

# **School of Forestry and Natural Resources**

Unit Assessment Report

2015-16

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The School of Forestry and Natural Resources (SFNR) offers undergraduate and graduate degrees in three major areas: Forestry, Wildlife Management, and Spatial Information Systems (SIS). SFNR's graduate program offers a Master of Science in Forest Resources with specialization in Forestry, Wildlife Management, and Spatial Information Systems. Additionally, the School also offers a two-year degree in Land Surveying Technology. The mission statement for the School is as follows.

*The mission of the School of Forest Resources is to educate professional forest and wildlife resource managers, to enlarge the body of knowledge in renewable forest resources, and to disseminate new ideas and technology. Successful accomplishment of this mission will promote and enhance management, conservation and appreciation of public and private forests, thereby providing for continuous production and optimum attainment of a variety of forest resources for the people of Arkansas, the South and the Nation. These resource benefits include the production of wood and fiber, wildlife and clean water; as well as provision for recreation, aesthetic, and other special values.*

**1. What are the Student Learning Outcomes (SLOs) for your unit? How do you inform the public and other stakeholders (students, potential students, the community) about your SLOs?**

A Natural Resources Management graduate of the School of Forestry and Natural Resources should be able to:

1. Demonstrate professional competence and diversity of background to assume positions with a variety of resource management organizations, such as private industry, private consulting firms, or public agencies.
2. Collect, synthesize, and analyze natural resource data and make resource management decisions based on such analysis.
3. Perform critical reasoning, and demonstrate ability to make science-based judgment on natural resource management issues.
4. Demonstrate good written and oral communication skills and the ability to translate complex and technical resource management information and communicate them in a manner that is easily understood by multiple audiences.
5. Demonstrate good technology skills and the ability to analyze resource data using these tools.
6. Demonstrate advanced knowledge and skills based on the requirements of his/her chosen degree option.
7. Identify and pursue gainful employment or pursue advanced graduate degrees.

**NOTE: These learning outcomes have not yet been officially accepted by the faculty. We had plans to do so and also to have discussions on revising our assessment plan at a faculty retreat. However, due to UAM's plans to revise strategic plans for the university, the retreat has been postponed. We hope to have these discussions next year so that our plans fit the university's goals better.**

These statements are easily accessible on the web at the School's home page. The url for these statements is: <http://www.afrc.uamont.edu/sfr/mission2.htm>.

The School's Forestry curriculum is accredited by the Society of American Foresters (SAF). The letter of accreditation is attached in Appendix I.

All SFNR programs (forestry, wildlife management and conservation, geospatial science, communications in natural resources, environmental science, land surveying, and graduate programs) have separate brochures that provide information on the requirements of these programs to prospective students. These brochures are attached in Appendix III. The SFNR web site (<http://www.afrc.uamont.edu/sfr/index.htm>) also provides ample information on our programs to any prospective students. In addition, the UAM catalog also includes detailed information on our programs. Several times a year, the School rents information booths at professional meetings and conventions in an effort to recruit and provide information to prospective students. Once a year, the School holds a recruitment day that brings in students from neighboring high schools. The event involves current SFNR students and faculty who demonstrate teaching and research activities at SFNR to prospective students.

Current students are reached in a variety of different ways. All SFNR faculty members are required to develop specific, measurable core competencies/learning objectives for each of their courses. Students are required to meet the requirements of these core competencies over the course of the semester before they can receive a passing grade for the course. These core competencies are clearly explained in course syllabi and communicated to the students on the first day of class. Examples of several course syllabi are included in Appendix IV. Many SFNR faculty members also have web sites for their courses and these learning objectives are communicated to the students through these web sites.

Additionally, SFNR graduate students are also in constant communication with their thesis advisors and graduate committee members. Graduate students receive ample advice and mentoring needed to fulfill the requirements for their Master of Science degree.

