

7.0 APPENDICES

APPENDIX 7-A. Proposal to Merge and Rename the Forest Resources and Forest Engineering Degrees into the Sustainable Forest Management Degree

Master of Forestry, Master of Science and
Doctor of Philosophy in
Sustainable Forest Management

Oregon State University

College of Forestry
Forest Engineering, Resources and Management

FERM Category 1 Proposal: Merge and Rename the Forest Resources and Forest Engineering Degrees into the Sustainable Forest Management Degree (November 5, 2010, updated to reflect liaison as of November 29, 2010.)

Name Change to Graduate Degree in Sustainable Forest Management (MF, MS, PhD)
Termination of Graduate Degree in Forest Resources (MF, MS, PhD)
Termination of Graduate Degree in Forest Engineering (MF, MS, PhD)

Abstract: The proposal reflects the expanded departmental composition and new potential that resulted from reorganization of three departments (Forest Resources, Forest Engineering, and Forest Science) in the College of Forestry to two departments (Forest Engineering, Resources, and Management, and Forest Ecosystems and Society). This proposal focuses on the graduate degrees of the Forest Engineering, Resources, and Management department. Concentrations available under the Forest Resources and Forest Engineering degrees would be merged into the Sustainable Forest Management degree. A proposal has also been prepared by the Forest Ecosystem and Society department.

1. Program description

- a. CIP: 030506

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- b. *Overview: (Brief overview (1-2 paragraphs) of the proposed program, including its disciplinary foundations and connections; program objectives; programmatic focus; degree, certificate, minor, and concentrations offered)*

The Department of Forest Engineering, Resources, and Management at Oregon State University offers graduate programs in Forest Resources (MF, MS, and PhD) and Forest Engineering (MF, MS, and PhD) that are not offered at other campuses in OUS. Teaching and research within the department emphasizes active management of forests to achieve a wide array of society objectives. Faculty members within the new department comprise groups of scientists with overlapping disciplines and interests necessary for solution to research or policy challenges. Graduate students are essential participants in carrying out the research programs for the department and are trained to meet employment needs in basic and applied research, education, and public and private enterprises.

Nationally, training of graduate and undergraduate students in forest management and sciences is moving toward ever more interdisciplinary approaches to complex processes, replacing traditional discipline-specific courses of study. The merger of the Forest Resources and Forest Engineering programs into a Sustainable Forest Management program reflects this movement. With the overarching single major, we will continue to offer concentrations in all areas of active forest management including: 1) Forest Operations Planning and Management; 2) Forest Policy Analysis and Management; 3) Forest Biometrics and Geomatics; 4) Silviculture, Fire, and Forest Health; 5) Forest Watershed Management; and 6) Engineering for Sustainable Forestry. The Forest Policy Analysis and Management area of concentration is jointly sponsored by the Forest Engineering, Resources and Management Department, Applied Economics Graduate Program and the Agricultural and Resource Economics Department.

The name change to Sustainable Forest Management reflects the parallel revision of our core course curriculum (separate Category II proposal), from discipline-focused introductory courses to more integrated courses which all graduate students in the department must take before continuing into specialty courses in preparation for their chosen concentration area. The name change also reflects increasing integration of faculty research interests, funding and employment opportunities. Lastly the name change and core course revision will clearly state the broad foundation of the degree for our graduate students, thus positioning them for future employment.

- c. *(Course of study – proposed curriculum, including course numbers, titles, and credit hours.)*

The graduate program in Sustainable Forest Management (SFM) will emphasize the management of forests to meet a defined set of ecological, economic and social

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criteria. The SFM graduate program provides students a strong grounding in the principles and techniques of active management of forests to improve forest health and condition while producing a full range of products and ecosystems services. The SFM Graduate Program consists of an 12-credit core required of all students, and a the specialization in one of six areas of concentration: 1) Forest Operations Planning and Management; 2) Forest Policy Analysis and Management; 3) Forest Biometrics and Geomatics; 4) Silviculture, Fire, and Forest Health; 5) Forest Watershed Management; and 6) Engineering for Sustainable Forestry. Students must choose their specialization during their first year of study. Incoming students without a prior degree in forest management may be required to undertake an additional set of forestry core courses.

All graduate students majoring in Sustainable Forest Management are required to undertake a 12-credit core in forest management and research methods including (1) *Research Methods and Critical Thinking (3 credits total)*: Lectures and seminars in research philosophies and methods with special emphasis on applied research; (2) *Grad Level Statistics or Econometrics (6 credits total)*: Graduate level courses in either statistics or econometrics to be agreed upon by the student's committee and approved by Program Director, and (3) *Sustainable Forest Management (3 credits total)*: An overview of the role of forests in providing products and ecosystems services around the world and criteria and indicators of sustainable forest management, forest policy and regulations. An additional 6-7 credits in a SFM program specialization from one of the six specialization areas of concentration is required. PhD students will also be required to undertake a teaching practicum. All students are also required to take 1 credit of graduate seminar during the first year of their program to present their research project or thesis proposal and 1 credit of graduate seminar at the end of their program to present their project or thesis results. All core and specialty courses currently exist except for the Sustainable Forest Management core course (3 credits); two specialty courses: *Forest Supply Chain Management (3 credits)* and *Forest Geomatics (3 credits)*, and one modification to an existing course, *Tactical and Operational Planning (3 credits)*. Category II proposals are being prepared for these four courses. Students will continue to complete or exceed the university standards for MF/MS (45 credit) and PhD (108 credit) programs.

