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### Forestry

Five specializations are offered within the major in forestry: Forest Resources Management, Forest Hydrology, Urban Forest Management, Forest Recreation and Park Management, and Wildlife Habitat Management and Conservation. University Core Curriculum requirements and a core of professional courses are similar for each specialization. Students majoring forestry may not take courses specifically required in the various specializations for pass/fail credit.

A Conservation Law Enforcement Certificate (42 credit hours) is jointly offered through Forestry and Criminology and Criminal Justice for interested students.

Available to the forestry program for teaching and research in addition to resources present on campus are the following: the Crab Orchard National Wildlife refuge; the Shawnee National Forest; a number of state parks and state forests; conservation areas and federal reservoirs. Collectively, these public lands and waters offer considerable and diverse outdoor educational and recreational opportunities, all in the vicinity of the University.

The curricula of the forestry program prepare graduates for employment with local, state and federal natural resource agencies, as well as private industry. In addition, many graduates continue their education in advanced masters and doctoral programs. Federal agencies employing our graduates include the Forest Service, Natural Resources Conservation Service, Fish and Wildlife Service, National Park Service, Bureau of Reclamation, Bureau of Land Management, Environmental Protection Agency, Tennessee Valley Authority, and the Army Corps of Engineers. There are also employment opportunities in state government with agencies such as fish and game commissions, departments of natural resources and conservation, and forest services. At the local level, there are opportunities with urban forest and park systems. Private agencies have included Ducks Unlimited, the Nature Conservancy, the National Audubon Society and the American Forestry Association. Forestry graduates often are employed by private forestry consulting firms and by private industries such as Weyerhaeuser Co., International Paper Co., Georgia Pacific Corporation, and New Page Corporation.

The educational programs for the specializations Forest Resources Management, Forest Hydrology, Urban Forest Management, Forest Recreation and Park Management, and Wildlife Habitat Management and Conservation leading to the B.S. in Forestry are accredited by the Society of American Foresters (SAF, [eforester.org](http://eforester.org)).

### Bachelor of Science (B.S.) in Forestry

#### Forest Hydrology Specialization

The specialization in Forest Hydrology helps students develop knowledge and skills in integrated natural resource management in a watershed context with an emphasis on freshwater and forest resources. The goal of the Forest Hydrology specialization is to prepare individuals for water-related careers in federal and state government agencies, municipal/county watershed management, and environmental/engineering consulting firms. This specialization also prepares students for graduate study in natural resource management and hydrology. The specialization includes areas of study recommended and accredited by the Society of American Foresters and includes the course work necessary to qualify as a hydrologist in a federal agency. Students in the specialization are required to participate in either the four week forest resource management or forest recreation and park management summer field camp to gain practical field experience. Costs per student for off-campus living expenses and transportation for summer field-studies are not to exceed \$750 and must be borne by the student. Other costs for

equipment and supplies, which are required for field study and certain other courses, are specified in course descriptions.

## B.S. Forestry - Forest Hydrology Specialization Degree Requirements

Degree Requirements	Credit Hours
University Core Curriculum Requirements	39
Requirements for Major in Forestry with Forest Hydrology Specialization	81
Forestry Core: FOR 100, FOR 201, FOR 202, FOR 285, FOR 308, FOR 310, FOR 314, FOR 325, FOR 331, FOR 351, FOR 352, FOR 381, FOR 411, FOR 430 <sup>1</sup>	41-42
CHEM 140A, Science Requirement: (one of the following) ZOOLOGY 115, ZOOLOGY 118, PLB 115, PLB 200	(6) + 1-2
ABE 204 or ECON 240 <sup>2</sup>	(3)
Summer Field Studies: FOR 422C or FOR 310C, FOR 314C, FOR 351C, FOR 360C	6
MATH 108 or MATH 109 or MATH 140 or MATH 141	(3) - 1
FOR 402, FOR 421, FOR 429, FOR 452L, (FOR 416 or FOR 420)	13-14
FOR 312 or ABE 318 or MATH 282 or PLB 360	3
Forestry Electives (FE): CSEM 442, CSEM 443, CSEM 446, CSEM 447, CSEM 448, CSEM 468, FOR 125, FOR 210, FOR 220, FOR 230, FOR 302, FOR 305, FOR 312, FOR 315, FOR 350, FOR 375, FOR 390, FOR 403, FOR 404, FOR 405, FOR 415, FOR 416, FOR 420, FOR 425, FOR 428, FOR 431, FOR 451, FOR 460, FOR 470, FOR 480, FOR 486, GEOG 330, GEOG 401, GEOG 404, GEOG 406, GEOG 420, GEOG 431, GEOG 433, GEOG 434, GEOL 416, GEOL 470, GEOL 471, GEOL 474, MATH 150, PHYS 203A, PHYS 203B, PLB 445, ZOOLOGY 410, ZOOLOGY 411, ZOOLOGY 414, ZOOLOGY 415, ZOOLOGY 458, ZOOLOGY 466, ZOOLOGY 468, ZOOLOGY 477 <sup>3</sup>	13-17
Total	120

<sup>1</sup> FOR 308 - Substitution of GEOG 401 or other equivalent GIS course may be allowed with approval.  
FOR 352 - Substitution of CSEM 240 or other equivalent Soil Science course may be allowed with approval.

<sup>2</sup> Hours included in total for University Core Curriculum requirements.

<sup>3</sup> Minimum hours required to bring total to 120. No course may be used for more than one requirement. Only 6 hours of lower level coursework (100/200) may be used as FE. Specialization exceptions: MATH 140, MATH 141, MATH 150, PHYS 203A and PHYS 203B.

## Forest Recreation and Park Management Specialization

The program in Forest Recreation and Park Management provides interdisciplinary training for management of the nation's outdoor recreation heritage. The National Recreation and Park Association and the Society of American Foresters are among those organizations recommending the courses offered. The goal of the Forest Recreation and Park Management option is to prepare students for entry into professional careers in planning, managing, and administering public lands for outdoor recreation operated by a variety of agencies in diverse geographic and natural settings. The Forest Recreation and Park Management student travels through selected sections of the United States on a park and recreation field studies session to outdoor recreation and protected area facilities. The forest recreation summer camp requires the student pay transportation and living expenses not to exceed \$750 and must be borne by the student. Other costs for equipment and supplies, which are required for field study and certain other courses, are specified in course description.

