



Forest Operations Management Program

Undergraduate Advising Guide 2009—2010

Forest Engineering, Resources and Management

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Forest Operations Management Program

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Opening Statement

We are pleased to learn of your interest in our new Forest Operations Management degree at Oregon State University. We believe that graduates from this program will play a key role in helping to meet the world's appetite for wood products from sustainable forests, while also protecting other resource values such as soils, water, wildlife habitat, and recreation opportunities. In a world of more than 6 billion people, our wood needs are enormous and growing, even with aggressive recycling programs. We can best meet these demands with careful planning and implementation of forest activities — applying the best science, technology and experience available to conduct safe, cost effective, and environmentally responsible forest operations. Forestry continues to be a cornerstone of the economy of many communities, providing jobs and economic vitality, though the nature of the forestry business is changing and becoming more competitive in an increasingly global marketplace.

Graduates from the Forest Operations Management program will have many career options. Some will find opportunity and satisfaction in owning or managing a contracting business that provides silviculture, harvesting, or transportation system services to larger companies or agencies, especially if you have some entrepreneurship in your blood. Others may be employed by companies or agencies to administer contracts and manage operations, much like project managers do in the construction business. As some graduates gain experience, they may apply the blend of business and forestry education in this degree in management positions to help maintain competitive forest businesses in the Pacific Northwest or elsewhere in the country or world. Maintaining economic value in forests will be a key to avoiding conversion to other land uses.

All of these types of positions represent vibrant and timely career opportunities. This is a good time to be entering this field as the baby boomer generation begins to retire. As the world becomes more complex the need for well-rounded highly trained forest operations managers become greater; we at Oregon State University are working to fill that need! You will be in for an exciting career!

Welcome by the Dean

Welcome:

On behalf of the faculty and students of the College of Forestry, I want to tell you how delighted we are to learn of your interest in pursuing your professional education in forestry with us. These are exciting times for professionals in natural resource management and you could not have selected a more interesting and challenging subject to study and pursue as a career.

The College of Forestry at Oregon State University is an excellent place to study and begin your professional development. Oregon is without question the top forestry state in our nation and our faculty, facilities and programs clearly reflect that status. You will be studying with a faculty that is second to none, people who are first and foremost dedicated to good teaching and who also, by the way, are national and international leaders in their professional specialties. The state's magnificent forests are our laboratories and, in addition, we have a 12,500-acre research forest of our own within 20 minutes drive of campus where students apply classroom knowledge.

At the national and state levels, the policies and approaches that guide the management of our public and private lands are being developed, debated and applied in Oregon first. As a student, you will be an active participant in the debate because your professors are and they bring that debate into their classrooms. I know of no more exciting time to study forestry or a more exciting place to do so!

Our College is also an integral part of the Oregon State University community. We are part of Oregon's only Land Grant University and Oregon's only university-level forestry program. We therefore play an important part in campus life as a focal point for natural resources education.

We welcome you as a student in the College of Forestry and as a part of a profession dedicated to the management of our nation's outstanding forest resources.

Sincerely yours,

Hal Salwasser
Dean
College of Forestry

Introduction

The College of Forestry has a long tradition of excellence in undergraduate education. In 2006 we were pleased to announce the latest addition to our undergraduate programs, the Forest Operations Management degree.

The Bachelor of Science in Forest Operations Management is designed as a professional degree that blends elements of forest engineering and forest management with business management and entrepreneurship. This unique new degree will prepare graduates to support the needs of an evolving forest sector in Oregon and globally. As they gain experience, graduates will have options to serve as project managers for logging or silvicultural contracting service firms, as consultants, or as company or agency contract administrators that supervise a growing contracting work force. Graduates will also be prepared to continue on to graduate school in a variety of disciplines that range from natural resources to business. The Forest Operations Management program is accredited by the Society of American Foresters (SAF).

The Forest Operations Management curriculum was designed through collaboration between faculty in the Departments of Forest Engineering, Resources and Management, the School of Civil and Construction Engineering, and in the College of Business. It will be administered by the Forest Engineering, Resources and Management Department through continuing engagement with partners. The 180-credit program includes a minor from the College of Business.