The specific program will be developed by the student and student's committee and may include significant work in another field as needed to prepare the student for thesis or dissertation research. For example, in Forest Policy Analysis and Management, if the policy question is wildland fire management the MS and PhD programs of study might include:

Required Courses:		Credits	Level
FOR 561	Forest Policy Analysis	3	G
AEC 512	Microeconomic Theory I	4	G

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Supporting courses for an MS program (34-36 credits):

FOR 534	Economics of the Forest Resource	3	G
FOR 536	Wildland Fire Science and Management	4	g
FOR 546	Wildland Fire Ecology	3	g
AEC 523	Statistics and Optimization for Economics	4	G
AEC 525	Applied Econometrics	4	G
FOR 521	Spatial Analysis of Forested Landscapes	3	g

One of:

ST 581	Linear Programming	3	g
FOR 557	Techniques for Forest Resource Analysis	4	g
IE 521	Industrial Systems Optimization I	3	G

One of:

PS 574	Natural Res Policy and Bureaucratic Politics	4	G
FOR 562	Natural Resource Policy and Law	3	g

Supporting courses for a PhD program, 47-49 credits:

FOR 534	Economics of the Forest Resource	3	G
FOR 536	Wildland Fire Science and Management	4	g
FOR 546	Wildland Fire Ecology	3	g
AEC 523	Statistics and Optimization for Economics	4	G
AEC 525	Applied Econometrics	4	G
FE 640	Heuristics for Combinatorial Optimization	3	G
PS 574	Natural Res Policy and Bureaucratic Politics	4	G
FOR 562	Natural Resource Policy and Law	3	g
FOR 521	Spatial Analysis of Forested Landscapes	3	g

One of:

ST 581	Linear Programming	3	g
IE 521	Industrial Systems Optimization I	3	G

Two of:

AEC 612	Advanced Microeconomic Theory I	4	G
AEC 515	Macroeconomic Theory	4	G
AEC 615	Advanced Macroeconomic Theory	4	G
AREC 651	Advanced Natural Resource Economics	3	G
AREC 652	Advanced Environmental Economics	3	G

G = graduate students only; g = slash courses

- d. *(Manner in which the program will be delivered, including program location (if offered outside of the main campus), course scheduling, and the use of technology (for both*

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on-campus and off-campus delivery.) This proposal does not suggest any change from the current modes and locations of program delivery.

- e. *(Ways in which the program will seek to assure quality, access and diversity)* Application and admittance requirements for this program are consistent with the approaches that have been used in the Forest Resources and Forest Engineering Graduate degree programs for many years. We recruit students primarily through our web presence, and also advertise nationally and internationally when we have a graduate research assistantship available. Teaching assistantships as available are distributed to graduate students so that all have an opportunity to apply for available positions. Selection of TAs are made by the instructor. Women and minorities have been under-represented in forestry. We are working toward achieving a gender balance among graduate students in both programs with 7 women, 36 men and 5 ethnic minorities represented in our graduate student body in the 2010-11 academic year. We annually assess student performance using a standardized form signed by the student, the adviser and the department head that ensures that adequate progress is being made in each student's program. Finally, an exit interview is conducted by the department head with all graduate students to inform an adaptive management approach to making continual improvements in graduate student experiences in the department.

Each faculty member is asked to indicate how they are contributing to enhancing diversity in the department during their annual PROF review. We are working closely with the College's Diversity and Social Justice Committee to conduct focus group sessions with students in each of the OSU cultural centers to have information that will guide changes in making our department a more welcoming environment for a diverse student body.

- f. *(Anticipated fall-term headcount and FTE enrollment over each of the next 5 years)* While we have normal uncertainties about projected enrollment, we are optimistic that the SFM program will build upon our historical student base and attract an emerging population of students seeking training in collaborative, interdisciplinary science. We currently have 44 graduate students supervised by faculty in the FERM Department including students in the Forest Engineering (FE), Forest Resources (FR), Forest Science (FS), and Applied Economics (AE) degree programs and Institute of Water and Watersheds (IWW). Table 1 represents what we feel to be a conservative estimate of likely enrollment in the FERM graduate program.

Table 1. Expected fall-term head count enrollment in the FERM graduate program for each of the next 5 years.

Degree	Mean AY 05-10	AY10-11	AY11-12	AY12-13	AY13-14	AY14-15
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MF	2	4	6	8	12	18
MS	15	23	25	26	28	30
PhD	20	16	18	20	22	24

g. *(Expected degrees/certificates produced over the next 5 years)*

Table 2. Expected degrees awarded in each of the next 5 years in each degree program

Degree	Mean AY 05-10	AY10-11	AY11-12	AY12-13	AY13-14	AY14-15
MF	2	2	3	3	7	13
MS	5	8	10	10	10	11
PhD	5.2	5	6	6	6	6

h. *(Characteristics of students served (resident/non-resident/international; traditional/nontraditional; full/part-time))* Table 3 is a snapshot of FERM graduate student enrollment in spring term, 2010. Included are students in the current Forest Engineering Program, Forest Resources Program, Forest Sciences Program and those students in the current Institute for Water and Watersheds (IWW) and Applied Economics Program who are advised by faculty in the FERM department. Most of our graduate students are non-residents and many receive either a partial or full graduate research assistantship or teaching assistantship. The number of non-traditional, mid-career students is expected to increase somewhat as the demographics of the workforce changes, but most students will be full-time traditional students simply because of the research support that is available to students through research grants. Nonetheless, we always have students with families who are balancing graduate school responsibilities with other priorities

Table 3. Fall term, 2010 enrollment.