### B.S. Forestry - Forest Recreation and Park Management Specialization Degree Requirements

Degree Requirements	Credit Hours
University Core Curriculum Requirements	39
Requirements for Major in Forestry with Forest Recreation and Park Management Specialization	81
Forestry Core: FOR 100, FOR 201, FOR 202, FOR 285, FOR 308, FOR 310, FOR 314, FOR 325, FOR 331, FOR 351, FOR 352, FOR 381, FOR 411, FOR 430 <sup>1</sup>	41-42
CHEM 140A, Science Requirement: (one of the following) ZOOL 115 or ZOOL 118, PLB 115 or PLB 200 <sup>2</sup>	(6) + 1-2
ABE 204 or ECON 240 <sup>3</sup>	(3)
ENGL 101, ENGL 102, (ABE 318 or FOR 312 or MATH 282 or PLB 360), CMST 101, (MATH 106 or MATH 108 or MATH 125)	(12) + 3-4
HORT 328A and HORT 328B Landscape Design and Landscape Design Lab	4
Summer Field Studies: FOR 422C	6
FOR 220, FOR 420, FOR 421, FOR 423	11
Forestry Electives (FE): ANTH 430A, BIOL 307, FOR 125, FOR 210, FOR 230, FOR 302, FOR 305, FOR 312, FOR 315, FOR 350, FOR 375, FOR 390, FOR 402, FOR 403, FOR 404, FOR 405, FOR 409, FOR 415, FOR 416, FOR 425, FOR 428, FOR 429, FOR 431, FOR 451, FOR 452L, FOR 470, FOR 480, FOR 486, GEOG 401, GEOG 404, GEOG 406, GEOG 420, GEOG 471, MGMT 304, MGMT 350, PSYC 307, REC 300, REC 303, REC 430, SOC 386,	12-15

Degree Requirements	Credit Hours
CMST 412, ZOOL 410, ZOOL 411, ZOOL 468, ZOOL 469 4	
Total	120

<sup>1</sup> FOR 308 - Substitution of GEOG 401 or other equivalent GIS course may be allowed with approval.  
FOR 352 - Substitution of CSEM 240 or other equivalent Soil Science course may be allowed with approval.

<sup>2</sup> Hours included in total for University Core Curriculum requirements.

<sup>3</sup> Hours included in total for University Core Curriculum requirements.

<sup>4</sup> Take minimum hours required to bring total to 120. No course may be used for more than one requirement. Only 6 hours of lower level coursework (100/200) may be used as FE.

## Forest Resources Management

The program in Forest Resources Management includes instruction leading to careers in forest management and production, forest ecosystem management, and the forest products industries. The goal of the Forest Resources Management specialization is to develop individuals with sufficient understanding of the physical, biological and economic considerations required to make sound management decisions for forest sustainability. The specialization includes areas of study recommended and accredited by the Society of American Foresters. Emphasis is upon integrated resource management of natural and renewable resources, coordinating forest utilization methods and conservation practices, and sustaining our wild lands heritage. Students in the specialization are required to participate in the four week forest resource management summer field camp (FOR 310C, FOR 314C, FOR 351C, FOR 360C) to gain practical field experience. Costs per student for off-campus living expenses and transportation for summer field-studies are not to exceed \$750 and must be borne by the student. Other costs for equipment and supplies, which are required for field study and certain other courses, are specified in course descriptions.

## B.S. Forestry - Forest Resources Management Specialization Degree Requirements

Degree Requirements	Credit Hours
University Core Curriculum Requirements	39
Management Specialization	81
Forestry Core: FOR 100, FOR 201, FOR 202, FOR 285, FOR 308, FOR 310, FOR 314, FOR 325, FOR 331, FOR 351, FOR 352, FOR 381, FOR 411, FOR 430 <sup>1</sup>	41-42
CHEM 140A, Science Requirement: (one of the following) ZOOL 115, ZOOL 118, PLB 115, or PLB 200 <sup>2</sup>	(6) + 1-2
ABE 204 or ECON 240 <sup>3</sup>	(3)

Degree Requirements	Credit Hours
ENGL 101, ENGL 102, (ABE 318 or FOR 312 or MATH 282 or PLB 360), CMST 101, (MATH 106 or MATH 108 or MATH 125) <sup>4</sup>	(12) + 3-4
Summer Field Studies: FOR 310C, FOR 314C, FOR 351C, FOR 360C	6
FOR 315, FOR 416	7
Forestry Electives (FE - Course Selection): CSEM 442, CSEM 443, CSEM 468, FOR 125, FOR 210, FOR 220, FOR 230, FOR 302, FOR 305, FOR 312, FOR 350, FOR 375, FOR 390, FOR 402, FOR 403, FOR 404, FOR 405, FOR 409, FOR 415, FOR 418, FOR 420, FOR 421, FOR 423, FOR 425, FOR 428, FOR 429, FOR 431, FOR 451, FOR 452L, FOR 470, FOR 480, FOR 486, BIOL 307, GEOG 401, GEOG 404, GEOG 406, GEOG 420, MGMT 350, PLB 300, PLB 443, PLB 445, PLB 451, ZOOL 118, ZOOL 410, ZOOL 468, ZOOL 469 <sup>5</sup>	20-23
Total	120

<sup>1</sup> FOR 308 - Substitution of GEOG 401 or other equivalent GIS course may be allowed with approval.  
FOR 352 - Substitution of CSEM 240 or other equivalent Soil Science course may be allowed with approval.

<sup>2</sup> Hours included in total for University Core Curriculum requirements.

<sup>3</sup> Hours included in total for University Core Curriculum requirements.

<sup>4</sup> Hours included in total for University Core Curriculum requirements

<sup>5</sup> Minimum hours required to bring total hours to 120. No course may be used for more than one requirement. Only 6 hours of lower level coursework (100/200) may be used as FE.

## Urban Forest Management Specialization

The program in Urban Forest Management provides students with interdisciplinary training in the management of forest resources in urban areas and other settings where aesthetics and enhancing environmental values of communities are of primary concern. The specialization includes areas of study recommended and accredited by the Society of American Foresters with additional course work providing a background in arboriculture, landscape management and design, small business management, and municipal government. Students are especially prepared for entry into careers in the green industry and municipal forest management and administration. Students in the specialization are required to participate in either the four week forest resource management (FOR 310C, FOR 314C, FOR 351C, FOR 360C) or forest recreation and park management (FOR 422C) summer field camp to gain practical field experience. Field study costs per student for off-campus living expenses and transportation are not to exceed \$750 per student and must be borne by the student. Other costs for equipment and supplies, which are required for field study and certain other courses, are specified in course descriptions.

