

Department of Forest Products

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Wood is a constant part of the lives of the people in this country and throughout the world. Nearly 80 percent of the material going into the construction of a home in the U.S. is wood based. It is also in the paper we use as newspapers, money, books, and packaging. In the U.S., every man, woman, and child consumes over 2,000 pounds of wood per year in the form of various products. The forest products industries rely on a renewable resource (trees) to produce over 5,000 different products for shelter, communications, packaging, and chemicals. Wood not only forms the raw material for the product, it also supplies a large portion of the energy needed by these industries. Many wood-using industries generate more than 50 percent of their energy requirements from wood residues. The industry utilizes almost all the wood fiber that is delivered to the mills and the innovation and modernization now taking place will assure a higher degree of efficiency and a greater level of utilization of the wood fiber.

The programs of the Forest Products Department are designed to prepare students for rewarding careers in an array of forest-products industries. Outstanding careers range from work with light-frame construction, forest engineering, log transport systems, wood building products manufacture, and the business and marketing aspects of forest industries. In addition to jobs in industry, our graduates also obtain positions in a variety of governmental agencies and multinational corporations. A recent survey of graduates from the Forest Products Department showed that 95 percent of the respondents were employed in permanent, forest-products jobs or were in graduate school.

The Department of Forest Products cooperates with the wood technology program at Washington State University, the Department of Architecture and Interior Design at the University of Idaho, and the region's forest products industries in carrying out its program responsibilities. The forest products industry actively supports our programs through scholarships for undergraduate students.

The department offers three options within the B.S.For.Prod. degree. These include forest operations, wood construction and design, and forest products business management.

Facilities available to the department include a University Experimental Forest for use in the field work of the forest operations option and an experimental forest student logging crew that provides students with hands-on experience with timber harvesting and forest management. Forest products laboratory equipment (analytical chemistry instruments, polymer characterization instruments, materials processing equipment, universal testing machine, blender, dry kiln, conditioning chambers, and microscopy) provides students with hands-on experience with the manufacture and testing of a variety of forest products and biomaterials.

The department offers bachelor's, master's, and doctoral programs. The undergraduate programs are structured, but still allow the student to follow specific interests through course selection from restricted and unrestricted electives. A graduate student's program can be tailor-made to the student's career goals and aspirations. A variety of industrial organizations and public agencies provide funds and facilities to carry out research and this allows the department to offer assistantships and fellowships.

While graduate work is often undertaken by students who desire to enter careers in teaching and research, the program is also recommended for students who plan to enter production management and marketing careers. Work at the master's and doctoral levels is designed to enhance the student's professional background and is often pursued by those with backgrounds in forestry, business management, engineering, and other fields. For some students who plan to strengthen their background and enter the industrial and production fields, a non-thesis option at the master's level is available.

Graduate work can be undertaken in each of the department's principal areas: wood construction and design, wood technology and engineering, forest products business management and marketing, wood chemistry, wood composites and forest operations.

Graduate students' research is closely integrated with that of the department's faculty. Emphasis areas currently include physical and mechanical properties of wood, wood chemistry, wood drying and preservation, technology of adhesives and particleboard, modeling and analysis of timber harvesting systems and equipment, recovery and use of wood for energy, forest road layout and construction, management and marketing in the forest products industry, value added manufacturing opportunities, and wood construction and design.

Breadth and diversity of opportunities for graduate students is enhanced by grants, contracts, and the department's cooperative relationships with government agencies, large forest industries, and nearby Washington State University.

Preferred preparation for graduate study in forest products is an undergraduate degree in forest products, forestry, forest business management, or civil, mining, or forest engineering, or a related field. Students with other backgrounds may be admitted but will usually be required to complete a number of courses to remove the deficiencies in their preparation.

Courses

See Part 6 for courses in Forest Products (ForP).

Undergraduate Curricular Requirements

FOREST PRODUCTS (B.S.For.Prod.)

Required course work includes the university requirements (see regulation J-3) and one of the following options:

No more than 25 percent of the course work used for the forest products degree may be taken in business courses (excluding Econ 201 and 202). Of the 128 credits required, at most 32 credits taken in business courses may be counted toward the degree.

A. Wood Construction and Design Option

This option is designed for students interested in residential and light commercial construction or design management positions that emphasize effective use of wood as a structural material. Students may focus in one of two emphasis areas. In the architectural technology emphasis area, the student will develop design skills in addition to a background in business and wood technology for positions in non-licensed design, specification writing, design-build construction, and architectural and construction liaison. Students selecting the wood construction business emphasis area will be prepared for careers that include both supervisory and managerial positions in residential and light commercial building and building materials, sales and marketing of wood products, estimating, banking, insurance, and government agencies that deal with housing. The wood construction and design option can also provide an educational foundation for those wishing to become entrepreneurs in the area of wood construction.