Resident	Non-Resident	International	Minority	Over 25	Total
15	25	7	5	36	41*

* 3 continuing students are not enrolled Fall, 2010

i. *(Adequacy and quality of faculty delivering program)* FERM has a cadre of faculty who are internationally recognized as among the best in the world in sustainable forest management. Their research productivity is outstanding. The average number of graduate student advisees per regular on-campus faculty member is currently 2.4. The Tenure/Tenure Track (T/TT) professorial faculty produced 59 research publications and 5 text books during the year, and faculty in the department led over 100 workshops and outreach presentations. The faculty regularly publish in

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top-tier national, international, and applied journals appropriate to their disciplines. Our T/TT faculty is dominated by tenured individuals. FERM department faculty members are excellent instructors. Departmental SET scores for the class (Question 1) were 4.9 and for the instructor (Question 2) were 5.2 in Fall 2009 (the maximum possible score is 6.0).

- j. *(Faculty resources – full-time, part-time, adjunct)* See Tables 4 and 5. In addition to our tenure/ tenure track faculty, a large number of our courtesy, adjunct and affiliate faculty direct graduate students or serve on graduate committees. In addition, our Faculty Research Assistants and Associates provide important research support for our research faculty and often work side by side with graduate students in the lab or in the field.

Table 3. Forest Engineering, Resources and Management Workforce Demographics: summary. Extension faculty also have professorial rank.

	Total	Female	Male
Professorial faculty	18	1	17
Extension faculty	8	0	8
Fixed Term instructors	5	3	2
Courtesy Faculty	1	0	1
Adjunct Faculty	6	0	6
Affiliate Faculty	0	0	0
Faculty Research Assistants & Research Associates	17	7	10
Professional faculty	1	1	0
Classified Staff	3	3	0

Vitae for faculty members are available on request.

Table 5. FERM teaching, extension and research faculty who engage regularly with students or are eligible to serve on graduate committees.

Adams, Darius M. Emeritus Professor, PhD FOR 111. Introduction to Forestry	Forest sector modeling; estimating the impacts of carbon sequestration strategies through tree planting; price-based substitution of wood and non-wood products.
Adams, Paul W. Professor and Forest Watershed Extension Specialist, PhD	Extension: develops and presents seminars, training programs and educational materials related to forest practices and watershed resources, watershed effects of wildfire and post-fire treatments, as well as on municipal water supplies from forest lands

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<p>FE 460/560. Forest Operations Regulations and Policy Issues</p>	<p>Research: Forestry and forest soils, public issues and policies on forest lands, effects of mechanized timber harvesting and fuel reduction treatments on soil properties, including the growth of residual trees near compacted and tilled skid trails.</p> <p>Advises FE graduate students with interest in real-world problem solving through integration of soil and watershed science with forest practices and policies.</p>
<p>Bailey, John Duff Associate Professor, PhD</p> <p>FOR 429 - Integrated Prescriptions FOR 436 - Wildland Fire Sci and Fuels Mgmt FOR 443/543 - Silvicultural Practices FOR 446 - Wildland Fire Ecology</p>	<p>Evaluates the role of stand structure and dynamics on fire hazard, mature forest development, sustainable forest management, and post-fire recovery. Research considers the broad economic, ecological, and sociopolitical implications on forest.</p>
<p>Bennett, Max Associate Professor/Extension Specialist, MS</p>	<p>Forestry and Natural Resource Agent, Jackson/Josephine Counties, area Forester. Rogue Tree School 2010 instructor, 26 classes on care and management of trees and forests. http://extension.oregonstate.edu/sorec/Forestry/</p>
<p>Boston, Kevin Associate Professor, PhD</p> <p>FE 415/515 Forest Road Engineering FE 416/516 Forest Road System Management FE 450/550 Operations Design I FE 451/551 Operations Design II FE 565 Supply Chain Management</p>	<p>Forest transportation planning, forest road design and management systems and supply chain management for the primary forest industry.</p> <p>Develop techniques to plan, schedule, and monitor the primary forest products supply chain.</p>
<p>Bowers, Steve Associate Professor, MF Lane County Extension Forestry Agent</p>	<p>Log Marketing and Evaluation, timber Measurements</p>
<p>Fitzgerald, Steve Professor/Deschutes County Extension Agent, MS</p>	<p>http://extension.oregonstate.edu/deschutes/</p>
<p>Fletcher, Richard Professor/Benton County Extension Agent, PhD</p>	<p>http://extension.oregonstate.edu/benton/</p>
<p>Hailemariam, Temesgen Associate Professor, PhD</p> <p>FOR 321 Forest Mensuration FOR 524 Forest Biometrics</p>	<p>Forest Biometrics and Measurements. Develop imputation and sampling techniques to assess, monitor, and analyze forest resources; develop quantitative methods to characterize, quantify, and integrate tree/crown attributes and site productivity; and integrate airborne LiDAR and ground data to estimate status, change, and trends.</p>
<p>Hann, David Professor, PhD</p>	<p>Forest Modeling. Development of growth and yield information for major PNW tree species; generation</p>

