Learning Objectives and Outcomes for

B.S. in Parks, Recreation & Tourism

March 2013

The goal of the Parks, Recreation, & Tourism (PRT) program is to produce outdoor recreation, tourism, and natural resource planning professionals with outstanding scientific and technical knowledge, knowledge about human dimensions, practical field and management skills with strong communication abilities, a strong stewardship ethic, and other necessary skills needed to design and manage high-quality, nature-based recreation and tourism experiences. Graduates of the PRT program will be sought by public agencies or private businesses that provide outdoor recreational and tourism experiences for visitors to public and private forestlands. The program emphasizes the integration of natural and social sciences as an interdisciplinary context in which complex recreation, tourism, natural resource management, and environmental concerns must be addressed. This professional degree is proposed for accreditation by the SAF.

## Learning Objectives

Students graduating from the PRT program will be effective stewards of forests for all resources, including outdoor recreation, trees, wildlife, and water by being able to:

1. Write and speak effectively to promote, advocate, interpret, and articulate concerns about the complexities and tradeoffs associated with forest recreation and natural resource management.
2. Utilize basic approaches and applications of quantitative methods for analysis and problem solving.
3. Integrate knowledge of basic biology, physical sciences forest ecology, wildlife ecology, and the social sciences into the analysis of forest recreation and natural resource management problems.
4. Develop and apply prescriptions appropriate to forest recreation management goals and objectives, including methods to assess the quality of recreation experience and resource conditions as well as methods to monitor long-term impacts of those prescriptions to evaluate if goals and objectives are met.
5. Apply knowledge of and techniques from forest measurement, geomatics, silviculture, forest economics, forest operations, forest products, and forest policy to develop and evaluate land management choices.
6. Implement principles and procedures related to operation and care of resources, areas, and facilities.
7. Choose and employ appropriate models and effective techniques to produce and analyze forest recreation management plans consider multiple competing objectives.

## Curriculum

### General Education:

The University of Maine’s goal is to ensure that all of its graduates, regardless of the academic major they pursued, are broadly educated persons who can appreciate the achievements of civilization, understand the tensions within it, and contribute to resolving them. This component of every program is called general education. The design of general education at the University of Maine is meant to be flexible within the broad goals it seeks to achieve. It affords each student many ways of meeting its requirements.

The General Education curriculum is divided into three broad categories: Oral and written communications, science and mathematics, and social science and humanities.

#### Oral and Written Communications.

Effective written communication is a critical skill for professional foresters and as such many core SFR courses require students to apply concepts learned in ENG 101 (English Composition) such as developing a structure of reasoning and providing substantial support for their positions through the use of experimental data or from existing sources. Students are required to provide necessary references for external work as well. These skills are further developed in ENG 317 (Technical Writing) to prepare SFR students to produce a quality management plan or other technical document as part of their senior capstone project in the final semester.

With respect to required learning outcomes for **oral and written communications** in the SFR, PRT graduates will be able to:

1. Prepare and deliver effective oral presentations;
2. Comprehend and critically evaluate information presented in a variety of writing styles and compose essays, papers, and reports that effectively communicate ideas.

With respect to non-restrictive General Education learning outcomes for Demonstrated Writing Competency at the University of Maine, graduates will be able to:

1. Critique and revise their writing.
2. Achieve the intended purpose in the writing task, with awareness of audience.
3. Identify and fully develop ideas to a specific thesis.
4. Organize ideas effectively.
5. Adhere to proper mechanics and style.
6. Achieve clarity of expression in language, argument, rhetorical form, and idea.

#### Science and Mathematics:

An introductory course in chemistry (CHY 121/123) or physics is required in the second year of the program. Fundamental concepts of physical and chemical properties, measurements, and states of matter for examination of soil chemical properties important for plant growth (PSE 140 – Soil Science) and understanding ecological impacts as a result of recreation (SFR 228 – Forest Recreation Management).

With respect to required learning outcomes for **science** in the SFR, most are listed under the Professional Curriculum. The introductory learning outcome for non-biology science includes:

1. Understand physical and chemical properties, measurements, and states of matter.

With respect to General Education learning outcomes for **science** at the University of Maine, graduates will be able to:

1. Explain what makes knowledge scientific, i.e., “…things and events in the universe occur in consistent patterns that are comprehensible through careful, systematic study.” (AAAS)
2. Demonstrate the appreciation that scientific knowledge is subject to change as new observations and interpretations challenge current understanding.
3. Recognize that valid scientific information is durable, i.e., it is continually affirmed as new observations are made.
4. Perform scientific inquiry including aspects of the scientific method, such as observation, hypothesis, experiment, and evaluation. Note: Covered in laboratory science courses but not necessarily in applied science courses.