**2. Describe how your unit's Student Learning Outcomes fit into the mission of the university.**

School of Forest Resource’s mission statement and goals contribute to the University’s overall mission statement of seeking to enhance and share knowledge, to preserve and promote the intellectual content of society, and to educate people for critical thought. The following table presents a comparison of SFNR’s mission statements to those of the University.

*“The mission the University of Arkansas at Monticello shares with all universities is the commitment to search for truth, understanding through scholastic endeavor. The University seeks to enhance and share knowledge, to preserve and promote the intellectual content of society, and to educate people for critical thought “*

Generally speaking, this part of the UAM mission statement corresponds to all of SFNR’s SLOs. By educating students for graduate and undergraduate degrees, through applied research on important and relevant natural resource issues, the School fulfills this part of the University’s mission.

*“The University provides learning experiences that enable students to synthesize knowledge, communicate effectively, use knowledge and technology with intelligence and responsibility, and act creatively within their own and other cultures.”*

This part of the UAM mission statement corresponds to SFNR’s SLOs #2, 3, 4, 5, and 6. Through its academic curricula and extra-curricular activities the School seeks to provide the students professional and educational competencies. These skills prepare the students to become better professional, to communicate effectively, and if desired, to be able to pursue graduate studies.

*“The University strives for excellence in all its endeavors. Educational opportunities encompass the liberal arts, basic and applied sciences, selected professions, and vocational/ technical preparation. These opportunities are founded in a strong program of general education and are fulfilled through contemporary disciplinary curricula, certification programs, and vocational/technical education or workforce training. The University assures opportunities in higher education for both traditional and non-traditional students and strives to provide an environment that fosters individual achievement and personal development.”*

This part of the UAM mission statement corresponds to SFNR’s SLOs #1 and #7. The School seeks to achieve excellence in its academic programs through a combination of general education courses, core courses and other electives in its undergraduate curricula. The School’s graduate program also requires coursework that prepares the students to become mid-level professionals or to pursue further graduate studies for a career in academia. The School’s research program enhances

student learning by providing students with real-life field examples and research experience.

Therefore, the School's mission statement and goals contribute to the University's mission through preparation of the student for life-long learning and contribution in natural resources professions.

The Arkansas Forest Resources Center (AFRC), a University of Arkansas Center of Excellence, has three separate missions as part of the University of Arkansas Division of Agriculture's land grant status. The Center's teaching mission is administered through the School of Forestry and Natural Resources. The research and outreach missions, on the other hand, are administered through the Division of Agriculture. AFRC brings together academicians and researchers in the natural resources area from around the state. The mission statement of the Center reads:

*"The mission of the Arkansas Forest Resources Center is to develop and deliver superior programs in education, research and extension that enhance and insure to sustainability of forest based natural resources"*

The Center's mission incorporates the cutting edge, and diverse research conducted by the Center faculty into SFNR's teaching mission. This ultimately results in the delivery of superior and up-to-date learning materials to the students, and to the natural resources community in general. This is a direct component of the University's mission to enhance and share knowledge.

### **3. Provide an analysis of the student learning data from your unit. How is this data used as evidence of learning?**

SFNR faculty members use a variety of methods to assess the achievement of School's learning outcomes. These assessment methods can be broadly categorized into course-specific assessment and degree-specific assessment. These assessment techniques and analyses of data are described below.

#### **A. COURSE-SPECIFIC ASSESSMENT**

Since the School offers several graduate, undergraduate, and associate degrees in fundamentally different subject areas, the nature of course content varies widely within the School. As it stands right now, choice of specific methods of assessment for individual courses is left up to individual instructors. As mentioned earlier, we plan to revise our assessment program in the near future. This should result in a tighter, and more practical assessment system for the School.