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<p>FOR 322 - Forest Models FOR 507 - Seminar FOR 525 - Forest Modeling</p>	<p>of an animating interface for growth and yield models; development of sampling methodologies for characterizing complex forest stands ORegon Growth ANalysis and ProjectiON; also known as: ORGANON The Visible Forest: Computer generated visualization of within stand structure of the forest from field data or growth model projections.</p>
<p>Huntington, Geoffrey Senior Instructor JD FOR 462 Natural Resource Policy & Law FOR 463/563 Environment Policy & Law Interactions</p>	<p>Affiliations: U.S. Institute for Environmental Conflict Resolution, Certified Practitioner Oregon Wetlands Conservancy, Board Chair</p>
<p>Johnson, Jim Professor/Associate Dean for Extended Education, PhD</p>	<p>Recent projects have included "Adoption of Sustainable Forestry Practices by Non-Industrial Private Forest Owners", "Sustainable Forestry in Bolivia", "International and Domestic Approaches to Building and Supporting Extension Forestry Programs", and "Sustainable Forestry Education for Loggers and Landowners."</p>
<p>Kellogg, Loren Professor/Lematta Professor of Forest Engineering, PhD FE 370 Harvesting Operations FE 371 Harvesting Process Engineering FE 471/571 Harvesting Management</p>	<p>Forest operations analysis, small-diameter timber harvesting mechanized logging systems, thinning and fuels reduction, harvesting methods for alternative silviculture systems, international forest engineering Mechanized harvesting of small timber, harvesting economics of alternative silviculture systems for timber and mature forest wildlife species, harvesting systems to improve forest health, young stand management and skyline thinning.</p>
<p>Kiser, James Assistant Professor, PhD FE 309 Forest Photogrammetry FE 310 Forest Route Surveying FE 311 Advanced Forest Surveying</p>	<p>Damage to residual trees during commercial thinning operations, Response of trees and stands following commercial thinning damage, New technology development and applications in forest operations including GPS, lasers and photogrammetry. Research: The Effects of mechanical damage on residual coastal Douglas-fir stands following commercial thinning</p>
<p>Landgren, Chal Professor, MS Washington County Extension Agent</p>	<p>http://extension.oregonstate.edu/washington/</p>
<p>Maguire, Douglas Associate Professor, Silviculture and Biometrics Hayes Professor of Silviculture</p>	<p>Mechanisms of response to fertilization in Douglas-fir plantations; foliage age class dynamics in Douglas-fir; silvicultural control of crown development and wood quality; Swiss needle cast growth impact; stand dynamics after variable-</p>

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Director of Center for Intensive Planted-forest Silviculture (CIPS), PhD	retention silvicultural treatments; growth and yield of mixed conifer forests of eastern Oregon; natural regeneration in ponderosa pine forests.
Maness, Thomas Professor and Department Head, PhD FOR 330 Forest Resource Economics I	Research interest is in developing innovative forest policies and practices to balance the production of traditional forest products with society's expanding need for ecosystem services, energy, and climate mitigation. Research falls in three broad categories: *Strategic Land-use Planning and Forest Tenure Policy *Value Chain Optimization *Energy and Climate Policy
McDonnell, Jeffrey Professor/University Distinguished Professor/Richardson Chair in Watershed Science, PhD	Conceptualization of streamflow generation processes in steep terrain; How water flowpaths on steep slopes affect slope stability; Use of isotope tracers for determining water source, age and flowpath, study of forest road and logging effects on stream hydrology and water quality *Conceptualization of streamflow generation processes in steep terrain *How water flowpaths on steep slopes affect slope stability *Use of isotope tracers for determining water source, age and flowpath study of forest road and logging effects on stream hydrology and water quality
Montgomery, Claire Professor, PhD FOR 331 - Forest Resources Economics II AEC 512 - Microeconomic Theory I FOR 534 - Economics of the Forest Resource	Economics of biodiversity, forest land use trade-offs, economics of wildland fire. *Community considerations in prioritizing forest fire fuel treatments *Letting fires burn: an analysis of the opportunity cost of fire suppression *Computational sustainability: computational methods for a sustainable environment, economy, and society *Extensions of RPA timber assessment modeling *Interaction of private and public forest fire risk management decisions
Murphy, Glen Professor/Stewart Professor in Forest Engineering, PhD FE 440/540 Logging Operations Analysis FE 441/54 Production Planning and Control in Logging	Production economics and impacts of alternative silvicultural systems, small timber harvesting systems, smart sensor systems for improved wood utilization, scanning for value on mechanized harvesters