This advising guide is your map through the Forest Operations Management curriculum. **You should retain this advising guide and any updates that are published as you progress through the program, and utilize the various forms included to track your progress.** It is your obligation as an aspiring professional to maintain accurate records of your courses and accomplishments, just as the University registrar maintains the official University records of your progress.

This guide is a supplement to the Graduation Requirements and the Academic Regulations and Procedures of Oregon State University through the OSU web page <http://catalog.oregonstate.edu/>.

Advising and Assistance

The College of Forestry and the Forest Engineering, Resources and Management Department are committed to helping students succeed. A part of that help deals with identifying majors and minors, and understanding broader University rules and regulations. The department office staff and your faculty advisor are the starting points when you have questions, but another valuable resource for University procedures, rules and regulations is the College of Forestry Student Services office.

This advising guide provides details of the Forest Operations Management (FOM) program not listed in the University Catalog, and helpful suggestions for your success as a student. The guide does not replace the need for regular term-by-term visits with your advisor. The Forest Operations Management program is a tightly structured program, which leaves few elective choices to the student choosing to graduate within the 180 credit program. However, the choices that are required are very important to satisfying the intent of the curriculum and to providing the professional education that you desire. A close association with your advisor will help you make the best choices as you progress through the program. Your advisor is also an invaluable resource for discussions about options to add extra value to your education through additional coursework, minors, or second degrees.

The advising effort is one of mutual respect and collaboration between you and your advisor. If the process is to be effective, both you and your advisor must meet certain obligations. With that in mind, below are key responsibilities shared between your advisor and you.

As an advisee, you should:

- **Understand and accept that you are ultimately responsible for your education and your own decisions.**
- Be prepared when you come to advising sessions; be active in your advising session, and ask questions when you have them.
- Understand and communicate personal values, abilities, and goals.
- Provide accurate and truthful information when being advised.
- Initiate a purposeful relationship with your advisor and make appointments when necessary or in need of assistance.
- Keep your local address and phone up to date in Student Online Services and utilize and **regularly check your ONID account.**
- Call to cancel appointments that cannot be kept.
- Learn and understand OSU's policies, procedures, and requirements as they relate to your academic success and/or degree completion.

Advising and Assistance continued

- Follow through on plans-of-action identified during advising sessions.

Advisors should:

- **Develop a purposeful relationship with and be an advocate for their advisees.**
- Inform students of the nature of the advisor/advisee relationship.
- Assist students in defining and developing expressed educational, career, and life plans.
- Provide timely and accurate educational information.
- Promote learning opportunities that will help students define or meet personal goals and plans.
- Assist students in preparing a program that is consistent with their abilities and interests.
- Monitor progress toward educational/career goals.
- Interpret and provide rationale for institutional policies, procedures and requirements.
- Inform inquiring students of campus resources and special services available to them.
- Refer students to those resources that can enhance or supplement their academic or personal experience.

While your advisor has an important role and takes that role seriously, the important decisions are truly yours. It's up to you to take primary responsibility for planning your individual program and for meeting academic requirements and deadlines. Advisors can provide information but you are the one to act on that information.

Making an appointment is strongly encouraged. Make yourself aware of your advisor's posted office hours, or phone or email to arrange and appointment.

DISCLAIMER: Future term data are continually updated. Check the web frequently for current information.



Forest Operations Management Program Objectives

The educational objectives of the Forest Operations Management Program are an outgrowth of the Departmental Mission of developing science, engineering and technical solutions that promote sustainable management of forest, land and water resources to meet society's economic, environmental and social needs.

- **Forestry Principles**

The Forest Operations Management program will incorporate an adequate presentation of fundamental forestry principles so that Forest Operations Management graduates will be able to implement and manage forest operations to achieve silvicultural objectives.

- **Soil and Water Resources**

The Forest Operations Management program will incorporate an adequate presentation of the physical and biological aspects of soil and water resources so that Forest Operations Management graduates will be able to implement and manage forest operations that appropriately protect these resources.

- **Surveying and Measurement**

The Forest Operations Management program will incorporate adequate surveying and measurement of land and forest resources to implement and manage the tasks associated with forest land management.