Assessment of student performance at SFNR has two elements. The first is individual course-level assessment done by instructors. Second, these course-level assessment data are then used for assessment at the program level. The measure of student performance begins with individual courses. The underlying intent of the School's current assessment system was to produce measurements on students' achievement of specific learning objectives. At the end of each semester, data on course assessment were meant to be reported to the School Assessment Coordinator (Dr. Mehmood) through a short report. This report essentially contained information on student performance in achieving the core competencies. The Assessment Coordinator was supposed to collect and analyze these data for use by the unit and our accreditation agency for the forestry degree—the Society of American Foresters. However, due to a number of personnel and curriculum changes, significant gaps started to occur in data and it became very difficult, if not impossible, to maintain the integrity of the system as it was originally intended. Nevertheless, examples of these course assessment summaries are presented in Appendix II.

Starting from last year, we began to put a significantly greater emphasis on our incoming freshmen class. We began to offer a combined introductory class on natural resource management that is required for incoming freshmen in all degree options. The instructors, Drs. Osborne and Gharis, put a significant amount of work into developing a class that is both educational and exciting for the students. The goal was to give these students a taste of what natural resource management is all about in a teaching format that is fun and exciting. The syllabus for this course is included in Appendix IV. The course included a number of trips to local forest resource industries, visits by the SFNR student leaders, guest speakers, and the use of GIS and other field equipment. We hope that this class will inspire our freshmen students and help in retention. However, it is too early to measure the effects of this new class.

Part of the requirements of Introduction to Natural Resource Management was an individual project for the students to make a short video explaining why they chose natural resources as their field. The students had fun working on these videos and then they presented these videos in front of an audience of SFNR faculty and students. Both the students and the audience members enjoyed these videos tremendously and it was an important learning experience for the students.

As a part of our new Natural Resource Management curriculum, we have also redesigned our Capstone course. This course is now called Natural Resources Practicum, and it is spread over fall and spring semesters. This gives the students more time to do their capstone project. This 2-semester version of the capstone course has started from fall 2016, and hence no data is available.

## **B. DEGREE-SPECIFIC ASSESSMENT**

### **B.S. in Natural Resource Management:**

Since Natural Resource Communication and Environmental science are new options, we do not have any data on them. Therefore, the following discussion will only focus on Forestry, Wildlife Management and Conservation, Geospatial Sciences, and Surveying options.

Tools identified for assessment are:

#### 1. Required coursework.

The forestry, wildlife management and conservation, and geospatial sciences curricula consist of a total of 120 hours of coursework. Students in all three of these majors are required to take a sequence of coursework consisting of a forestry core curriculum and a block of supportive requirements. The students must complete these courses (with the exception of free electives) with a grade of C or better to graduate from the School with a Bachelor of Science degree in forestry, wildlife management, or SIS.

The sequence of courses in these curricula is designed to achieve the School's learning objectives. The number of hours dedicated to each of these learning objectives is balanced against the relative importance of these objectives within the curricula. After going through extensive coursework, seniors enroll in the School's one of two capstone courses—Natural Resource Practicum or SIS Practicum (depending on their major). These capstone courses test the student's abilities in each of the learning areas, and their ability to combine their knowledge in these areas in order to prepare a comprehensive, holistic management plan for a forest; or in case of SIS students, their ability to prepare a comprehensive plan for a project that was assigned to each student.

Faculty advisors within the School ensure that students complete their required course work in a timely manner. Since many of these courses are pre-requisites and co-requisites for other courses, this function served by faculty advisors is critical. This is especially a difficult task for wildlife management advisors since most of the required courses are offered outside of SFNR and many are not offered every year. Advisors routinely check transcripts and run degree audits on their advisees to keep them on track for completion of their degree. Courses listed with a grade lower than C must be retaken for credit. SFNR students are required to re-take courses until grades of C or better are earned. A final check on

graduating seniors is made by running degree audits to ensure that they meet all of their degree requirements.

## 2. Capstone courses

The forestry and wildlife management curriculums include a required integrated resource and planning management course that challenges students to integrate materials learned from previous courses in the development of a management plan that is presented to actual forest landowners. In order to be successful in this course, the students must demonstrate critical thinking, problem solving, planning, and development skills along with the skills of oral and written communication. Since the students are required to work in groups, this course also tests the student's abilities in working as part of a team.