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<p>Parker, Bob Associate Professor/OSU Extension Forester, MS</p>	<p>Forest soils; forest regeneration; timber harvesting; forest measurements</p>
<p>Punches, John Associate Professor, MS</p>	<p>Area Staff Chair for Coos, Douglas and Josephine Counties, and specialist in development of Extension Service Districts in Oregon. His office is located off campus in Roseburg. John supervises Extension faculty from OSU's colleges of Forestry; Education; Health and Human Sciences; Agriculture and Forestry. Research interests include tree growth processes and wood quality.</p>
<p>Pyles, Marvin Professor/Knudson Professor of Forestry, PhD</p> <p>FE 101 Introduction to Forest Engineering FE 315 Soil Engineering FE 316 Soil Mechanics FE 330 Fluid Mechanics and Hydraulics FE 480 Forest Engineering Practice and Professionalism</p>	<p>Engineering properties of soils, slope stability, hydraulics and hydrology, logging mechanics, forest roads</p> <p>Fish passage at low volume road crossings, analytical modeling of tail spars and intermediated supports, failure mechanisms in shallow forest soils, peak flow hydrology.</p>
<p>Reed, Scott A. Professor, PhD Dean of Extension Services</p>	<p>Characterization of forest development opportunities; policy alternatives to stimulate nonindustrial private forest management; educational needs of natural resource managers and landowners; application of new technologies, program evaluation.</p>
<p>Rose, Robin Professor, PhD Director, Vegetation Mgmt Research Coop Director, Nursery Technology Coop</p>	<p>Reforestation; plant physiology; forest nursery management; nursery stock evaluation; forest soils; vegetation management; international forestry – India, Thailand, Vietnam, China, Taiwan, New Zealand, South Africa.</p>
<p>Sessions, John University Distinguished Professor Strachan Chair of Forest Operations Management, PhD</p> <p>FE 447 Tactical and Project Planning FE 449/549.Strategic and Tactical Forest Planning FE 470/570 Logging Mechanics FE 499 Biomass Assessment, Harvesting and Transport FE 552 Forest Transportation FE 572 Logging Vehicle Performance</p>	<p>Developing techniques for transportation planning, tactical forest planning, strategic forest planning, decision support systems for road management, strategic planning on State forests, treatment and utilization of small diameter stems in federal forests.</p> <p>Wood transportation, optimal bucking practices, timber harvest scheduling, timber supply, scheduling of silviculture practices, fire hazard reduction, logging mechanics, international forestry.</p>

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<p>FE 640 Combinatorial Optimization in Forest Planning FE/FOR 456 International Forestry FOR 457/557. Techniques for Forest Resource Analysis</p>	
<p>Shaw, David Assistant Professor, PhD Extension Forestry Health Agent Director, Swiss Needle Cast Cooperative</p> <p>FS 599 Ecological & Economic Impact of Non-native Pests & Pathogens FS 599 Native Forest Diseases</p>	<p>Biology and management of Swiss needle cast in Douglas-fir, invasive insect and disease pests, silviculture and integrated pest management, the interactions of fire and forest pests, and biology and ecology of native insect and disease organisms considered pests. Interests also include the biology and ecology of mistletoes.</p> <p>Evaluation of Models Used to Predict Post-Fire Tree Mortality.</p>
<p>Skaugset, Arne Associate Professor, PhD</p> <p>FE 430/530 Watershed Processes FE 434/534 Forest Watershed Management FE 532 Forest Hydrology FE 533: Forest Hydrology Lab FE 536 Forest Erosion Processes</p>	<p>Propagation of harvesting related stream temperatures downstream during summer low flows in forested headwater streams, attenuation of high intensity rainfall by forest vegetation, hydrology of forest roads, interaction of forest roads and hillslopes, forest roads and watershed hydrology, effect of DEM error and grid resolution on predicting landslide locations using terrain analysis and topographic indices, and the spatial and temporal variability of rainfall and its influence on the occurrence of landslides</p>
<p>Tesch, Steven Professor, PhD Executive Associate Dean and Associate Director of Forest Research Laboratory</p>	<p>Co-PI for the college's national Center for Wood Utilization Research and as the program manager for the Forest Research Laboratory's Fish and Wildlife Habitat in Managed Forests Research program. Provided administrative leadership to establish the Watersheds Research Cooperative, which is a major collaborative effort to improve scientific understanding of modern forestry practices on water quality, native fish and aquatic habitats.</p>
<p>Wing, Michael Associate Professor, PhD Associate Director of Environmental Remote Sensing Applications laboratory</p> <p>FE 102 Forest Engr. Problem Solving and Technology FE 308 Forest Surveying FE 357 FIS and Forest Engr. Applications FOR 421/521 Spatial Analysis of Forested Landscapes</p>	<p>GIS and Spatial Analysis</p>

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- k. *(Other staff)* The departmental office is supported by an office manager, three full-time support staff, and one part-time employee.
- l. *(Facilities, library other resources)* FERM is housed primarily in Peavy Hall, which provides excellent office, laboratory, classroom, computer, GIS, and distance education space.

The OSU College forests are living laboratories where active forest management practices provide teaching, research, and demonstration opportunities for students of all ages, forest managers, and for the citizens of Oregon. The College forests comprise the McDonald-Dunn, Spaulding, Marchel, and Blodgett forest properties, totaling about 14,000 acres.

