

# FOREST ECOSYSTEM MANAGEMENT, B.S.

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**Begin Campus:** Any Penn State Campus

**End Campus:** University Park

## Program Learning Objectives

- **Basic Knowledge of Forest Flora and Fauna:** Demonstrate knowledge of the biology, taxonomy, and ecology of flora and fauna associated with forested ecosystems
  - Identify the common tree species of North America (especially those of the northeastern US) and describe their silvics
  - Identify key understory plants, invasive species, pathogens, non-timber forest products, and fauna and describe their ecological roles in forest ecosystems
- **Forest Data Collection:** Accurately identify, measure and quantify a variety of forest ecosystem attributes
  - Design, execute, analyze and report on a forest inventory to measure both timber and non-timber attributes: Demonstrate proficiency with a specified set of field equipment
  - Design and implement a plan to monitor key ecosystem resources and processes
- **Communication:** Communicate effectively with diverse groups through listening, speaking and writing
  - Communicate clearly through email, letters and other forms of professional correspondence
  - Effectively present complex information in different formats to a variety of audiences: Use geographical information systems (GIS) to create a map showing features such as buffer zones on streams or roads or the layout of a timber sale
  - Conduct a clear dialog with a potential client to determine their needs
  - Use appropriate methods of communicating with diverse groups
  - Apply conflict resolution skills for consensus building, facilitation and negotiation
- **Data Analysis and Critical Thinking:** Apply science-based knowledge to select, obtain, analyze and interpret natural resources information in an ecological, economic and social context
  - Acquire data from primary and secondary sources to describe and analyze ecological, economic and social relationships on both spatial and temporal scales
    - Use a geographical positioning system (GPS) to map features such as a hiking trail
    - Find relevant natural resources information, such as publicly available data sets, research reports, and management plans
  - Critically analyze the evidence on multiple sides of a contemporary natural resources issue
  - Assess the economic, social, and ecological opportunities and constraints of a given land parcel within a relevant spatial and temporal context and recognize appropriate and defensible land management objectives
  - Identify and evaluate the full range –ecological, social, and economic –of impacts of different forest management alternatives
    - Apply economic, financial and business management tools to assess alternative forest management activities
- **Data Synthesis and Critical Thinking:** Recognize, identify, and integrate the relevant ecological, economic, and societal aspects of contemporary problems in natural resources management and use this understanding to develop, support and implement effective solutions
  - Based on an assessment of a property, develop, write and present a management plan, including silvicultural prescriptions, for the property that meet the stated land management objectives and implement the components of the plan
  - Describe the role of institutions such as markets, communities, governments, and non-government organizations in the management of natural resources
    - Describe and evaluate how a contemporary natural resources issue has been addressed by society
    - Identify a natural resources problem, evaluate the science and the politics behind the problem, engage the stakeholders involved, and propose a solution to the problem
- **Professionalism and Social Awareness:** Synthesize knowledge, diverse values, and ethics for making, communicating and supporting decisions with confidence, respect, professionalism, and compassion
  - Demonstrate openness, tolerance, and appreciation for alternative points of view
  - Demonstrate awareness of global issues and cultural diversity
  - Be able to present and conduct oneself as a professional