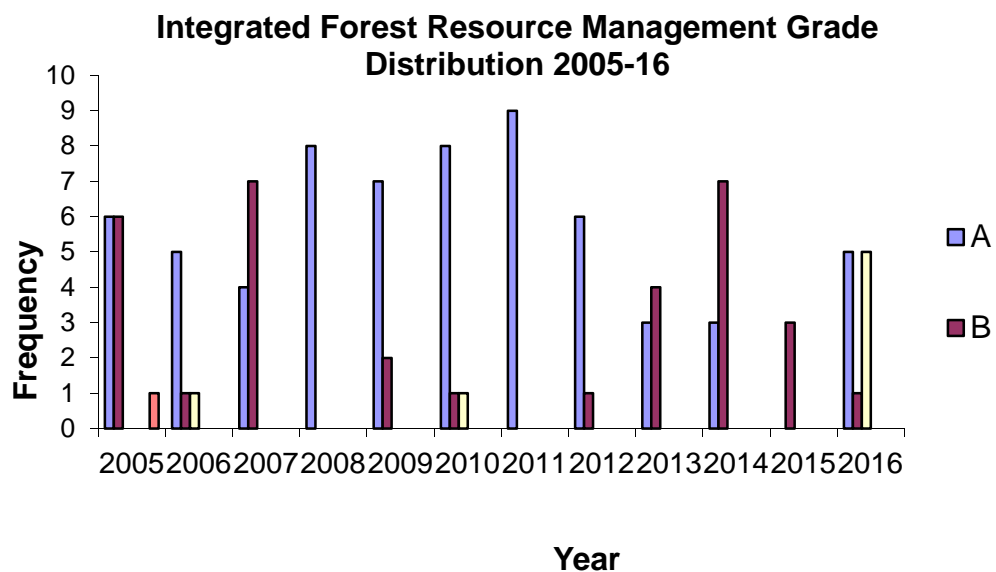
As mentioned earlier, this course requires team work. Teams of 3 students each are assigned parcels of forest land typically owned by non-industrial private forest landowners in the state. Each team was required to complete a comprehensive forest resource management plan for their parcel within the course of a semester (spring semester of their senior year). These plans require a tremendous amount of field work involving survey of the land, inventory of timber, wildlife, and other resources. The forestry students work with their colleagues in wildlife management for collecting these data. This provides some important and interesting experience for the forestry students in that they have to work with students of another discipline who probably have a somewhat different way of looking at natural resource issues. The teams are also required to communicate with their respective landowner and understand his/her plans for the land. All of this information is then used to prepare the management plans. The quality of the management plan demonstrates each team's ability to integrate previous coursework into a working plan that meets specific management objectives. The teams are then required to present their plans in seminars that are open to all. These seminars are attended by many faculty members who actively participate in discussions and test the students through rigorous questioning. Ample feedback is provided as to the plan's effectiveness and integration of relevant course material. The teams also present their plans to their respective landowners. The following chart shows student grade distribution for the course since 2005.

It is evident from the chart that in recent years students have done exceptionally well in the capstone course, especially since 2008. While it is admittedly anecdotal, the fact that these students received high grades despite the rigorous nature of the course is indicative of the quality of their learning experience at the School. However, It is also clear that the rather drastic change in curricula and the course has been difficult for some students. For the first time in a number of



years, there were several C grades in the class. Due to the significant difference between the old and the new curricula, it would have been extremely difficult for students, especially those that were close to completing their degrees, to transition to the new curricula. This put some additional pressure on these students to complete their degree requirements before the new curricula took effect.

The students also present their management plans to the landowners. This opportunity gives the students valuable experience in planning, interpersonal communication, and interaction with landowners.



In addition to the management plan, all senior students are required to complete Senior Seminar to demonstrate their ability to speak about a variety of issues. Students are evaluated by their fellow students during their presentation and feedback is also provided by their instructor. Students are videotaped during their seminar presentation, which adds to the feedback.