## B.S. Forestry - Urban Forest Management Specialization Degree Requirements

Degree Requirements	Credit Hours
University Core Curriculum Requirements	39
Requirements for Major in Forestry with Urban Forest Management Specialization	81
Forestry Core: FOR 100, FOR 201, FOR 202, FOR 285, FOR 308, FOR 310, FOR 314, FOR 325, FOR 331, FOR 351, FOR 352, FOR 381, FOR 411, FOR 430 <sup>1</sup>	41-42
CHEM 140A, Science Requirement: (one of the following) ZOOL 115, ZOOL 118, PLB 115, or PLB 200 <sup>2</sup>	(6) + 1-2
ABE 204 or ECON 240 <sup>3</sup>	(3)
ENGL 101, ENGL 102, CMST 101, MATH 106 or MATH 108 or MATH 125 <sup>4</sup>	(12) - 1
FOR 312 or ABE 318 or MATH 282 or PLB 360	3
Summer Field Studies: (FOR 310C, FOR 314C, FOR 351C, FOR 360C), or FOR 422C	6
(FOR 416 or FOR 421), FOR 428, HORT 328A, HORT 328B, and HORT 434	12-13
Forestry Electives (FE): CSEM 420, CSEM 442, CSEM 443, CSEM 447, CSEM 468, FOR 125, FOR 210, FOR 220, FOR 230, FOR 302, FOR 305, FOR 312, FOR 315, FOR 375, FOR 390, FOR 403, FOR 404, FOR 415, FOR 416, FOR 420, FOR 421, FOR 423, FOR 425, FOR 451, FOR 452L, FOR 480, FOR 486, GEOG 401, GEOG 404, GEOG 406, GEOG 420, HORT 322, HORT 327, HORT 422, HORT 428, HORT 429, HORT 475, MGMT 350 <sup>5</sup>	14-18
Total	120

<sup>1</sup> FOR 308 - Substitution of GEOG 401 or other equivalent GIS course may be allowed with approval.  
FOR 352 - Substitution of CSEM 240 or other equivalent Soil Science course may be allowed with approval.

<sup>2</sup> Hours included in total for University Core Curriculum requirements.

<sup>3</sup> Hours included in total for University Core Curriculum requirements.

<sup>4</sup> Hours included in total for University Core Curriculum requirements.

<sup>5</sup> Minimum hours required to bring total to 120. No course may be used for more than one requirement. Only 6 hours of lower level coursework (100/200) may be used as FE.

## Wildlife Habitat Management and Conservation Specialization

The program in Wildlife Habitat Management and Conservation helps students develop knowledge and skills in integrated natural resource management with an emphasis on habitat management for wildlife. The goal of this specialization is to train individuals for wildlife and forestry-related careers in federal and state governmental agencies, non-governmental conservation organizations, and natural resource consulting firms. Students will also be well-prepared for entry into the profession of conservation police officer. In addition, this specialization readies students for graduate study in forestry and wildlife management. This specialization includes areas of study recommended and accredited by the Society of American Foresters. Students in the specialization are required to participate in either the forest resources management (FOR 310C, FOR 314C, FOR 351C and FOR 360C) or forest recreation and park management (FOR 422C) summer field camp to gain practical field experience. Summer camp fees for off-campus living expenses and transportation are not to exceed \$750 per student and must be borne by the student. Other costs for equipment and supplies, which are required for field study and certain other courses, are specified in course descriptions.

### B.S. Forestry - Wildlife Habitat Management and Conservation Specialization Degree Requirements

Degree Requirements	Credit Hours
University Core Curriculum Requirements	39
Requirements for Forestry Major with Wildlife Habitat Management and Conservation Specialization (WHMS)	81
Forestry Core: FOR 100, FOR 201, FOR 202, FOR 285, FOR 308, FOR 310, FOR 314, FOR 325, FOR 331, FOR 351, FOR 352, FOR 381, FOR 411, FOR 430 <sup>1</sup>	41-42
CHEM 140A; Science Requirements: (one of the following) PLB 115, PLB 200, ZOOL 115, or ZOOL 118 <sup>2</sup>	(6) + 1-2
ABE 204 or ECON 240 <sup>3</sup>	(3)
MATH 108, (FOR 312 or ABE 318 or MATH 282 or PLB 360)	(3) + 3
Summer Field Studies: (FOR 310C, FOR 314C, FOR 351C, FOR 360C) or FOR 422C	6
FOR 305, FOR 315, FOR 405, FOR 416, FOR 451	17
Forestry Electives (FE): BIOL 211, BIOL 212, BIOL 307, FOR 125, FOR 210, FOR 220, FOR 230, FOR 302, FOR 305, FOR 312, FOR 375, FOR 390, FOR 402, FOR 403, FOR 404, FOR 415, FOR 420, FOR 421, FOR 422C, FOR 425, FOR 428, FOR 429, FOR 431, FOR 452L, FOR 470, FOR 480, FOR 486, GEOG 404, GEOG 406, GEOG 420, MATH 109, MATH 111, PLB 300, ZOOL 410, ZOOL 461, ZOOL 467, ZOOL 468, ZOOL 469, ZOOL 478, ZOOL 490 <sup>4</sup>	11-16

Degree Requirements	Credit Hours
Total	120

<sup>1</sup> FOR 308 - Substitution of GEOG 401 or other equivalent GIS course may be allowed with approval.  
FOR 352 - Substitution of CSEM 240 or other equivalent Soil Science course may be allowed with approval.

<sup>2</sup> Hours included in total for University Core Curriculum requirements.

<sup>3</sup> Hours included in total for University Core Curriculum requirements.

<sup>4</sup> Minimum hours required to bring total hours to 120. No course may be used for more than one requirement. Only 6 hours of lower level coursework (100/200) may be used as FE.

## Undergraduate Certificate in Conservation Law Enforcement

The Conservation Law Enforcement Undergraduate Certificate is designed for students interested in the intersection of forestry, wildlife management, conservation, policing, and law. It is intended to provide students with a broad knowledge base applicable for careers as conservation officers, wildlife/game wardens, park rangers, or other similar careers. The 42-credit certificate includes 12 credit hours of foundational skills, 6 credit hours of conservation law enforcement classes, 12 credit hours of Forestry classes, and 12 credit hours of Criminology and Criminal Justice classes. All coursework used to complete the certificate program may be counted toward a bachelor's degree in Forestry and/or a bachelor's degree in Criminology and Criminal Justice. A minimum of 24 credit hours toward the certificate must be earned at SIU Carbondale.

