RENEWABLE MATERIALS (RMAT)

RMAT 100 Intro to Renewable Resources
2 credits
Overview of renewable building materials and bio-energy industries. Discovery laboratory in the use of renewable and recycled waste stream materials to create useful products. One lecture and one three-hour lab a week. (Spring only)

RMAT 203 (s) Workshop
Credit arranged.

RMAT 204 (s) Special Topics
Credit arranged.

RMAT 299 (s) Directed Study
Credit arranged.

RMAT 321 Properties of Renewable Materials
3 credits
Physiology, structure and physical and mechanical properties of woody and other renewable plant materials. (Fall only)

RMAT 400 (s) Seminar
Credit arranged.

RMAT 401 Undergraduate Research
1-3 credits
Directed undergraduate research at the upper division level. 
Prereq: Junior or senior standing.

RMAT 403 (s) Workshop
Credit arranged.

RMAT 404 (s) Special Topics
Credit Arranged.

RMAT 405 (s) Professional Development
Credit Arranged
Credit earned in this course will not be accepted toward grad degree programs.
Prereq: Permission.

RMAT 410 Wood Properties, Processes, and Uses
1-2 credits
Joint-listed with RMAT 510
Open to non-majors only. Physical, mechanical, and chemical properties of wood and wood products; timber harvesting technologies; and issues in use of wood products. Additional projects/assignments reqd for grad cr. Graded P/F. Five days of workshop, including field trip.

RMAT 436 Biocomposites
3 credits
Joint-listed with RMAT 536
Raw material, processes, properties, and their applications for a number of natural fiber and wood composites made of veneers, particles and fibers. Additional projects and assignments reqd for grad cr. Two half day field trips. Two lectures and one 3-hr lab a week. RMAT 536 only: Cooperative: Open to WSU degree-seeking students. (Fall only)
Prereq: CHEM 101 and RMAT 321; and CHEM 275 or CHEM 277.

RMAT 438 Introduction to Lignocellulosic Chemistry
1 credit
The chemistry of lignocellulosic fiber (natural fiber and wood) formation and structure. Two lectures a week for the first half of the semester. This course meets concurrently with RMAT 538. (Spring only)
Prereq: CHEM 101 or CHEM 111; and CHEM 275 or CHEM 277.

RMAT 444 Primary Products Manufacturing
3 credits
Raw materials, procurement, production methods, drying product specifications, and grading for primary products made from renewable materials including lumber, plywood, poles, and energy products; plant layout, machines, and systems analysis; plant tours. Two lec and one 5-hr lab a wk. (Spring only)
Prereq: RMAT 321.

RMAT 450 Biomaterials Deterioration and Protection
2 credits
Agents that cause deterioration of biomaterials; green building durability issues and design considerations; preservative systems and alternative control methods; and environmental considerations. Recommended preparation: RMAT 321 (Fall only)

RMAT 473 ECB Senior Presentation
1 credit
Gen Ed: Senior Experience
Cross-listed with FISH 473, FOR 473, NRS 473, REM 473, and WLF 473 Reporting and presenting the senior project (thesis or internship); taken after or concurrently with 485 or 497. Serves as the senior capstone course for Ecology and Conservation Biology (ECB).
Prereq: Instructor Permission.

RMAT 491 Biomaterial Product and Process Development Lab
2 credits
Lab to accompany RMAT 495. One 3-hr lab per week. (Spring only)
Prereq: ECON 201 or ECON 202, and RMAT 495.

RMAT 495 Product Development and Brand Management
3 credits
Gen Ed: Senior Experience
Cross-listed with MKTG 495
This course examines product development strategy and the management of brands. Topics will include strategic intent of product development, the process of product development (ideation through post product launch evaluation), market and financial feasibility of product development, trends in product development, and managing brands (strategic brand management and managing brand equity).
Prereq: ECON 201 and ECON 202, or ECON 272; and MKTG 321.
Coreq: MKTG 321.

RMAT 498 Renewable Natural Resources Internship
Credit arranged
Supervised field experience with an appropriate public agency or private company. Graded P/F. (Summer only)
Prereq: Permission of advisor.

RMAT 499 (s) Directed Study
Credit arranged
For the individual student; conferences, library, field, or lab work.
Prereq: Senior standing, GPA 2.5, or Permission.

RMAT 500 Master's Research and Thesis
Credit arranged.
Renewable Materials (RMAT)

RMAT 501 (s) Seminar
Credit arranged
Major philosophy, management, and research problems of forest products industries; presentation of individual studies on assigned topics.
Prereq: Permission.

RMAT 502 (s) Directed Study
Credit arranged.

RMAT 503 (s) Workshop
Credit arranged
Selected topics in the conservation and management of natural resources.
Prereq: Permission.

RMAT 504 (s) Special Topics
Credit arranged.

RMAT 505 (s) Professional Development
Credit arranged
Credit earned in this course will not be accepted toward graduate degree programs.
Prereq: Permission.

RMAT 510 Wood Properties/Processes/Uses
1-2 credits
Joint-listed with RMAT 410
Open to non-majors only. Physical, mechanical, and chemical properties of wood and wood products; timber harvesting technologies; and issues in use of wood products. Additional projects/assignments reqd for grad cr. Graded P/F. Five days of workshop, including field trip.

RMAT 536 Biocomposites
3 credits
Joint-listed with RMAT 436
Raw material, processes, properties, and their applications for a number of natural fiber and wood composites made of veneers, particles and fibers. Additional projects and assignments reqd for grad cr. Two half day field trips. Two lectures and one 3-hr lab a wk. RMAT 536 only: Cooperative: Open to WSU degree-seeking students. (Fall only)
Prereq: CHEM 101 and RMAT 321; and CHEM 275 or CHEM 277.

RMAT 538 Lignocellulosic Biomass Chemistry
3 credits
The chemistry of lignocellulosic fiber (natural fiber and wood) formation; agricultural/natural fiber and wood structure and reactions of lignocellulosic compounds. Two lec and one 3-hr lab a wk. Cooperative open to WSU degree-seeking students (Spring only).
Prereq: CHEM 101 and RMAT 321; and CHEM 275 or CHEM 277.

RMAT 552 Wood and Fiber Science
3 credits
Cell physiology and formation, anatomy, chemistry, and physical and mechanical properties. Factors that impact material quality and performance. (Spring only)
Prereq: Graduate Standing.

RMAT 597 (s) Practicum
Credit arranged.

RMAT 598 (s) Internship
Credit arranged.

RMAT 599 (s) Research
Credit arranged
Research not directly related to a thesis or dissertation.
Prereq: Permission.

RMAT 600 Doctoral Research and Dissertation
Credit arranged
Prereq: Admission to the doctoral program in "natural resources" and Permission of department.