The Integrated Resource Planning and Management course provides a unique, practical experience to the forestry students. Students also learn to work as part of a team. In the past year, team members included students in forestry and wildlife management majors, with varying degrees of professional field experience. This diversity of experience in team members provided the students with a taste of the usual real-life work environment for natural resource professionals.

The most significant challenges for students centered on interpersonal issues connected with meeting mutually set deadlines, detail and quality of the work

presented and fair division of labor within the teams. Instructors monitored the progress of the teams and offered technical as well as organizational suggestions when needed.

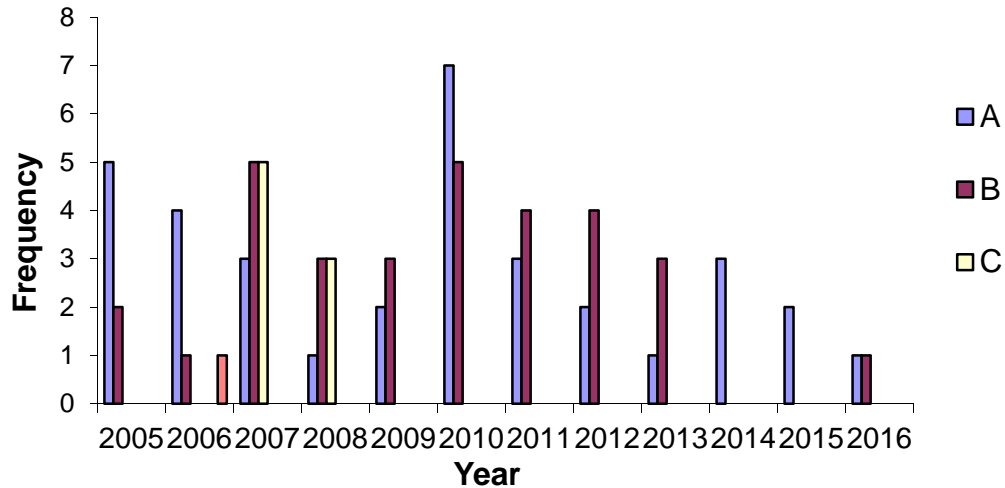
Students reported that the “Integrated” experience is one of the best of their professional education. They appreciated the opportunity to work in groups, and while there were problems, they realized that the world of work is full of similar circumstances.

SFNR faculty agree that this assessment practice is useful in determining if students possessed the ability to synthesize data, organize a presentation, and deliver the information to a group of people.

The SIS curriculum includes a required SIS practicum course that challenges students to integrate materials learned from previous courses in the development of a plan that is assigned to them at the beginning of their final semester. In order to be successful in this course, the students must demonstrate critical thinking, problem solving, technical, and planning skills along with the skills of oral and written communication.

Individual students are assigned a project that requires tremendous amounts of planning, technical abilities, and decision-making abilities on the part of the students. These projects may or may not have had a natural resource component to them, and the nature of the project depends on the students area of concentration—GIS or surveying. Each student is required to collect and analyze data and complete a comprehensive plan (or map) for their project within the course of a semester (spring semester of their senior year). The quality of the plan demonstrates each student’s ability to integrate previous coursework into solving a real-life problem that meets specific management objectives. The students are then required to present their plans in seminars that are open to all. These seminars are attended by many faculty members who actively participate in discussions and tested the students through rigorous questioning. Feedback is provided as to the plan's effectiveness and integration of relevant course material. The following chart shows student grade distribution for the course since 2005.