### Conservation Law Enforcement Certificate Requirements

Degree Requirements	Credit Hours
Foundation Skills	12
ENGL 101, ENGL 102, UCC MATH (3), CMST 101	
Core Conservation Law Enforcement	6
FOR 280 or CCJ 280 and FOR 380 or CCJ 380	
Criminology and Criminal Justice (choose 12 credit hours from the list below)	12
CCJ 101, CCJ 302, CCJ 303, CCJ 306, CCJ 310, CCJ 320, CCJ 408, CCJ 410, CCJ 415	
Forestry	12
Choose 3 credit hours from the list below:	
FOR 100 and FOR 220, FOR 125, FOR 201	
Choose 9 credit hours from the list below:	



Degree Requirements	Credit Hours
FOR 210, FOR 305, FOR 405 or FOR 451, FOR 480	
Total	42

## Technology Fee

The College of Agricultural, Life, and Physical Sciences assesses undergraduate majors a technology fee of \$4.58 per credit hour up to 12 credit hours. The fee is charged Fall and Spring semester.

## Forestry Courses

**FOR100 - Introduction to Forestry** Students experience varied subject areas of Forestry including forest recreation, ecology, silviculture, wildlife habitat restoration, hydrology, wildland fire, forest products, natural ecosystems and conservation. Special emphasis is given to the diversity of careers in Forestry. Required field trip transportation fee not to exceed \$50 per course registration. Credit Hours: 1

**FOR102 - Tree Identification Primer** A one-semester course that teaches fundamental identification techniques of trees, vines, and shrubs using leaves, twigs, bark, and fruit characteristics. Students will learn basic principles in plant taxonomy and botany, and develop problem solving techniques to help in plant identification processes. The course serves as an introductory plant identification course and as a primer for FOR 202-Tree Identification Laboratory. Credit Hours: 3

**FOR125 - Forestry and Natural Resource Conservation** (University Core Curriculum) Introduction to the field of forestry and natural resource conservation. Special emphasis will be placed on the key fields of study including ecosystem science, wildlife habitat relationships, forest recreation, and urban forestry. The following course related performance goals would be expected from you at the conclusion of the course: 1. Describe the forest regions of the world, 2. Describe the key concepts wildlife habitat relationships, 3. Describe the primary types of ecosystem services in natural areas, 4. Describe the factors that affect participation in forest recreation, 5. Understand commonly used natural resource data, 6. Describe commonly used forest practices, 7. Describe the key concepts urban forests, and 8. Describe common careers in the forest management profession. Credit Hours: 3

**FOR201 - Ecology of North American Forests** This course introduces concepts of biology, physiology, ecology, and silvics important to the growth, development, and sustainability of trees and forest ecosystems. Emphasis includes understanding how trees are influenced by: the physical environment (atmosphere, light, water, topography, fire, soils, etc.); the biological, physiological, and genetic potential of tree species; and interrelationships with other organisms including wildlife, fungi, and humans. Requires field trip transportation fee not to exceed \$20 per course registration. Credit Hours: 3

**FOR202 - Tree Identification Laboratory** Field and Laboratory identification of native and exotic trees, shrubs and woody vines using leaf, twig, bark and fruit characteristics. Requires field trip transportation fee not to exceed \$50 per course registration. Credit Hours: 3

**FOR210 - Freshwater Angling and Aquatic Resource Management** This course will provide an introduction to angling in Illinois ponds, lakes, and streams/rivers. Emphasis will focus on angling techniques, equipment, and habitat requirements necessary for freshwater game species in Illinois' waters. Threats and challenges toward the future of angling will also be discussed highlighting emerging diseases, fishing pressure, resource competition, aquatic weed control, and water quality. The course is offered online only. Credit Hours: 3

**FOR215 - Bass Fishing Techniques** This course will provide an introduction to bass fishing in Illinois ponds, lakes, and streams/rivers. Emphasis will focus on angling techniques, equipment, and habitat

requirements necessary for recreational angling and tournament fishing across the U.S. Threats and challenges toward the future of Bass Fishing will also be discussed highlighting fishing pressure, resource competition, aquatic weed control, and water quality. This course is online and face-to-face course that will meet 1 day per week. Credit Hours: 3

**FOR220 - Introduction to Forest Recreation** Trends in outdoor recreational use of wild lands and natural areas with emphasis on state and federal parks and forests. Introductory concepts in recreation resources management, visitor impact assessment and environmental interpretation. Credit Hours: 2

**FOR230 - Introduction to Water Resources** Introduction to the distribution, management, and quality of water resources. Emphasis on the hydrologic cycle, the watershed as a unit of management, water supply and treatment, and the functions of aquatic ecosystems including rivers, streams, aquifers, lakes, ponds, and wetlands. Credit Hours: 3

**FOR280 - Introduction to Conservation Law Enforcement** Introduction to field of conservation law enforcement as it relates to natural resource management. Students will learn the history of natural resource laws and the protection and conservation of natural resources such as fish, wildlife, and state parks. The focus of the course is Illinois and Federal law regulating the conservation of natural resources, centering on fish, wildlife, timber, waterways, and state-owned properties. Credit Hours: 3

**FOR285 - Social Influences on Forestry** Study of the human dimensions of natural resource management. Exploration of the ethical and historical negotiations of the human-nature relationship. Examination of the role of public opinion in conservation and sustainable resource decision making. Exposure to environmental justice, political ecology, ecological economics, and the influences of media, science and technology. Credit Hours: 3

**FOR302 - Silvics and Winter Tree Identification** A half-semester course that teaches silvics and identification of dormant deciduous trees, vines and shrubs primarily using twig and bark characteristics. Silvical characteristics such as range, shade tolerance, reproduction, growth and yield, soils and topography will be covered on approximately 50 of the most regionally important tree species. Prerequisites: FOR 202 and FOR 310. Restricted to senior standing. Credit Hours: 1

**FOR305 - Wildlife Monitoring Design and Techniques** An introduction to the design of monitoring programs and field-based techniques for studying wildlife populations. The course focuses on two primary areas: (1) wildlife research and experimental design and (2) practical, field-based wildlife monitoring techniques. Course emphasis is on the application of such techniques during class labs and in the field. Prerequisites: none. Requires field trip transportation fee and supplemental expenditures not to exceed \$75 per course registration. Credit Hours: 4