The College of Forestry supports a sophisticated computer network for electronic connectivity among the three-building forestry complex, county Extension offices, the College forests, the H.J. Andrews Experimental Forest, and collaborating agencies.

In addition to the resources of the Valley Library, students in the College of Forestry have access to the Self-Learning Center. Located in Peavy A252, the Self Learning Center is a media-rich learning environment that serves the students of the College, providing access to reserve readings, audiovisual programs, and other self-paced learning materials.

- m. *(Anticipated start date)* We would like to begin the revised program as soon as possible, preferably Fall term, 2010.

2. Relationship to Mission and Goals

a. *(Manner in which the proposed program supports the institution's mission and goals for access, student learning, research and/or scholarly work, and service.)* The department has a balanced distribution of FTE among teaching, research, outreach and service. All four efforts interact broadly with colleagues, clients and interests groups throughout the state and across the globe. Students are encouraged to participate in all four types of activity. Most students are fully supported on assistantships; GRA opportunities are advertised on the FERM web site and through disciplinary list-serves.

b. *(Connection of the proposed program to the institution's strategic priorities and signature areas of focus.)* OSU's Strategic Plan, Phase II, identified Advancing the Science of Sustainable Earth Ecosystems as a signature area of distinction. This newly-reorganized department and its graduate program are poised to take the integration of forest management, policy analysis, and forest operations for sustainable forest management to a new level for OSU. The revision of this

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graduate program is in recognition of this potential and is a mechanism to assure its progress.

c. *(Manner in which the proposed program contributes to OUS's goals for access, quality learning, knowledge creation and innovation, and economic and cultural support of Oregon and its communities.)* See 1e and 2a above. FERM is a leader at OSU in the sustainable forest management. The T/TT professorial faculty produced 59 research publications and 5 text books during the year. FERM is also a leader at OSU in the community outreach arena. Faculty in the department led over 100 workshops and outreach presentations.

d. *(Manner in which the proposed program meets broad statewide needs and enhances the state's capacity to respond effectively to social, economic, and environmental challenges and opportunities.)* See 2c above for ways in which the program assists development of the state's economic capacity. The teaching, research and outreach of the department are central to meeting the state's environmental challenges and opportunities. The science we are engaged in is central to concepts of sustainability, ecosystem services and natural resources management.

3. Accreditation

The Master of Forestry (general forest management) and Master of Forestry (silviculture) are accredited by the Society of American Foresters (SAF). The SAF accreditation cycle returns in 2011 where the SFM program will be reviewed.

4. Need

a. *(Evidence of market demand.)* Faculty receive more direct inquiries every winter from potential applicants who do not wind up submitting applications because of an unavailability of assistantships with that advisor. This level of demand for positions is generated by a web presence and the reputation of the program and individuals around the world. OSU has one of the few exclusive colleges of forestry left in North America and one of the very best. This department benefits from the outstanding reputation of its faculty among colleagues at other institutions. We are seeking to change our program name to more accurately reflect the reorganization of our department and its mission.

b. *(If the program's location is shared with another similar OUS program, proposal should provide externally validated evidence of need (e.g., surveys, focus groups, documented requests, occupational/employment statistics and forecasts). Not applicable.*

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c. *(Manner in which the program would serve the need for improved educational attainment in the region and state.)* The revised program will provide specific disciplinary opportunities in sustainable forest management in the natural resource setting but also strives to develop interdisciplinary skills and knowledge. The demand for disciplinary training has always been strong; the demand for integrated, interdisciplinary training has grown rapidly in natural resources.

d. *(Manner in which the program would address the civic and cultural demands of citizenship.)* See section 2b-d above. The natural resources of Oregon are essential to the economic and social well-being and identity of Oregonians. This program is educating the next generation of scientists and educators dealing with forest-based knowledge, concepts and values. An especially critical dimension of this program is providing graduates with the knowledge to manage forests sustainably for maximum societal benefit.

5. Outcomes and Quality Assessment

a. *(Expected learning outcomes of the program.)*

Graduates of our program will be able to

- be experts within their discipline (s)
- add to the base of knowledge and understanding in sustainable forest management
- demonstrate critical thinking skills
- pose appropriate and effective questions
- use interdisciplinary skills and knowledge to critically evaluate existing research
- identify and contribute to collaborative solutions in their discipline
- be able to communicate knowledgeably and effectively about current topics in natural resources policy
- be prepared to participate in and contribute to interdisciplinary research teams
- conduct rigorous, high-quality research

b. *(Methods by which the learning outcomes will be assessed and used to improve curriculum and instruction.)*

- Instructors are asked to include the learning outcomes in their courses and to evaluate students on them
- Course evaluations will be discussed as part of instructor performance reviews
- Preliminary and final exams (defenses)
- Department head exit interview
- Teaching evaluations are an integral part of promotion and tenure decisions and all teaching faculty undergo an external review of their materials and their effectiveness as instructors by peers as well as by the students with whom they have worked.

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c. *(Program performance indicators.)*

- Graduation rates
- Median GPA of student populations
- Publication and presentations
- Awards received
- Employment rate and type

d. *(Nature and level of research and/or scholarly work expected of program faculty; indicators of success.)* Faculty are expected to fund research programs with competitive and non-competitive grants and publish research results in peer-reviewed journals appropriate for the subject matter. See 2c.