**SIS Practicum Grade Distribution, 2005-16**



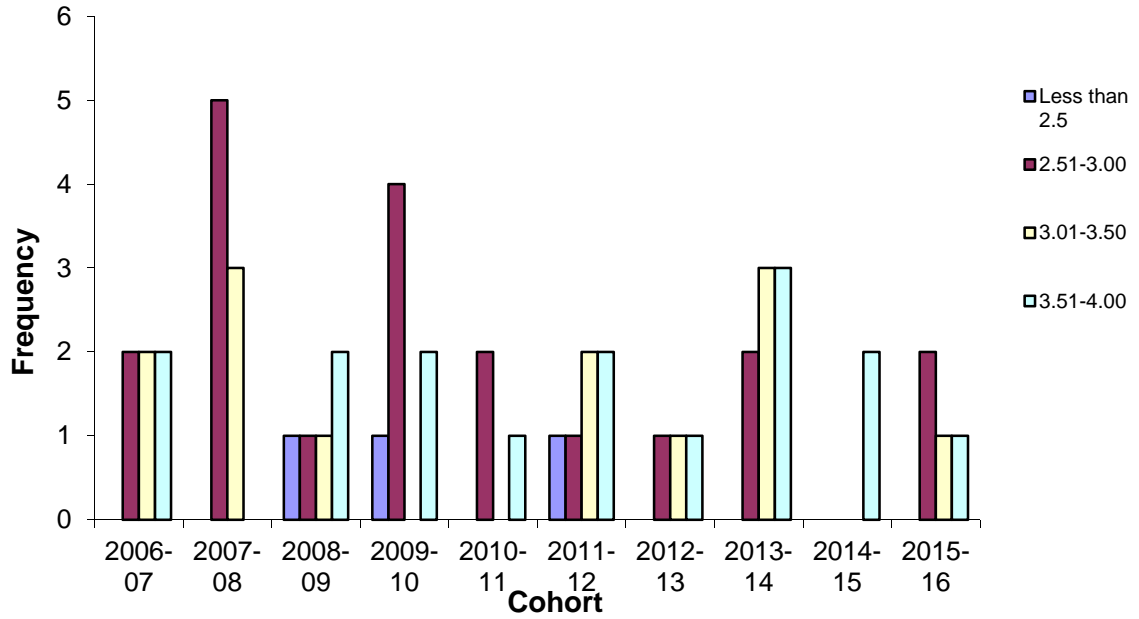
The Practicum course provides a unique, practical experience to the SIS students by working on a real-life project. Students have to use their knowledge of GIS and/or surveying acquired in previous semesters and answer management questions associated with their projects. Instructors monitor the progress of the students and offer technical as well as organizational suggestions when needed.

In past graduate exit interviews, SIS students picked SIS Practicum as one of the most favorite and most useful of their professional education. They appreciated the opportunity to work with a variety of public and private collaborators.