A solid foundation in mathematics is necessary for proper management of forest resources so SFR students are expected to be competent in algebra and trigonometry as well as have an understanding of polynomial, logarithmic and exponential functions. MAT 122 (Pre-calculus) prepares students for subsequent courses related to forest measurements and statistics (SFR 205), geomatics (SFR 208), forest economics (SFR 444), and forest resources business, marketing and entrepreneurs (SFR 464).

With respect to required learning outcomes for **mathematics** in the SFR, most are listed under the Professional Curriculum. With respect to General Education learning outcomes for **mathematics** at the University of Maine, graduates will be able to understand the role that mathematics and quantitative thinking plays in solving and communicating information about real world problems and relationships. The learning outcomes for introductory mathematics includes:

1. Translate problems from everyday spoken and written language to appropriate quantitative questions.
2. Interpret quantitative information from formulas, graphs, tables, schematics, simulations, and visualizations, and draw inferences from that information.
3. Solve problems using arithmetical, algebraic, geometrical, statistical, or computational methods.
4. Analyze answers to quantitative problems in order to determine reasonableness. Suggest alternative approaches if necessary.
5. Represent quantitative information symbolically, visually, and numerically.
6. Present quantitative results in context using everyday spoken and written language as well as using formulas, graphs, tables, schematics, simulations, and visualizations.

#### Social Sciences and Humanities:

At the University of Maine, **social sciences and humanities** and in 5 broad categories: Western cultural tradition, social context and institutions, cultural diversity and international perspectives, artistic and creative expression, and population and the environment. In this broad topic group, an introductory economics course (ECO 100 or ECO 120), an introductory sociology (SOC 101) or psychology (PSY 100) are courses to provide a foundation to understanding visitor behavior, conflict issues, consumer behaviors for other courses in the curriculum such as SFR 436 Private and Commercial Recreation, SFR 438 Human Dimensions of Wildlife, SFR Environmental Attitudes and Behavior. Several SFR courses fulfill social science and humanities required such as SFR 480 Wilderness and Wild and Scenic Rivers Management fulfills the western cultural traditions and SFR 226 Park Systems of the World fulfilling cultural diversity and international perspectives outside of the Professional Curriculum. Students need to complete one course outside of the Professional Curriculum that covers artistic and creative expression.

The Learning Outcomes in **social sciences and humanities** for the General Education requirements at the University of Maine include the following:

Students completing the General education area of the Western Cultural Tradition will be able to:

1. Examine the sources, transmission, development and outcomes among ideas, institutions, artifacts, and values within the traditions of the West.
2. Recognize and explore the complexity and variety among ideas, traditions, institutions, archaeological and historical texts and artifacts and values that inform the cultural traditions of the West.
3. Analyze and think critically about how societies are or have been defined by such cultural traditions.

Students completing the general education area of Social Context and Institutions will be able to:

1. Identify, describe and analyze social contexts and human institutions
2. Recognize and critically evaluate the interaction between social contexts and human institutions

Students completing the Cultural Diversity or International Perspectives general education area of will be able to do at least one of the following:

1. Recognize the experiences, perspectives, and cultural values of one or more groups who live within a culture different than their own.
2. Describe the diversity of American culture and reflect on their personal roles within that diversity.
3. Identify and assess how different cultures have related to each other either in the past or the present.
4. Achieve intermediate or advanced mastery of a language other than English.

Students completing the general education area of Population and Environment will be able to do at least one of the following:

1. Recognize and understand the role of both local and global environmental change on the quality of human life,
2. Describe the influence of diverse factors, such as philosophical, cultural, religious, economic, educational, and political, on population growth and environmental quality,
3. Understand the concepts and principles necessary to evaluate contemporary issues of population growth, natural resource conservation, and environmental protection,
4. Interpret diverse types of information about environmental issues, to develop their own perspectives on these issues, and to communicate these perspectives effectively,
5. Understand and describe technical and/or scientific approaches for addressing problems that arise in the relationship between human population and the environment.

Students completing the general education area of Artistic and Creative Expression will be able to:

1. Participate in, identify or evaluate artistic and creative forms of expression.
2. Develop skills and/or intellectual tools central to the artistic and creative process or its critique.

### Professional Education: Content

The SFR developed learning outcomes and metrics for the outcomes, and courses were developed to meet these expectations.

What follows is a summary of the curricula based on the Areas of Study in Ecology and Biology, Measurement of Forest Resources, Management of Forest Resources, and Policy, Economics, Administration, & Law.