Acct 202 Introduction to Managerial Accounting (3 cr)
Arch 154 Introduction to Architectural Graphics (2 cr)
Arch 266 Materials and Methods (3 cr)
Arch 353 Architectural Design III and Arch 354 Architectural Design IV; or Acct 310 Accounting for Business Decisions I and Bus 311 Introduction to Management (5-10 cr)
Arch 366 Building Technology I (3 cr)
Arch 463-464 Environmental Control Systems (8 cr)
Arch 575 Professional Practice (3 cr)
BLaw 265 Legal Environmental of Business (3 cr)
Comm 101 Fundamentals of Public Speaking (2 cr)
Econ 202 Principles of Economics (3 cr)
Engl 102 College Writing and Rhetoric (3 cr)
Engl 313 Business Writing or Engl 317 Technical Writing (3 cr)
For 235 Society and Natural Resources (3 cr)
ForP 100 Forest Products Issues and Technology (2 cr)
ForP 277 Wood Anatomy and Identification (3 cr)
ForP 337 Physical and Mechanical Properties of Wood (3 cr)
ForP 365 Wood Building Technology (3 cr)
ForP 436 Wood Composites (3 cr)
ForP 444 Primary Wood Products Manufacturing
ForP 450 Wood Deterioration and Preservation (2 cr)
ForP 491 Biomaterial Product and Process Development Lab (2 cr)
ForP 495 Product and Process Development and Commercialization (3 cr)
LArc 383 Architectural Site Design (3 cr)
Math 160 Survey of Calculus (4 cr)
NR 101 Exploring Natural Resources (1 cr)
Phys 111 General Physics I (4 cr)
Stat 251 Statistical Methods (3 cr)
VTD 344 Computer-Aided Design (2 cr)
Electives to total 128 credits for the degree

B. Forest Operations Option

This option prepares students to work as managers and planners who are responsible for forest operations that achieve sustainable management objectives in forest products companies, forest engineering consulting firms, and government agencies. The program provides background in development and design of efficient harvesting operation plans and timber sales, protection of environmental values from forest operations, supervision of logging crews, design and layout of forest roads, wood procurement, and implementations of forest health restoration projects. Specific career areas include forest operations forester, woodland manager, wood appraisal and procurement, harvesting planning and administration, timberland manager, and forest engineer. Other positions can be found in the areas of equipment development and marketing and as technical representatives for equipment companies or as independent logging contractors. Beyond the courses required in the basic sciences and forest operations, students may choose course work that will also emphasize natural resource management or technology and engineering.

Biol 115 Cells and the Evolution of Life (4 cr)
Chem 101 Introduction to Chemistry I (4 cr)
Comm 101 Fundamentals of Public Speaking (2 cr)
Econ 202 Principles of Economics (3 cr)
Engl 102 College Writing and Rhetoric (3 cr)

Engl 313 Business Writing or Engl 317 Technical Writing (3 cr)
 For 221 Ecology or REM 221 Ecology (3 cr)
 For 235 or CSS 235 Society and Natural Resources (3 cr)
 For 274 Forest Measurement and Inventory (3 cr)
 For 320 Dendrology (3 cr)
 For 375 Introduction to Spatial Analysis for Natural Resource Management (3 cr)
 For 383 Economics for Natural Resource Managers (3 cr)
 For 474 Forest Inventory (3 cr)
 ForP 100 Forest Products Issues and Technology (2 cr)
 ForP 230 Field Measurements for Forest Operations (2 cr)
 ForP 277 Wood Structure and Identification (3 cr)
 ForP 430 Forest Engineering and Harvesting (3 cr)
 ForP 431 Forest Operations and Investment Analysis or Bus 362 Real Property Appraisal (3 cr)
 ForP 432 Designing Forest Access (3 cr)
 ForP 434 Forest Tractor and Cable Systems (4 cr)
 ForP 444 Primary Wood Products Manufacturing (3 cr)
 NR 101 Exploring Natural Resources (1 cr)
 Soil 205 The Soil Ecosystem (3 cr)
 Soil 206 The Soil Ecosystem Lab (1 cr)
 Stat 251 Statistical Methods (3 cr)
 And one of the following emphasis areas:

Technical Emphasis

Engr 210 Engineering Statics (3 cr)
 Engr 220 Engineering Dynamics (3 cr)
 Engr 335 Engineering Fluid Mechanics (3 cr)
 Engr 350 Engineering Mechanics of Materials (3 cr)
 Math 170 Analytic Geometry and Calculus I (4 cr)
 Math 175 Analytic Geometry and Calculus II (4 cr)
 Math 275 Analytic Geometry and Calculus III (3 cr)
 Math 310 Ordinary Differential Equations (3 cr)
 Phys 211 Engineering Physics I (4 cr)