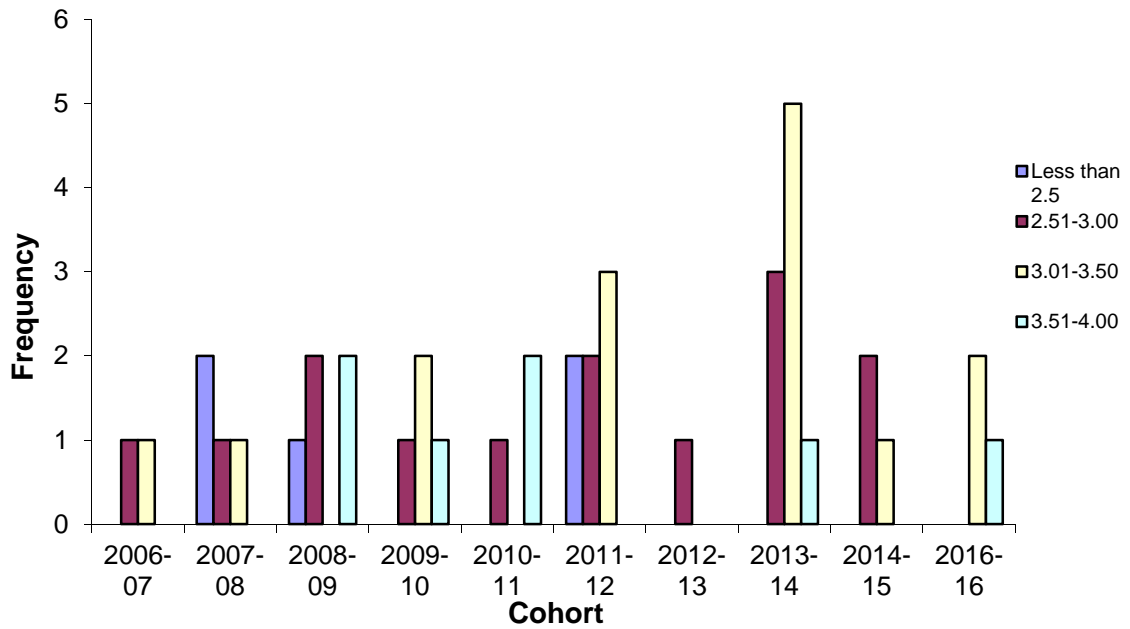
**3. GPA distribution and trends:**

The following three charts show cumulative GPA distributions of the School's forestry, wildlife management, and SIS graduates since the 2006-07 cohort.

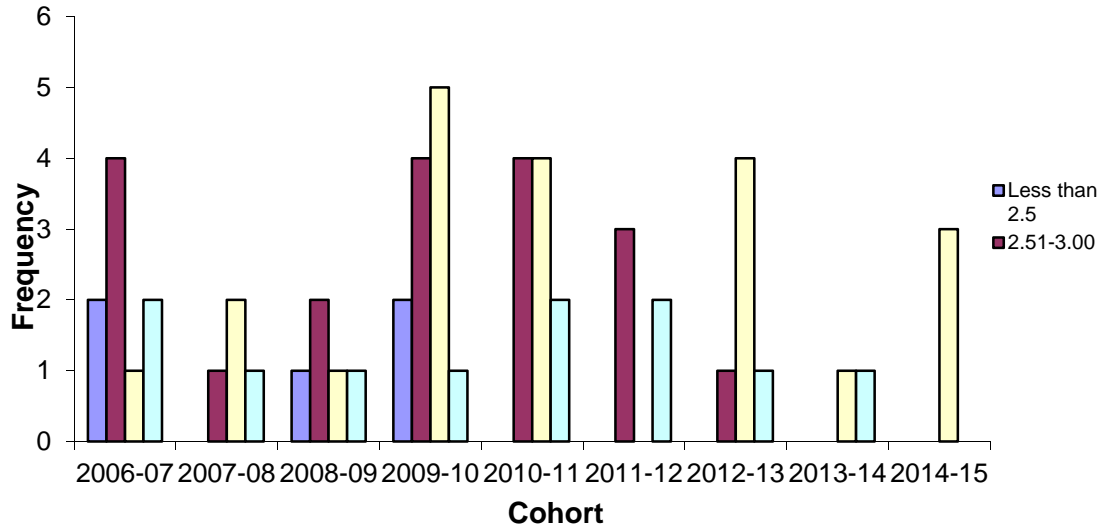
**GPA Distribution of Forestry Graduates, 2006-2016**