- **Forest Transportation**

The Forest Operations Management program will incorporate adequate principles for the physical and system aspects of forest transportation infrastructure so that Forest Operations Management graduates can implement and manage forest transportation in a way that meets the needs of forest land management and minimizes environmental impact.

- **Harvesting Operations**

The Forest Operations Management program will incorporate adequate principles for the physical and system aspects of harvesting operations so that Forest Operations Management graduates can implement and manage safe, economic, and environmentally sound forest operations.

- **Planning, Economics, and Business**

The Forest Operations Management program will incorporate adequate principles and techniques for forest land management, operational planning, and business in an environmental and economic context so that Forest Operations Management graduates can effectively manage successful forest operations and the forestry supply chain.



Forest Operations Management Learning Objectives

In addition to the learning outcomes defined for the OSU Baccalaureate Core classes, the specific learning outcomes for the Bachelor of Science in Forest Operations Management are:

1. Demonstrate an understanding of the development and execution of tactical and operational forest plans that support the achievement of strategic goals by developing the data requirements, goals and performance measurements for tactical and operational scheduling problems.
2. Demonstrate knowledge of forest ecology and silviculture principles to understand how forests respond to natural disturbances or management activities by designing appropriate harvesting systems to achieve potential landowners objectives.
3. Demonstrate the ability to apply appropriate knowledge of surveying and mapping tools to implement forest operations by being able to survey and map roads, critical habitat and other common forest features.
4. Develop expertise with technology, equipment, and systems by selecting the systems to be used in conducting forest operations to plan and conduct activities that achieve silvicultural objectives.
5. Demonstrate the ability to plan and administer safe working practices in a variety of forest operations.
6. Demonstrate the knowledge of the potential effects of forest operations on soils, wildlife and water resources by being able to show the tradeoffs of various harvesting systems on soils, wildlife and water resources.
7. Demonstrate the ability to collect forest and financial data to analyze the profitability of various forest operations.
8. Demonstrate an understanding of the financial risk and rewards for investing in forest land by completed various financial analysis methods used to analyze forest investments.
9. Demonstrate knowledge of business laws by being able to apply them to common business practices conducted in a contracting relationship.

Detailed Program Description

The Forest Operations Management curriculum is shown in term-by-term sequence in Table 1, and in Audit form in Table 2. The Audit form in Table 2 is useful for tracking your progress toward graduation. This form is exactly like the one that will be used by your advisor for graduation audits. The term-by-term sequence shown in Table 1 incorporates both course prerequisites and the term in which the courses are taught. There are a few cases where courses may be taken in more than one term. An example of this is the arrangement of English Composition (WR 121), Lifetime Fitness for Health (HHS 231), and Speech (COMM 111 or 114) in the Freshman year — these courses are scheduled alphabetically by your last name, hence you may be taking them in a different order than shown. However, in general, there are no guarantees that courses will be taught at times that do not conflict with other required courses except during the term identified on Table 1. For this reason, **it is imperative that you consult with your advisor any time you wish to depart from the schedule given in Table 1. Missing a single course in the term in which it is offered could delay completion of your degree by an entire year.** The following list of bullets address specific details that you must consider as you take courses.

This degree program meets all of the coursework requirements for a minor from the College of Business. Student in the Forest Operations Management Curriculum must apply to the College of Business to be admitted to the Business Minor. The entrance requirements are a 2.5 grade point average for the two prerequisite courses (Math 241 and Econ 201). Students may apply during the term that the last prerequisite is being taken. Students must maintain a 2.5 grade point average within the courses for the Business Minor.

In addition to the coursework requirements in this program of study, students must complete 6 months of approved summer work experience. Typically this requirement is met through two summer of work, but substantial flexibility exists. Consult with your advisor for more information about this requirement. This is an excellent opportunity to gain practical experience while earning money for school. Typically there are many seasonal jobs or internships to select from, and the College of Forestry assists students in learning about opportunities.