Resource Emphasis

Biol 116 Organisms and Environments or PISc 205 General Botany (4 cr)
 For 330 Forest Ecosystem Processes (2 cr)
 For 424 Forest Dynamics and Management (2 cr)
 For 462 Watershed Science and Management (3 cr)
 For 484 Forest Policy and Administration (2 cr)
 Math 160 Survey of Calculus or Math 170 Analytic Geometry and Calculus I (4 cr)
 Phys 111 General Physics I or Phys 211 Engineering Physics I (4 cr)
 One of the following (2-3 cr):
 For 426 Wildland Fire Ecology and Management (3 cr)
 For 468 Forest and Plant Pathology (2 cr)
 For 469 Introduction to Forest Insects (2 cr)

Electives to total 128 cr for the degree

C. Forest Products Business Management Option

This program is designed for students who plan careers in the staff or line management of firms in the forest products industry. Graduates are prepared for positions in production management, marketing and distribution of wood products, and in the technical service and support areas of the forest products industry. Students focus on the production, distribution, and marketing of wood products from a combined technical and managerial perspective. The degree also provides a foundation for pursuing a graduate degree in business, for example, the M.B.A. or M.S.

Acct 201 Introduction to Financial Accounting (3 cr)
 Acct 202 Introduction to Managerial Accounting (3 cr)
 Biol 102 Biology and Society (4 cr)
 BLaw 265 Legal Environment of Business (3 cr)
 Bus 301 Financial Management (3 cr)
 Bus 311 Introduction to Management (3 cr)
 Bus 321 Marketing (3 cr)
 Bus 370 Introduction to Operations Management (3 cr)
 Bus 424 Pricing Strategy and Tactics (3 cr)
 Bus/Stat 456 Quality Management (3 cr)
 Chem 101 Introduction to Chemistry I (4 cr)
 Chem 275 Carbon Compounds or Chem 277 Organic Chemistry I (3 cr)
 Comm 101 Fundamentals of Public Speaking (2 cr)
 Econ 202 Principles of Economics (3 cr)

Engl 102 College Writing and Rhetoric (3 cr)
Engl 313 Business Writing or Engl 317 Technical Writing (3 cr)
For 221 Ecology or REM 221 Ecology (3 cr)
For/CSS 235 Society and Natural Resources (3 cr)
For 383 Economics for Natural Resource Managers (3 cr)
ForP 100 Forest Products Issues and Technology (2 cr)
ForP 277 Wood Anatomy and Identification (3 cr)
ForP 337 Physical and Mechanical Properties of Wood (3 cr)
ForP 425 Forest Products Marketing (3 cr)
ForP 430 Forest Engineering and Harvesting (3 cr)
ForP 436 Wood Composites (3 cr)
ForP 438 Wood Chemistry and Adhesives (3 cr)
ForP 444 Primary Wood Products Manufacturing (3 cr)
ForP 450 Wood Deterioration and Preservation (2 cr)
ForP 491 Biomaterial Product and Process Development Lab (2 cr)
ForP 495 Product and Process Development and Commercialization (3 cr)
ForP 498 Renewable Natural Resources Internship (1 cr)
Math 160 Survey of Calculus (4 cr)
NR 101 Exploring Natural Resources (1 cr)
Phys 111 General Physics I (3 cr)
Stat 251 Statistical Methods (3 cr)
Electives to total 128 cr for the degree

Academic Minor Requirements

FOREST OPERATIONS MINOR

ForP 230 Field Measurements for Forest Operations (2 cr)
ForP 277 Wood Anatomy and Identification (3 cr)
ForP 430 Forest Engineering and Harvesting (3 cr)
Four of the following (12 cr)
 For 424 Forest Dynamics and Management or For 462 Watershed Science and Management (2-3 cr)
 ForP 431 Forest Operations and Investment Analysis (3 cr)
 ForP 432 Designing Forest Access (3 cr)
 ForP 434 Forest Tractor and Cable Systems (4 cr)
 ForP 444 Primary Wood Products Manufacturing (3 cr)

FOREST PRODUCTS MINOR

For students in business, engineering, forestry, or vocational education who wish to gain specific background and knowledge related to the forest products industry.

ForP 277 Wood Anatomy and Identification (3 cr)
ForP 430 Forest Engineering and Harvesting (3 cr)
ForP 444 Primary Wood Products Manufacturing (3 cr)
Electives in forest products (11 cr)

Graduate Degree Programs

Candidates must fulfill the requirements of the College of Graduate Studies and of the Department of Forest Products. See the College of Graduate Studies section of Part 4 for the general requirements applicable to each degree.

Master of Science. Through the Department of Forest Products, students seeking the M.S. degree in natural resources may specialize in the areas mentioned above.

Doctor of Philosophy. Through the Department of Forest Products, students seeking the Ph.D. degree in natural resources may specialize in the areas mentioned above. See the NR section in Part 3 for details.