#### Ecology and Biology

Parks, Recreation and Tourism students are immediately introduced to tree identification and basic forest ecology during the one-week field camp in SFR 101 – Introduction to Forest Resources. The first semester continues building tree identification and knowledge with SFR 107 – Forest Vegetation. A basic background in general biologic principles (cell biology, photosynthesis and respiration, plant biology – structure – function) is provided in the second semester in SFR 100 – Introduction to Forest Biology and SFR 102 – Biology of Woody Plants Laboratory. PSE 140 – Soil Science in the fourth semester utilizes chemical principles and factors affecting plant growth from earlier courses to help emphasize the importance of soils to forest ecosystems. Important principles from the first two years are then used to assess student abilities to apply the knowledge in SFR 300 – Field Practice in Forest Resources. In the fifth semester, the importance and complexity of ecological and biological principles are emphasized in SFR 349 – Applied Forest Ecology and Silviculture and SFR 458 – Tree Pests and Disease. Not only do these courses draw upon the courses from earlier in the curriculum, but they also cross-reference each other so that students become competent in utilizing knowledge from one field to help problem-solve in another. By the end of the sixth semester, students will have learned wildlife conservation principles in WLE 230 – Introduction to Wildlife Biology or WLE 323 – Introduction to Conservation Biology. During the final 2 semesters, students continue to apply ecological and biological principles in more measurement and management oriented courses: SFR 434 Recreation Site Planning and Management, SFR 477 Forest Landscape Management and Planning, and SFR 480 Wilderness and Wild and Scenic Rivers Management.

With respect to learning outcomes for **ecology and biology**, PRT graduates will be able to:

1. Identify forest and other tree species, their distribution, and associated vegetation and wildlife.
2. Explain ecological concepts and principles including the structure and function of ecosystems, plant and animal communities, competition, diversity, population dynamics, succession, disturbance, and nutrient cycling.
3. Interpret and explain the components, patterns, and processes of biological and ecological systems across spatial and temporal scales.
4. Explain basic concepts of molecular biology, cells, organisms, populations, species, communities, and ecosystems.
5. Understand soil properties and processes, hydrology, water quality, and watershed functions.
6. Master concepts in tree biology.
7. Master concepts in tree pests and diseases, and use them to evaluating tree and forest health/productivity.
8. Make stand, forest, and ecosystem assessments, including trail, campsite and facility impact assessments as they relate to soils, vegetation, water and wildlife.

#### Measurement in Forest Resources

Measurement of forest resources is addressed initially in the first semester in SFR 101 and SFR 106 – Forest Land Navigation and Outdoor Preparedness, courses that focus on field skills that are also applied in SFR 211 – Forest Operations Planning in the third semester. Also in the third semester, students take SFR 208 – Geomatics, Coordinate Geometry and GPS, a course that applies previously learned field and quantitative skills as well as providing a solid background in dealing with land measurements, surveying, and associated technology. During the fourth semester, the field skills and quantitative skills from earlier courses are tied together with measurement and statistical principles in SFR 205 – Forest Measurements and Statistics. Students also take in the fourth semester SFR 400 – Applied GIS where they can apply knowledge from SFR 208 and learn basic GIS skills. After the fourth semester, SFR 300 will assess student abilities in forest measurements. The basic skills are used again in upper level courses including SFR 349 and 477. The above courses are further integrated as students prepare projects as part of the senior capstone course (SFR 492).

With respect to **measurement in forest resources**, PRT graduates will be able to:

1. Use computers and other technologies for communication, measurement, analysis, and problem solving.
2. Identify and measure land areas and conduct spatial analysis.
3. Design and implement comprehensive and appropriate forest recreation resource inventories.
4. Apply basic approaches and applications of mathematics, linear programming, and statistics for analysis and problem solving.

#### Management in Forest Resources

Forest and recreation management concepts are introduced in the first semester in SFR 101 and SFR 103 – Introduction to Forest Resource Professions. In the second semester, history of conservation in forest resources is covered in part in SFR 220, and basic forest operations (SFR 211) and recreation management (SFR 228) are covered in the third semester. SFR 208 and 400 then apply geomatic and GIS skills to relevant aspects of forest management during the third and fourth semesters. As with earlier subject areas, topics from the first 2 years are applied and assessed in SFR 300. Applied Forest Ecology and Silviculture (SFR 349) along with tree pests and disease (SFR 458) continue to integrate ecological components into dealing with forest management issues in the fifth semester. Five upper division courses address topics associated with recreation site planning and management (SFR 434), forest economics (SFR 444), forest resource policy (SFR 446), administration (SFR 446), and wilderness, wild and scenic rivers management (SFR 480). SFR 477 introduces students to basic concepts and software needed for forest management planning. These above courses are required by SFR students and the concepts introduced are integrated as when students prepare projects as part of the senior capstone course (SFR 492).

With respect to **Management in Forest Resources**, PRT graduates will be able to:

1. Develop and evaluate management plans with multiple objectives and constraints.
2. Analyze forest inventory information, including recreation inventories, and project future recreation, forest, stand, and tree conditions.