**FOR308 - Introduction to Mapping and Geographic Information Systems** Integrated use of mapping, aerial photographs, and field information to evaluate resources in the development of land management plans. Topics range from aerial photo interpretations, to GIS database management and vegetation mapping. Course will include classroom presentations, field trips and lab exercises. Requires field trip and supplemental expenditures not to exceed \$50 per course registration. Credit Hours: 3

**FOR310 - Practices of Silviculture** Detailed study of classical concepts and recently developed techniques utilized in silviculture treatment of forests. Major emphasis to be placed upon establishment, thinning, timber stand improvement, and regeneration of forests. Prerequisite: FOR 331. Requires field trip and supplemental expenditures not to exceed \$40 per course registration. Credit Hours: 4

**FOR310C - Silviculture Field Studies** Methods of determining volume and quality of forest products, forest resource inventory procedures, growth, and productivity studies. Co-requisites: FOR 314C, FOR 351C, and FOR 360C. Prerequisite: FOR 310, FOR 331 or consent of instructor. Requires field trip transportation fees and supplemental expenditures per course registration. Summer camp fees and costs are outlined in the Forestry major-Forest Resources Management Specialization. \*\*Proposed fee amount: \$125 pending Board of Trustees approval-Meeting April 11, 2024. Credit Hours: 1

**FOR311 - Resources Photogrammetry** The science and art of obtaining reliable measurement by means of photographs, detection of disease, insects, and fire invasion by remote sensors; and delineation of resources boundaries through interpretation. Credit Hours: 3

**FOR312 - Data Management and Analysis** This course prepares students for managing and completing projects in natural resource careers. Emphasis will be on project design and management, database management, and statistical analysis. Students will develop skills in project planning and communication, database functionality in the Excel environment, and the analysis of ecological data. Prerequisites: None. Credit Hours: 3

**FOR313 - Harvesting Forest Crops** Emphasis is given to lumber sale layouts, sale contracts, and harvest engineering methods. Consideration is given to the environmental impacts of harvesting. Prerequisite: FOR 310 or consent of instructor. Requires field trip transportation fee not to exceed \$25 per course registration. Credit Hours: 3

**FOR314 - Forest Health** Detailed study of the factors that influence forest health, including abiotic stress, diseases, insects, and invasive plants. Special emphasis will be placed on the identifications of the signs and symptoms of the factors that affect forest health and the appropriate management techniques to mitigate these factors. Credit Hours: 3

**FOR314C - Forest Protection Field Studies** The prevention and suppression of forest fires, the recognition and control of insect and disease organisms and other destructive agents in the forest. Co-requisites: FOR 310C, FOR 351C, and FOR 360C. Prerequisites: FOR 314, FOR 315, and FOR 331 or consent of instructor. Requires field trip transportation fees and supplemental expenditures per course registration. Summer camp fees and costs are outlined in the Forestry major-Forest Resources Management Specialization. \*\*Proposed fee amount: \$250 pending Board of Trustees approval-Meeting April 11, 2024. Credit Hours: 2

**FOR315 - Fire in Wildland Management** Fire as a phenomenon in wildland management. Topics covered are fire prevention, detection, suppression, behavior, effects, use and economics. Major emphasis is on fire control and fire ecology. Requires field trip transportation fees and supplemental expenditures not to exceed \$75 per course registration. Credit Hours: 3

**FOR320C - Forest and Wildlands Recreation Field Studies** Recreation of forest and adjacent lands with emphasis on parks and national forests. Administration; interpretation; trends in use and development. Offered at summer camp only. Prerequisite: FOR 220. May require supplemental expenditures not to exceed \$35 per course registration. Summer camp transportation fees and cost are outlined in the Forestry Major description - Forest Resources Management Specialization. Credit Hours: 1

**FOR325 - Forest Resource Policy and Administration** Policy formation and implementation, including the roles of special interest groups and public values. Examination of federal natural resource policies, conservation leaders who influenced policy and current applications of policy in forest management. Credit Hours: 3

**FOR331 - Forest Ecosystems** Forest Ecosystems covers topics including community concepts; competition; tolerance; disturbance; succession; carbon balance; diversity; and the ecological and social aspects of ecosystem management relating to the structure, energy flow, and dynamic interrelationships of the biotic and abiotic forest environment to understand and sustainably manage forest ecosystems and habitat over time. Credit Hours: 3

**FOR341 - Forestry Practices** The fundamentals of integrated resource management of timberlands. Management systems, tree stand measurements. Planting and harvesting methods, multiple-use aspects of forest lands. Field trips. Emphasis on small forest ownerships. Not for graduation credit in forest resources management. Credit Hours: 3

**FOR350 - Wood as a Raw Material** Structure, identification, and properties of wood. Important species, significance of properties to end-use and significance of wood to the environment. Credit Hours: 3

**FOR351 - Forest Measurements** Introductory measurement, statistical and data processing concepts; volume, growth, and yield of forest products; methods of sampling forest resources. Requires field trip transportation fees and supplemental expenditures not to exceed \$75 per course registration. Credit Hours: 4

**FOR351C - Forest Resources Measurements Field Studies** Methods of determining volume and quality of forest products, forest resource inventory procedures, growth, and productivity studies. Co-

requisites: FOR 310C, FOR 314C, and FOR 360C. Prerequisite: FOR 351 or consent of instructor. Requires field trip transportation fees and supplemental expenditures per course registration. Summer camp fees and costs are outlined in the Forestry major - Forest Resources Management Specialization. \*\*Proposed fee amount: \$250 pending Board of Trustees approval-Meeting April 11, 2024. Credit Hours: 2

**FOR352 - Introduction to Forest Soils** An introduction to the characterization and fundamental concepts of forest soils and their relationships to forest communities and forest management practices. Emphasis is on the essential chemical, biological, and physical properties of forest soils as related to forests and forest management. This course will provide a sound basis for learning basic soils concepts specifically related to forest ecosystems which are beneficial to Forestry majors and those majoring/minoring in Soil Science or related natural science disciplines. Credit Hours: 3

**FOR360C - Forest Industries Field Studies** A study of primary and secondary forest product processing in the central hardwood region. Co-requisites: FOR 310C, FOR 314C, and FOR 351C. Requires field trip transportation fees and supplemental expenditures per course registration. Summer camp fees and costs are outlined in the Forest major-Forest Resources Management Specialization. \*\*Proposed fee amount: \$125 pending Board of Trustees approval-Meeting April 11, 2024. Credit Hours: 1

