	MTH 252: Integral Calculus <i>CH 122: General Chemistry II with Lab</i> FOR 112: Computing Apps in Forestry WSE 111: RM for a Green Planet	4 5 3 2	MTH 254: Vector Calculus <i>CH 123: General Chemistry III</i> FES 241: Dendrology <i>PAC: Physical Activity Course</i> <i>WR 121: English Composition</i>	4 5 3 1 3
	Total Credits	15	Total Credits	14	Total Credits	16
Second Year	FES 240: <i>Forest Biology</i> or <i>BI 101 or BI 211: General Biology</i> ECON 201: <i>Principles of Microecon</i> PH 211: <i>General Physics I</i> ST 351: Intro to Stat Methods I	4 4 4 4	WSE 210: <i>RM Tech & Utilization</i> PH 212: General Physics II ST 352: Intro to Stat Methods II Area of Concentration course	4 4 4 3	<i>ECON 202: Principles of Macroecon</i> PH 213: General Physics III <i>WR 214: Business Writing</i> or <i>WR 327: Technical Writing</i> Area of Concentration course <i>HHS 231: Lifetime Fitness</i>	4 4 3 3 2
	Total Credits	16	Total Credits	15	Total Credits	16
Third Year	WSE 320: Wood Anatomy WSE 321: Chemistry of RM BA 215: Fund of Accounting Area of Concentration course	3 3 4 4	WSE 322: Phys & Mech Prop of RM BA 230: Business Law Area of Concentration course <i>Western Culture Bacc Core</i> Free Elective	3 4 3 3 3	WSE 324: RM Laboratory Area of Concentration course <i>Cultural Diversity Bacc Core</i> <i>Literature & Arts Bacc Core</i> Free Elective	3 4 3 3 3
	Total Credits	14	Total Credits	13	Total Credits	13
Fourth Year	WSE 465: RM Manufacturing Exp. WSE 461: Manufacturing with RM I WSE 455: Mktg & Innov in RM Area of Concentration course <i>Science, Technology, Society Bacc Core</i>	2 4 4 3 3	WSE 462: Manufacturing in RM II <i>WSE 453: Global Trade in RM</i> Area of Concentration course <i>Difference, Power, Discrimination BC</i>	4 3 3 3	WSE 471: RM in Building Construction WSE 473: Bioenergy & Env. Impact Area of Concentration course <i>Contemporary Global Issues Bacc Core</i>	3 3 4 3
	Total Credits	16	Total Credits	13	Total Credits	13

Academic Advising

The College of Forestry and the Department of Wood Science and Engineering are committed to helping students succeed. That includes assistance with identifying majors and minors, and understanding broader University rules and regulations. The Renewable Materials Academic Advisor and the COF Head Advisor are your first points of contact when you have questions. The College of Forestry Student Services Office is another valuable resource for University procedures, rules, and regulations.

This advising guide provides details of the Renewable Materials program not listed in the University Catalog, as well as helpful suggestions for your success as a student. The guide does not replace the need for regular quarterly visits with your advisor. A close association with your advisor will help you make the best choices to progress efficiently through the program. Your advisor is also a valuable resource for discussions about options to add extra value to your education through additional coursework, minors, additional degrees, or co-curricular experiences.

You should refer to your College of Forestry Undergraduate Handbook for detailed information about advising, including the rights and responsibilities inherent in the advisor/advisee relationship. The most current advising information, and appointment scheduling, is available online:

<http://undergrad.forestry.oregonstate.edu/advising>

Who:



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What:

You can expect your advising appointments to be 30 minutes of one-on-one time with your academic advisor. You and your advisor will both prepare in advance—reviewing your MyDegrees page, preparing questions, and looking ahead. During your appointment, you will review your progress to date, make course plans for the upcoming term(s), discuss opportunities and resources pertinent to your goals, and track your progress toward graduation.

While your advisor is here to assist and guide you, your educational choices are yours to make. We advise and you decide.

When:

COF students are required to meet with their academic advisor at least once per quarter, and are welcome to meet more often. Your advising appointments should occur around these holidays:

Fall Term	Halloween
Winter Term	Valentine's Day
Spring Term	Cinco de Mayo

It's always okay to call, email, or drop in with questions.

How:

The easiest way to schedule your advising appointment is using your advisor's online calendar:

<http://undergrad.forestry.oregonstate.edu/advising/academic-advisors>