#### Forest Resource Policy, Economics, and Administration

Aspects of forest resource policy are introduced in SFR 103, SFR 226 Park Systems of the World, SFR 220, and SFR 222 – Environmental Communication Skills during the first year. Policies related to harvesting (SFR 211) and recreation (SFR 228) are covered in the second year. Forest Resource Policy (SFR 446) in the junior year and Wilderness, Wild, and Scenic Rivers Management (SFR 480) does a general survey of policies that impact natural resources. Economic concepts are introduced in second semester with SFR 150 Introduction to Tourism and ECO 100 in the third semester, and more applied in forth semester with SFR 224 Sustainable Tourism Management, and fifth semester in Applied Forest Ecology and Silviculture (SFR 349) and Private and Commercial Recreation (SFR 436). In the sixth semester, Forest Resource Economics (SFR 444) and Forest Resources Policy (SFR 446) provides the needed background for senior level courses dealing with forest management (SFR 477, 492), recreation planning and management (SFR 434), and SFR 464 Forest Resources Business, Marketing, & Entrepreneurs, and SFR 480 Wilderness, Wild and Scenic Rivers Management. The latter classes integrate the earlier material and prepare students on what to expect as they deal the private sector of the economy.

With respect to **Forest Resource Policy, Economics, and Administration**, PRT graduates will be able to:

1. Understand how resource conditions and social demands interact under various market and non-market structures to influence the valuation and availability of forest-related goods and services.
2. Understand how the existence of market externalities, ecosystem services, and non-market goods and services affect forestry decisions and resource conditions.
3. Evaluate moral and ethical questions by using critical reasoning skills.
4. Understand social and economic structures, processes, and institutions across a broad range of human experience and culture.
5. Recognize how federal, state, and local laws and regulations govern the practice of forest resource management.
6. Understand the administration, ownership, organization, human resource, and legal aspects of forest recreation management enterprises.
7. Understand forest recreation policy and processes by which it is developed.

#### Forest Recreation

In the first semester Parks, Recreation and Tourism students are introduced to the forest resources fields (SFR 103) to obtain a broad perspective of uses of forest environments and professions. They are also introduced to recreation and tourism in a global fashion to show the magnitude of importance of this field to natural resources and human communities with SFR 226 Park Systems of the World. In the second semester students are introduced to tourism (SFR 150) with a focus on nature-based tourism and this coincides with students learning basic natural sciences from the first semester (SFR 101, SFR 107) and continues in the (SFR 100) in the second semester. Forest Recreation (SFR 228) begins to emphasize the need for knowing the elements of natural sciences to minimize impacts caused by recreation use and to assist in planning for outdoor recreation opportunities. Sustainable tourism management and planning (SFR 224) builds on the introduction to tourism (SFR 150) and other base courses such economics (ECO 100), natural sciences, and environment and society (SFR 220). Broader awareness of forest recreation in the context of other societal needs and forest management issues are part of the design of courses in the second and third years with SFR 211, 349, 458, 444, 446 as well as tools to integrate SFR 205, SFR 400. Obtaining higher level awareness of tourism planning and management is obtained with forest recreation courses such as Private and Commercial Recreation (SFR 436) as well as the complexities of natural resources management with human dimensions of wildlife (SFR 438) and environmental attitudes and behavior (SFR 479). The accumulation of knowledge and skills developed from courses in the over the past 2-3 years will allow further development of forest recreation management classes such as environmental interpretation (SFR 452), recreation site planning and management (SFR 434), and wilderness, wild, and scenic rivers management (SFR 480). The latter classes integrates the earlier material and prepares students on what to expect as they deal with the private and public sectors as it relates to parks, recreation and tourism.

With respect to **Forest Recreation**, PRT graduates will be able to:

1. Promote, advocate, interpret, and articulate concerns related to natural environments and associated recreation opportunities for all populations.
2. Understand the tourism market research network and how to evaluate visitor and market information, including the destination-attraction life cycle and how to effectively gauge both maturing and new emerging visitor opportunities.
3. Understand the interrelationship between outdoor recreation behavior and the natural environment.
4. Develop and apply prescriptions appropriate to forest recreation management goals and objectives, including methods to assess the quality of recreation experience and resource conditions as well as methods to monitor long-term impacts of those prescriptions to evaluate if goals and objectives are met.
5. Understand political, social and economic structures, processes, and institutions related to biodiversity conservation.
6. Understand the fundamentals of the tourism and recreation industry
7. Understand the fundamentals of tourism planning and development
8. Know the SAF Code and recognize the responsibility to adhere to ethical standards in forestry decision making on behalf of clients and the public.
9. Understand the history and development of professions in the forest resources field.
10. Demonstrate an understanding of organizational structure, lines of authority, and the skills needed to serve as an effective member of a team or organization.
11. Understand the importance of and resources for professional development.