**FOR375 - Wildlife and Natural Resource Enterprise Management** Introduction to the field of wildlife and natural resource enterprise management in North America. Special emphasis will be placed on hunting as a source of generating revenue through leases, habitat consulting, and outfitting. The course will also offer an opportunity to explore outdoor recreation based tourism and recreational real estate. Credit Hours: 3

**FOR380 - Practical Applications of Conservation Law Enforcement** An introduction to practical, day-to-day issues and challenges of enforcement of conservation laws. Thought will be given to the judicial process as it pertains to the conservation law violator. Arrests, search and seizures, as well as case preparation will be discussed and reviewed. Specific problems of field enforcement and encounters will be studied and discussed. Required field lab transportation and equipment fee of \$60 per course registration. Credit Hours: 3

**FOR381 - Professional Preparation in Forestry** This course develops professional preparation skills important to help ensure a successful transition from the undergraduate degree in Forestry to future endeavors in the workplace or graduate school. Topics include: traditional and federal resume preparation, cover letters, internships and summer jobs, exploring graduate school, research concepts, applications, professional oral and written communications, networking, interviewing, and presentation development. Prerequisite: FOR 100 or concurrent enrollment. Restricted to Forestry majors. Credit Hours: 2

**FOR390 - Forestry Internship-Opportunities for Excellence** Forestry Internships (paid or non-paid) are supervised learning experiences which are integrated into the students' academic program and are conducted in a pre-approved setting with a local, state or federal agency, a non-profit organization, SIU Touch of Nature, or public/private business. Student must secure the internship and submit job site contact info and a list of personal goals and learning objectives for approval by a member of the forestry faculty who will serve as their internship advisor. A reflective paper on the internship experience and a written evaluation submitted by intern's on-site supervisor are required at the end of the semester. Repeatable; maximum of 3 hours toward degree (Forestry Elective credit). Prerequisite: minimum GPA of 2.50 and special approval needed. Credit Hours: 1-3

**FOR391 - Special Problems in Forest Resources** Independent research sufficiently important to require three hours per week of productive work for each hour of credit. Restricted to junior standing. Special approval needed from the chairperson. Credit Hours: 1-4

**FOR401 - Fundamentals of Environmental Education** (Same as AGRI 401 and REC 401) A survey course designed to help education majors develop an understanding of environmental education principles and teaching both inside and outside the classroom. Prerequisite: ten hours of biological science or ten hours of recreation and/or education, or consent of instructor. Requires field trip transportation fee not to exceed \$25 per course registration. Credit Hours: 3

**FOR402 - Wildland Hydrology** Fundamentals of hydrology as related to forest and wildland water resources will be emphasized. Considerations will include the hydrologic cycle with emphasis on soil and groundwater regimes, evapotranspiration, surface and subsurface runoff, and the quantity and timing of water yield. Credit Hours: 3

**FOR403 - Agroforestry** This course examines the deliberate integration of forestry and related land management practices within agricultural landscapes, primarily addressing wildlife habitat, water quality, crop yield, and animal production enhancement and sustainability. Emphasis is placed on systems successfully implemented in North America, particularly the Midwest, but international examples will also be discussed. Credit Hours: 3

**FOR404 - Tree Physiology Concepts and Applications in Forest Management** A study of physiological concepts and attributes of trees that underlies growth, ontogeny, and reproduction in the context of applied forest management. Physiological concepts will be presented and discussed in a framework that relates their influence on forest stand management activities such as establishing natural regeneration, tree planting, and other silvicultural processes in native, plantation and urban forests as well as forest tree and stand responses to disturbance, and the development and maintenance of old growth. Prerequisite: PLB 200 or FOR 201 or FOR 331 or a plant physiology course. Credit Hours: 3

**FOR405 - Forest Management for Wildlife** This course is designed to familiarize students with a scientific understanding of the theory and practice of forest management for wildlife. Students will gain knowledge of basic forestry management principles as they apply to wildlife; ecology and management of different types of forests for wildlife; and habitat requirements of forest birds, mammals, and herps and applicable forest management techniques. Credit Hours: 3

**FOR406 - Landscape Ecology** Principles of landscape ecology in the context of forested systems. There is an emphasis on how spatial heterogeneity and human activities influence landscape patterns. Prerequisite: G.I.S. course or consent of instructor. Credit Hours: 2

**FOR409 - International Forest Resources Decision-Making** Examines management planning decision-making for multiple-use forests around the world. Reviews concepts useful for analyzing flow-resource problems, emphasizing systems approaches, introduces use of modern quantitative and qualitative methods to evaluate resource use alternatives. Case studies from around the world. Prerequisite: FOR 411. Credit Hours: 3

**FOR411 - Forest Resources Economics** Application of micro and macro economics principles to forest timber and non-timber production: capital theory, benefit-cost analysis; and economics of conservation. Prerequisites: ABE 204 or ECON 240, FOR 310 and FOR 351, or consent of instructor. Credit Hours: 3

**FOR412 - Tree Improvement** Basic theories and techniques of obtaining genetically superior trees for forest regeneration. Restricted to senior standing. Credit Hours: 2

**FOR413 - Summer Ecology of Forest Wildlife** This course is designed to familiarize students with a scientific understanding of the ecology and management of forest wildlife species during the summer months. In this intensive, one-week summer course, students will engage in laboratory, lecture, and field modules intended to inform students about forest wildlife communities and common research and management methods. Students will gain considerable hands-on experience conducting field- and laboratory-based methods useful for studying and managing forest wildlife and their habitat. Credit Hours: 2

**FOR415 - Prescribed Burn Planning** FOR 415 provides a practical overview of planning, mapping, and execution of prescribed burns for ecological restoration efforts in woodland and prairie habitats or other wildland areas. Emphasis will be placed on writing burn prescriptions, laying out burn units, planning and executing burns, and long term monitoring efforts. This will be accomplished with weekly on-line reading assignments followed by Friday morning field trips to visit burn units, prepare control lines, record weather observations, and conduct fuel model assessments. Requires field trip transportation fees and supplemental course expenditures not to exceed \$45 per course registration. Offered during spring semesters. Prerequisite: FOR 315-Fire in Wildland Management. Consent of instructor. Credit Hours: 2

**FOR416 - Forest Resource Management** The application of business procedures and technical forestry principles to manage forest properties. Emphasis on integrated resource management for tangible and

intangible benefits. Prerequisite: FOR 351, completion of Forest Resource summer camp series or consent of instructor. Requires field trip transportation fee and supplemental expenditures not to exceed \$40 per course registration. Credit Hours: 4