- **Elective Baccalaureate Core Courses (may be taken S/U)**

The University Baccalaureate Core is designed to ensure that graduates of OSU receive a liberal education. The Baccalaureate Core includes many requirements that are fulfilled by courses required for the Forest Operations Management degree. For example, the Math, Physical Science, Biological Science, and Social Processes and Institutions requirements are fulfilled by Calculus for Management and Social Science (MATH 241), General Physics (PH 201), Forest Biology (FOR 240), and Introduction to Microeconomics (ECON 201) respectively. From the Forest Operations Management perspective, the Social Processes and Institutions required course (ECON 201) and the remaining Baccalaureate Core requirements are intended to broaden the educational experience of the Forest Operations Management student. These Baccalaureate Core courses are



Detailed Program Description continued

are divided into the perspective course groups, which include, Western Culture (3 cr), Cultural Diversity (3 cr), Literature and Arts (3 cr), and Difference Power and Discrimination (3 cr), and synthesis course groups, which include Contemporary Global Issues (3 cr), and Science Technology and Society (3 cr). They are elective in the sense that they may be selected from a University-approved list with the provision that no more than two courses from either the perspectives or synthesis groups may be taken from the same academic department. Note that Global Crises in Resource Ecology (FW 325) is a prescribed elective to meet both Global Issues and to satisfy an anticipated SAF accreditation requirement.

- **Fitness (course may be taken S/U; "S" or "D" or better required)**

The Baccalaureate Core requires completion of the 2-credit course Lifetime Fitness for Health (HHS 231) or Nutrition and Lifetime Fitness (NFM 232) and a 1-credit course from HHS 241-248 Lifetime Fitness: (various activities) or a physical activity course (PAC).

- **Communications (all courses must be graded; "D" or better required)**

A minimum of 10 credits of communications skill-building coursework is required for the Forest Operations Management degree. English Composition (WR 121), and Technical Writing (WR 327), are required for written communication, and either Public Speaking (COMM 111) or Argument and Critical Discourse (COMM 114) is required for oral communication.

In addition, a one-credit-hour component of the Senior Capstone Sequence (FE 450, 451) has been dedicated to written communication. The senior capstone is listed as a Writing Intensive Course (WIC), which is part of the University Baccalaureate Core. Numerous additional communication exercises, which are intended to build on the basic communication skills obtained from these communications courses, are embedded in Forest Operations Management courses at the junior (300) and senior (400) levels.

- **Using the Satisfactory/Unsatisfactory Grading System**

S/U grading can be selected only for **ELECTIVE** Baccalaureate Core courses counted toward the Forest Operations Management degree. Any other course not counted toward the Forest Operations Management degree can also be taken S/U.

- **Mathematics (must be graded; "D" or better required)**

Under the current requirements, a passing grade of "D" is acceptable. The reality is that grades less than a "C-" do not indicate proficiency adequate for success in the Forest Operations Management program. You should consult with your advisor about the need to retake Math courses for which a grade lower than "C-" is earned.

- **Basic Science (all courses must be graded; "C-" or better required in all College of Forestry courses; "D" or better required in all other courses)**

The Basic Science requirement included Physics, Chemistry, Soil Science, and an array of Forest Biology and Ecology courses. Under the current requirements, a passing grade of "D" is



Detailed Program Description continued

acceptable in Basic Science courses taught outside the College of Forestry. The reality is that grades less than a "C-" do not indicate proficiency adequate to continue in the Forest Operations Management program. You should consult with your advisor about the need to retake Science courses for which a grade lower than "C-" is earned.

- **Forest Operations Management Program Electives (all courses must be graded; "C-" or better required in all College of Forestry courses; "D" or better required in all other courses).**
- **Business Minor prerequisites and courses require an overall 2.5 grade point average in those *specific* courses.**

Program electives are intended to allow students to focus on a particular area of interest. **The courses that satisfy this requirement are to be identified in consultation with your advisor, and must enhance your education with respect to any aspect of forest operations management.**