6. Program Integration and Collaboration

a. *(Closely related programs in other OUS universities and Oregon private institutions.)* There are no closely related programs in Oregon. In Oregon (and around the world), there are individuals in educational institutions who do related research. Our faculty and graduate students collaborate with these individuals.

b. *(Ways in which the program complements other similar programs in other Oregon institutions and other related programs at this institution. Proposal should identify the potential for collaboration.)* NA. See 6a.

c. *(If applicable, proposal should state why this program may not be collaborating with existing similar programs.)* NA. See 6a

d. *(Potential impacts on other programs in the areas of budget, enrollment, faculty workload, and facilities use.)* We expect our graduate enrollment to grow. This may increase faculty workloads depending on college policy regarding currently unfilled positions.

7. Financial Sustainability

a. *(Business plan for the program that anticipates and provides for its long-term financial viability, addressing anticipated sources of funds, the ability to recruit and retain faculty, and plans for assuring adequate library support over the long term.)* This program revision does not change or require changes in the Department's or College's business plans or cost basis. There will be first year costs associated with renaming the programs including modification of web pages, business cards, and signage. We do not anticipate the need to increase library holdings. The State and University current financial challenges do provide some short-term challenges at the departmental level. Responding to the Provost's initiative, we are working with other campus units to build support for faculty lines that would be mutually beneficial.

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b. *(Plans for development and maintenance of unique resources (buildings, laboratories, technology) necessary to offer a quality program in this field.)* This program revision does not change or require changes in the management and delivery of courses and educational opportunities. See 1l for facilities list.

c. *(Targeted student/faculty ratio (student FTE divided by faculty FTE).)* See 1j. The Department currently has 18 T/TT faculty, not including Extension faculty. In addition, a number of courtesy and adjunct faculty advise students in this program. In fall term, 2010, there are 43 graduate students advised by this faculty.

d. *(Resources to be devoted to student recruitment.)* Student recruitment is done through web-based communications and word-of-mouth among colleagues. We are currently revising our web presence to better reflect our program potentials and to better catch the attention of potential applicants. As part of this effort, we are conducting some key-word surveys among student and professional groups. One office staff member and the Graduate Program Advisor work closely with student inquiries and applicants.

8. External Review

This proposal is for a revision of existing graduate programs resulting from departmental reorganization within the College of Forestry so an external review is not needed.

Appendix. Liaison

This cover letter was sent with the proposal to liaison contacts on November 5, 2010:

FES: David Hibbs
Fish&Wildlife: Dan Edge
Geosciences: Aaron Wolf
Range: Mike Borman
Hort: Anita Azarenko
COE: Jim Lundy
AEC: Munisamy Gopinath

BPP: Linda Ciuffetta
CSS: Russ Karow
Sociology: Denise Lach
COAS: Mark Abbott
MNR: Badege Bishaw
AREC: Susan Capalbo

Dear Colleagues,

The Department of Forest Engineering, Resources and Management is seeking to merge and rename the Forest Resources and Forest Engineering Graduate Programs to better reflect the current departmental membership and goals. The College of Forestry reorganization combined much of the Forest Resources Department with the Forest Engineering Department. We are pleased with the new combination and the

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potential to have students who integrate between all aspects of active forest management to improve forest health and condition while producing a full range of products and ecosystems services. We have been collaborating in the graduate program reorganization with our sister department, the Department of Forest Ecosystems and Society and have completed a joint preliminary meeting with the Graduate School to present our revised graduate programs.

As part of the Category 1 liaison process, I would appreciate hearing your comments on our proposal. We hope for your support, of course, but also hope for your insights on how to improve our proposal. The proposal is attached for your review. It would be very helpful to have your comments by November 19, 2010 in order to expedite the approval process. Please copy Dr. John Sessions in your response. A non response will be interpreted as neutral or positive.

Also, please do not hesitate to contact me if I can provide any additional information.

Thank you for your help.

Thomas Maness

The following comments were received:

Dear Thomas,

I am writing in response to your liaison request on the proposed SFM degree.

We enthusiastically support the proposed renaming of Forest Engineering and Forest Resources degrees into a single Sustainable Forest Management (SFM) degree, which appears to be based on science, cooperation among involved faculty and the anticipated future demand in these disciplines. The Applied Economics and proposed SFM degrees share a common goal: lower barriers for interdisciplinary research and education. Given the focus on sustainable management, we fully support the proposed SFM degree's inclusion of statistical/econometric training in the core and elective courses in microeconomics, macroeconomics and natural resource/environmental economics. Students from the proposed SFM degree are welcome to enroll in AEC courses so long as they meet the pre-requisites or their equivalents (space constraints may apply in a few courses, e.g. AEC 523). We are pleased to offer, jointly with FERM and AREC, the "Forest policy analysis and management" concentration under the proposed SFM degree.

Thanks for asking for our feedback.

-Gopi

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Munisamy Gopinath, Director, Applied Economics Graduate Program

Professor, Agricultural and Resource Economics

Oregon State University

213 Ballard Hall

Corvallis, OR 97330

Ph: 541-737-1402

Thomas/John,

We are quite pleased with the direction of change embodied in this proposal and are fully supportive of it. It provides a good match with the proposed FES changes to our graduate program and the synergy of the two programs strengthens the College. We also appreciate the participation in the development of your proposal you have offered us.