**FOR417 - Forest Land-Use Planning** Principles of location theory as a basis for determining land use; supply of forest land; population pressure and demand; conservation principles; determination of forest land values; institutional factors influencing forest land-use; forest taxation; special taxes, and capital gains. Taught in alternate years. Prerequisite: FOR 411 or consent of instructor. Credit Hours: 2

**FOR418 - Marketing of Forest Products** The role of marketing in the forest industries; review of economic principles; product policy, planning the product line, pricing, marketing channels, marketing programs, marketing organization, and marketing research as influences on the marketing of lumber, wood products, pulp, and paper. Taught in alternate years. Prerequisite: FOR 411 or consent of instructor. Credit Hours: 2

**FOR420 - Park and Wildlands Management** The management of state and federal parks and recreation areas. A systems approach toward management and decision-making will be emphasized. Requires field trip transportation fees and supplemental expenditures not to exceed \$50 per course registration. Credit Hours: 3

**FOR421 - Recreation Land-Use Planning** Principles and methods for land-use planning of park and recreation environments with emphasis on human dimensions of natural resource research. Focus on planning process and types of information to gather and organize. Application in group field projects. Prerequisite: FOR 220, 420, or consent of instructor. Requires field trip transportation fee not to exceed \$25 per course registration. Credit Hours: 3

**FOR422C - Park and Wildlands Management Camp** A study of park conditions, visitors, and management practices at selected county, state, and federal park systems in the U.S., including the federal wilderness preservation system. Prerequisite: FOR 220 or consent of instructor. Requires field trip transportation fees and supplemental expenditures per course registration. Summer camp fees and costs are outlined in the Forestry major - Forest Recreation and Park Management Specialization. \*\*Proposed fee amount: \$750 pending Board of Trustees approval-Meeting April 11, 2024. Credit Hours: 6

**FOR423 - Environmental Interpretation** (Same as AGRI 423 and REC 423) Principles and techniques of natural and cultural interpretation. Two hours lecture, three hours laboratory. Prerequisite: ten hours biological science or ten hours of recreation. Requires field trip transportation fee not to exceed \$40 per course registration. Credit Hours: 3

**FOR425 - Habitat Management for Wild Game** Introduction to the field of habitat management for wild game species in the Central Hardwood Forest Region of North America. Special emphasis will be placed on providing and manipulating the essential habitat requirements for trophy game including deer, turkey, and upland birds. A holistic approach to habitat management will be emphasized to identify how management of wild game habitat can satisfy other landowner goals and objectives. Restricted to junior level standing or above or permission of instructor. Credit Hours: 3

**FOR428 - Urban Forestry** An introduction to principles and practices useful in the management of trees and forests in populated settings. Emphasis is placed on the development of comprehensive management strategies consistent with the biological, physical, economic and social constraints of the urban environment. Credit Hours: 2

**FOR429 - Watershed Management Field Laboratory** A field intensive laboratory course focused on hydrological and biological methods used to manage watersheds and assess watershed health. Laboratory topics include stream gauging, soil water and ground water sampling, channel morphology, stream benthos measurements, and water quality analysis of stream and lake ecosystems. Requires field trip transportation fee not to exceed \$30 per course registration. Credit Hours: 2

**FOR430 - Wildland Watershed Management** Emphasis is placed on the principles, technical problems, procedures, alternatives, and consequences encountered in managing wildland watersheds for the production of quality water in harmony with other uses. Credit Hours: 3

**FOR431 - Regional Silviculture** This course examines prevailing management practices within each of the major forested regions of the United States. The course is primarily intended for students interested in wildlife habitat, wood production, or restoration. Emphasis is placed on understanding how underlying soils, silvics, climate, biotic agents, social forces, and past uses drive forestry differentially across the country. Prerequisite/Co-Requisite: FOR 310, or consent of instructor. Credit Hours: 3

**FOR451 - Wildlife Habitat and Populations** This course is designed to familiarize students with a scientific understanding of major topics in wildlife ecology and management, with a special focus on Forestry majors and natural resource inventory techniques. Students will gain knowledge of the history of the field of wildlife management, primary wildlife management principles and practices, ecological theory pertinent to wildlife populations and habitat, and current important issues/problems regarding wildlife management and natural resource inventory. Credit Hours: 3

**FOR452 - Forest Soils** Forest Soils is designed to give the student a more comprehensive in-depth study of the patterns and processes of soil formation and their relation to forest productivity. Upon completion of the course, student will be familiar with soil/plant interactions, water relationships, and forest soil management for sustainable productivity and environmental quality. This course provides a sound basis for learning basic soils concepts specifically related to forest ecosystems which are beneficial to Forestry majors and those majoring/minoring in Soil Science or related natural science disciplines. Prerequisite: FOR 352 or consent of instructor. Requires field trip transportation fee not to exceed \$25 per course registration. Credit Hours: 3

**FOR452L - Forest Soils Laboratory** Companion laboratory for FOR 452. Emphasis is on methods to characterize and evaluate the chemical, physical, and biological properties of forest soils. Requires field trip transportation fee not to exceed \$25 per course registration. Offered spring semester, even years. Credit Hours: 2

**FOR453 - Environmental Impact Assessment in Forestry** Methods of assessing the environmental impact of land-use systems on forest resources and assessing the impact of forest management systems on environmental quality are presented. Case studies culminating in the preparation of environmental impact statements are emphasized. Restricted to senior standing in a natural resource major. Requires field trip transportation fee not to exceed \$25 per course registration. Credit Hours: 2

**FOR454A - Forest Ecology Field Studies-Boreal** A study of forest communities, soils, and site conditions. Course requires a field trip of about 10 days. Each trip is worth three semester credits; a maximum of 6 credits may be applied toward degree. Restricted to senior standing in natural resources or biological sciences, courses in tree identification, forest ecology, and soils. Special approval needed from the instructor. Requires field trip transportation fee not to exceed \$300 per course registration. Credit Hours: 3

**FOR454B - Forest Ecology Field Studies-Lake States** A study of forest communities, soils, and site conditions. Course requires a field trip of about 10 days. Each trip is worth three semester credits; a maximum of 6 credits may be applied toward degree. Restricted to senior standing in natural resources or biological sciences, courses in tree identification, forest ecology, and soils. Special approval needed from the instructor. Requires field trip transportation fee not to exceed \$300 per course registration. Credit Hours: 3