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Table 1. Forest Operations Management Curriculum Flow Chart

| Freshman Year (44) | | | | | | | | |
|--------------------|---------------------------------------|----|--------------------|---------------------------------------------------|----|-----------------|----------------------------------------------------|----|
| Fall Term | | | Winter Term | | | Spring Term | | |
| Course | Title | Cr | Course | Title | Cr | Course | Title | Cr |
| CCE 201 | Civil Engr II: Engr Graphics & Design | 3 | MTH 241 | Calculus for Management and Social Science | 4 | ECON 201 | Introduction to Microeconomics [BC] | 4 |
| CH 121 | General Chemistry | 5 | WSE 210 | Wood Technology and Utiliza- | 4 | COMM 111 or 114 | Public Speaking or Argument and Critical Discourse | 3 |
| FOR 111 | Introduction to Forestry | 3 | HHS 231 | Lifetime Fitness for Health | 2 | FOR 141 | Tree and Shrub Identification | 3 |
| FE 101 | Introduction to Forest Engineering | 2 | HHS 241-248 or PAC | Lifetime Fitness or Physical Activity | 1 | FE 308 | Forest Surveying | 4 |
| WR 121 | English Composition | 3 | FE 102 | Forest Engineering Problem Solving and Technology | 3 | | Term Total | 14 |
| | Term Total | 16 | | Term Total | 14 | | | |

| Sophomore Year (46) | | | | | | | | |
|---------------------|---------------------------------------|----|-------------|-------------------------|----|-------------|------------------------------------|----|
| Fall Term | | | Winter Term | | | Spring Term | | |
| Course | Title | Cr | Course | Title | Cr | Course | Title | Cr |
| ST 351 | Introduction to Statistical Methods | 4 | Elective | Cultural Diversity [BC] | 3 | FE 310 | Forest Route Surveying | 4 |
| BA 260 | Intro to Entrepreneurship | 4 | WR 327 | Technical Writing [BC] | 3 | FOR 240 | Forest Biology [BC] | 4 |
| PH 201 | General Physics | 5 | FE 309 | Forest Photogrammetry | 4 | CSS 205 | Soils: Sustainable Ecosystems [BC] | 4 |
| FE 357 | GIS & Forest Engineering Applications | 3 | BA 211 | Financial Accounting | 4 | BA 230 | Business Law | 4 |
| | Term Total | 16 | | Term Total | 14 | | Term Total | 16 |

| Junior Year (48) | | | | | | | | |
|------------------|-----------------------------------------------------------------------------------------------|----|-------------|------------------------------|----|-------------|----------------------------------------------|----|
| Fall Term | | | Winter Term | | | Spring Term | | |
| Course | Title | Cr | Course | Title | Cr | Course | Title | Cr |
| FOR 321 | Forest Mensuration | 5 | BA 213 | Managerial Accounting | 4 | FOR 443 | Silvicultural Practices | 5 |
| FOR 330 | Forest Resource Economics I | 4 | FE 434 | Forest Watershed Management | 4 | FOR 429 | Integrated Prescriptions | 3 |
| FE 371 | Harvesting Process Engineering | 4 | FOR 331 | Forest Resource Economics II | 4 | FE 447 | Tactical and Operational Planning Techniques | 3 |
| FW 325 or BI 349 | Global Crises in Resource Ecology or Biodiversity: Causes, Consequences and Conservation [BC] | 3 | Elective | Western Culture [BC] | 3 | FE 440 | Forest Operations Analysis | 3 |
| | Total Term | 16 | | Total Term | 15 | FE 471 | Harvesting Management | 3 |
| | | | | | | | Term Total | 17 |

| Senior Year (42) | | | | | | | | |
|------------------|--------------------------------------------------|----|-------------|-----------------------------|----|-------------|--------------------------------------------|----|
| Fall Term | | | Winter Term | | | Spring Term | | |
| Course | Title | Cr | Course | Title | Cr | Course | Title | Cr |
| BA 351 | Managing Organizations | 4 | BA 460 | Venture Management | 4 | Elective | Literature & Arts [BC] | 3 |
| BA 390 | Marketing | 4 | FE 451 | Forest Operations Design II | 3 | Elective | Science, Technology & Society [BC] | 3 |
| FE 448 | Forest Operations, Planning and Scheduling [WIC] | 3 | FE 460 | Forest Operations | 3 | Elective | FOM Restricted Elective | 4 |
| FE 441 | Production Planning | 3 | Elective | FOM Restricted Elective | 4 | Elective | Difference, Power, and Discrimination [BC] | 3 |
| FE 480 | FE Practice & Professionalism | 1 | | Term Total | 14 | | Term Total | 13 |
| | Term Total | 15 | | | | | | |