Dave

David E. Hibbs, Associate Department Head

Professor of Ecology and Silviculture

Department of Forest Ecosystems and Society

Oregon State University, Corvallis, OR 97331 USA

541-737-6077

541-737-1393 (fax)

david.hibbs@oregonstate.edu

APPENDIX 7-B. FERM Department Policy on Area of Concentration – Departmental Fellowships.

FERM Departmental Policy on Area of Concentration – Departmental Fellowships Adopted February 2014

History:

Several years ago, we chose to expand our ability to recruit top quality graduate students by offering a first year of support (0.49 FTE with a tuition waiver) to as many as six applicants based on the merits of their applications – one from each of the six Areas of Concentration within the Department if possible. AoC faculty would agree on a nominee from their pool of applicants, who was then referred to the Department Head for selection and assignment. Not all AoC's were/are guaranteed a Fellowship given limits to funding – the strongest applicants, however, would be offered support.

Over time, however, it has become clear that this system has not predictably enhanced our ability to recruit the top applicants as well as we anticipated. We typically can offer the Fellowships in a timely manner, but many of these students (and certainly the best of the best) often secure better offers (multi-year support) from our competing institutions. This problem has plagued the Provost Fellowships, as well, which has prompted the Dean to add an additional year of support to those applicants.

Revised Policy:

We will extend the Departmental AoC Fellowship support offered to our most promising graduate student applicants to **two** years for MS students and **three** years for PhD students. The first year will be 0.49 FTE support per our previous policy; students will use that year for most of their coursework and for designing their research project, as well as grant writing in cooperation with their major professor and other members of the Department.

In many cases, this first year of support can be successfully leveraged for continuing funding to a project given an established line of research, an existing (and successful student), and the year of completed coursework. It is expected that the major professor will seek such funding and, if successful, award it preferentially to the Departmental AoC Fellow. Should grant-writing efforts prove unsuccessful or only partially successful, Departmental AoC Fellowship support in the second (MS) and third (PhD) years will:

- provide Fellowship support up to 0.49 FTE, contingent on availability of Departmental funds.

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- be contingent on the student's performance to date and progress to completion of degree.
- not extend beyond the second year for MS students and the third year for PhD students.
- include teaching assignments in the form of teaching assistantships. PhD students/candidates (and perhaps gifted MS students) might be used as actual instructors, rather than teaching assistants, for some in-person and/or ECampus courses. Such teaching arrangements for motivated PhD candidates provide 0.49 FTE support and could be linked to the 18-credit Teaching Certificate now available on campus.

For OSU Provost's Distinguished Graduate Fellows, this policy translates into a commitment to the third year of funding so that the best PhD applicants can be recruited with combined funding from the Provost, the Dean, and the Department.

This policy change will require four conditions/philosophies:

- 1) A commitment to recruit and support the best applicants for the whole department – we will jointly support these top students beyond just establishing this policy. We will aggressively grant write together and cooperate on teaching and research opportunities for these students.
- 2) The Department Head will maintain a sufficient pool of funds to support these students for multiple years which, if we all are regularly unsuccessful at grant writing, will progressively limit the number of new Fellowships that can be offered each year. That would be an unintended negative outcome of this policy change.
- 3) Annual evaluation of these students (and all our students) will be conducted in a timely manner, and the recruiting/mentoring of these students will be noted in our annual faculty performance reviews.
- 4) The letter to applicants offering AoC Fellowship support must clearly state the potential for reduced stipend support in ensuing years given the uncertain nature of future funding. We will have to communicate fully and regularly with these applicants to successfully recruit them.

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APPENDIX 7-C. Summary of Exit Interviews

The FERM department head conducts Exit Interviews with all graduate students. Since Fall 2013, the interview is preceded by a 21-question Exit Survey. The questions are generally open ended, but the following have been categorized based on 45 interviews. Number of responses to each question are in parentheses.

1. What attracted you to SFM program? (45)

26% Reputation
31% Faculty Member Contact
25% Good Fit
18% Other

2. Have you achieved your academic goals? (44)

84% Yes
14% Mixed Feelings
2% No

3. How would you rank overall quality of the FERM SFM Program? (45)

27% Superior
62% Good
9% Adequate
2% Fair
0% Poor

4. Was the academic environment stimulating? (43)

67% Yes
28% Mixed Feelings
7% No

5. Was your advisor generally available? (45)

98% Yes
2% No

6. How effective was your advisor at answering questions and helping you make curriculum choices? (45)

80% Very
18% Adequate
2% Not

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7. Did Faculty Provide Career Guidance, Finding Employment, Personal Issues? (42)

62% Yes
31% Some
7% No

8. Was Staff Support Adequate? (45)

93% Very Good/Excellent
7% Adequate
0% Poor

9. Computer Facilities (34)

74% Good
24% Adequate
3% Not Adequate

10. Office Space (37)

24% Good
46% Adequate
30% Not Adequate

11. Would you recommend the SFM Program to Other? (41)

90% Yes
5% Depends
5% No