**FOR454C - Forest Ecology Field Studies-Southern Appalachians** A study of forest communities, soils, and site conditions. Course requires a field trip of about 10 days. Each trip is worth three semester credits; a maximum of 6 credits may be applied toward degree. Restricted to senior standing in natural resources or biological sciences, courses in tree identification, forest ecology, and soils. Special approval needed from the instructor. Requires field trip transportation fee not to exceed \$300 per course registration. Credit Hours: 3

**FOR454D - Forest Ecology Field Studies-Southern Pine** A study of forest communities, soils, and site conditions. Course requires a field trip of about 10 days. Each trip is worth three semester credits; a maximum of 6 credits may be applied toward degree. Restricted to senior standing in natural resources or biological sciences, courses in tree identification, forest ecology, and soils. Special approval needed from the instructor. Requires field trip transportation fee not to exceed \$300 per course registration. Credit Hours: 3

**FOR454E - Forest Ecology: Southwestern Fuels Management** A study of forest communities, soils, and disturbance factors in the Southwestern United States. Course requires a field trip of about 8 days. Each trip in the Forest Ecology Series is worth three semester credits; a max of 6 credits may be applied toward student's degree program. The Southwestern Fuels Management course focus is on learning about fuels inventory and the mapping software in use by most federal agencies when developing fuels project work across jurisdictions. A main deliverable of this course will be hands-on experience in writing a fuels project analysis for an ongoing district planning team, learning about fuels, modeling software, and field methods. Students will also have the opportunity to work with an on-site field forester and fire ecologist and visit national historic sites. Prerequisites: FOR 315 or concurrent enrollment and FOR 351 and consent of instructor. Required field trip transportation and supplemental expenditure fee not to exceed \$300 per course registration. Credit Hours: 3

**FOR460 - Forest Industries** Analysis of raw material requirements, the processes and the products of forest industries. The environmental impact of each forest industry will also be discussed. Credit Hours: 2

**FOR470 - Wilderness Management, Policy, and Ethics** Study of current management philosophy and practice in America's wilderness. Analysis of current wilderness policy and its historical evolution. Discussion of the evolution of the wilderness idea and the individuals that have influenced it. Weekend field trip required. Offered alternate (even) years. Restricted to senior standing. Required field trip transportation and materials fee not to exceed \$80 per course registration. Credit Hours: 2

**FOR471 - Interdisciplinary Approaches to Environmental Issues** Application of concepts for the biological, physical and social sciences, economics, humanities and law, are used to understand the interdisciplinary complexities of environmental issues. Students will develop and demonstrate problem-solving skills as part of a team analyzing a regional environmental issue. Team-taught seminar style discussions. Prerequisite: PLB 301I and admission to Environmental Studies minor program. Credit Hours: 3

**FOR480 - Natural Resource Conflict Management** Examines the role and methods of stakeholders in influencing natural resource policies. Emphasis on applied methods, techniques and strategies for conflict resolution, especially collaborative decision making and persuasion theory. Restricted to junior standing or consent of instructor. Credit Hours: 3

**FOR486 - Invasive Plant Ecology and Management** (Same as CSEM 486, PSAS 486) Ecology and evolution of invasive plant species, with a focus on land management, including characteristics and biology, introduction and spread, population dynamics, community impacts and ecological interactions, and invasive plant evolution and adaptation, as well as management techniques and considerations, including biological, chemical, and mechanical control. Prerequisite: BIOL 307 or consent of instructor. Restricted to junior standing. Credit Hours: 3

**FOR490A - Resources Management Consortium** Intensive field course in resources management decision making. Student serves as team member in solving resource problems in forestry, wildlife management, recreation, and interpretation at Land Between the Lakes. Enrollment is limited to six. Course taught at Land Between the Lakes. Not for graduate credit. Special approval needed from the instructor. Requires transportation, room and board fee not to exceed \$150 per course registration. Credit Hours: 2

**FOR492 - Special Studies for Honor Students** Research and individual problems in forestry. Not for graduate credit. Prerequisite: a 3.0 minimum grade point average. Special approval needed from the program. Credit Hours: 1-4

**FOR494A - Practicum-Forest Environmental Assessment** Supervised practicum in a professional setting. Emphasis on administration, supervision, teaching and program leadership in community, school, park, forest, institution, and public or private agencies. Students should enroll according to their curriculum specialization. Special approval needed from the instructor. Credit Hours: 1-6

**FOR494B - Practicum-Outdoor Recreation Resource Management** Supervised practicum in a professional setting. Emphasis on administration, supervision, teaching and program leadership in community, school, park, forest, institution, and public or private agencies. Students should enroll



according to their curriculum specialization. Special approval needed from the instructor. Credit Hours: 1-6

**FOR494C - Practicum-Forest Resources Management** Supervised practicum in a professional setting. Emphasis on administration, supervision, teaching and program leadership in community, school, park, forest, institution, and public or private agencies. Students should enroll according to their curriculum specialization. Special approval needed from the instructor. Credit Hours: 1-6

## Forestry Faculty

**Akamani, Kofi**, Associate Professor, Ph.D., University of Idaho, 2011.

**Carver, Andrew D.**, Professor, Ph.D., Purdue University, 1998.

**Groninger, John W.**, Professor, Ph.D., Virginia Polytechnic Institute and State University, 1995.

**HolzmueLLer, Eric J.**, Professor, Ph.D., University of Florida, 2006.

**Nielsen, Clayton K.**, Professor, Ph.D., Southern Illinois University, 2001.

**Park, Logan O.**, Associate Professor, Ph.D., Virginia Polytechnic Institute and State University, 2009.

**Pease, Brent S.**, Assistant Professor, Ph.D., North Carolina State University, 2021.

**Ruffner, Charles M.**, Professor, Ph.D., Pennsylvania State University, 1999.

**Schoonover, Jon E.**, Professor, Ph.D., Auburn University, 2005.

**Williard, Karl W. J.**, Professor, Ph.D., Pennsylvania State University, 1999.

**Zaczek, James J.**, Professor, Ph.D., Pennsylvania State University, 1994.

## Emeriti Faculty

**Chilman, Kenneth C.**, Associate Professor, Emeritus, Ph.D., University of Michigan, 1972.

**Mangun, Jean C.**, Associate Professor, Emeritus, Ph.D., Purdue University, 1991.

**Phelps, John, E.**, Professor, Emeritus, Ph.D., University of Missouri, 1980.

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