| Course Number | Course Title | Basic Science | Forestry & Forestry Related | Forest Operations | Business | Other | Term Taken | Grade | Comments (Substitutions, +/- Credits, Etc) |
|-----------------------|------------------------------------------------------------|---------------|-----------------------------|-------------------|----------|-------|------------|-------|--------------------------------------------|
| | | | | | | | | | |
| CCE 201 | Civil Engr II: Engr Graphics & Design | | | 3 | | | | | |
| CH 121 | General Chemistry | 5 | | | | | | | |
| WR 121 | English Composition [BC] | | | | | 3 | | | |
| FOR 111 | Introduction to Forestry | | 3 | | | | | | |
| FE 101 | Introduction to Forest Engineering | | | 2 | | | | | |
| MTH 241 | Calculus for Management & Social Science | 4 | | | | | | | |
| WSE 210 | Wood Technology and Utilization | | 4 | | | | | | |
| HHS 231 | Lifetime Fitness: Activity [BC] | | | | | 2 | | | |
| HHS241-248 or PAC | Lifetime Fitness (various activities) or Physical Activity | | | | | 1 | | | |
| FE 102 | Forest Engr Problem Solving & Technology | | | 3 | | | | | |
| ECON 201 | Introduction to Microeconomics [BC] | | | | 4 | | | | |
| FOR 141 | Tree and Shrub Identification | | 3 | | | | | | |
| COMM 111 Or COMM 114 | Public Speaking [BC] or Argument & Critical Discourse [BC] | | | | | 3 | | | |
| FE 308 | Forest Surveying | | | 4 | | | | | |
| +/- Subtotal | | | | | | | | | |
| SOPHOMORE YEAR | | | | | | | | | |
| PH 201 | General Physics | 5 | | | | | | | |
| BA 260 | Introduction to Entrepreneurship | | | | 4 | | | | |
| FE 357 | GIS and Forest Engineering Applications | | | 3 | | | | | |
| ST 351 | Introduction to Statistical Methods | 4 | | | | | | | |
| BA 211 | Financial Accounting | | | | 4 | | | | |
| FE 309 | Forest Photogrammetry | | | 4 | | | | | |
| WR 327 | Technical Writing [BC] | | | | | 3 | | | |
| | Cultural Diversity [BC] | | | | | 3 | | | |
| FE 310 | Forest Route Surveying | | | 4 | | | | | |
| CSS 205 | Soils: Sustainable Ecosystems [BC] | | 4 | | | | | | |
| FOR 240 | Forest Biology [BC] | | 4 | | | | | | |
| BA 230 | Business Law | | | | 4 | | | | |
| Leave | | | | | | | | | |

Restricted electives are those approved by advisor before taking and they may include:

| Course # | Title | Credit Hours |
|-----------------|-------------------------------------------|---------------------|
| BA 275 | Quantitative Business Methods | 4 |
| BA 463 | Family Business Management | 4 |
| CE 461 | Photogrammetry | 3 |
| CE 463 | Control Surveying | 4 |
| CE 465 | Oregon Land Survey Law | 3 |
| CE 469 | Property Surveys | 3 |
| CEM 201 | Engineering Graphics and Design | 3 |
| CEM 341 | Construction Estimating | 4 |
| ENGR 490 | Engineering Economic Analysis | 3 |
| FE 311 | Advanced Forest Surveying | 4 |
| FOR 420 | Advanced Aerial Photos and Remote Sensing | 3 |
| FOR 421 | Advanced GIS Applications in Forestry | 3 |
| FOR 462 | Natural Resource Policy and Law | 3 |
| FOR 463 | Environmental Policy and Law Interactions | 3 |
| IE 355 | Statistical Quality Control | 4 |
| SPAN 211 | Second-Year Spanish | 4 |
| SPAN 212 | Second-Year Spanish | 4 |
| SPAN 213 | Second-Year Spanish | 4 |
| ST 352 | Regression Analysis | 4 |
| WSE 455 | Forest Products Marketing | 3 |