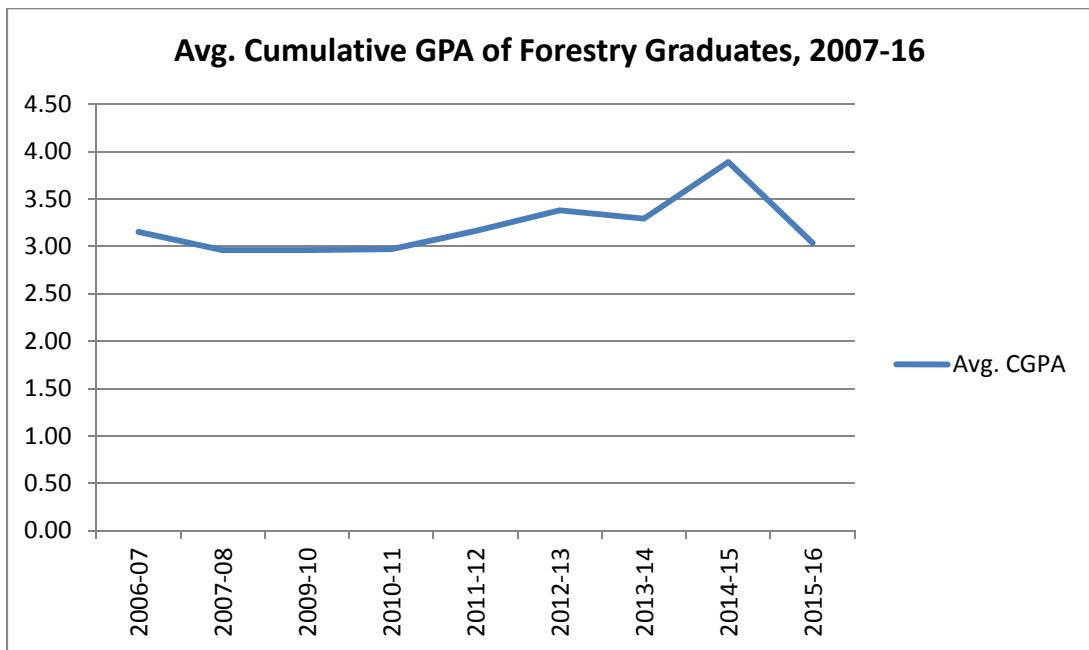
**GPA Distribution of Wildlife Management Graduates, 2006-2016**

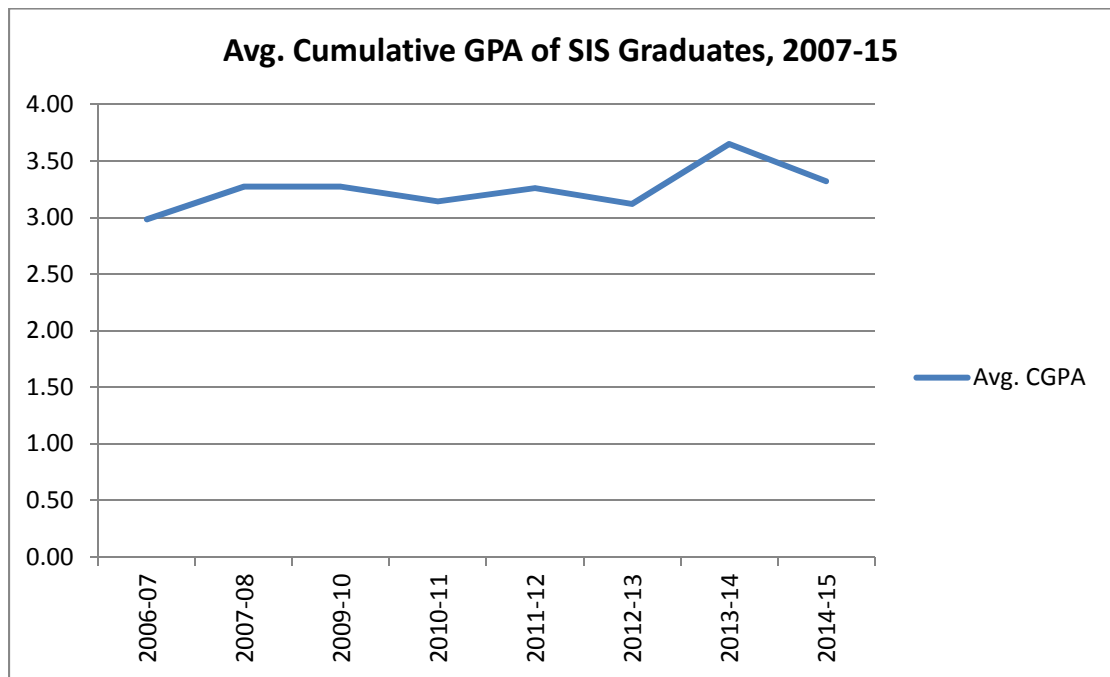
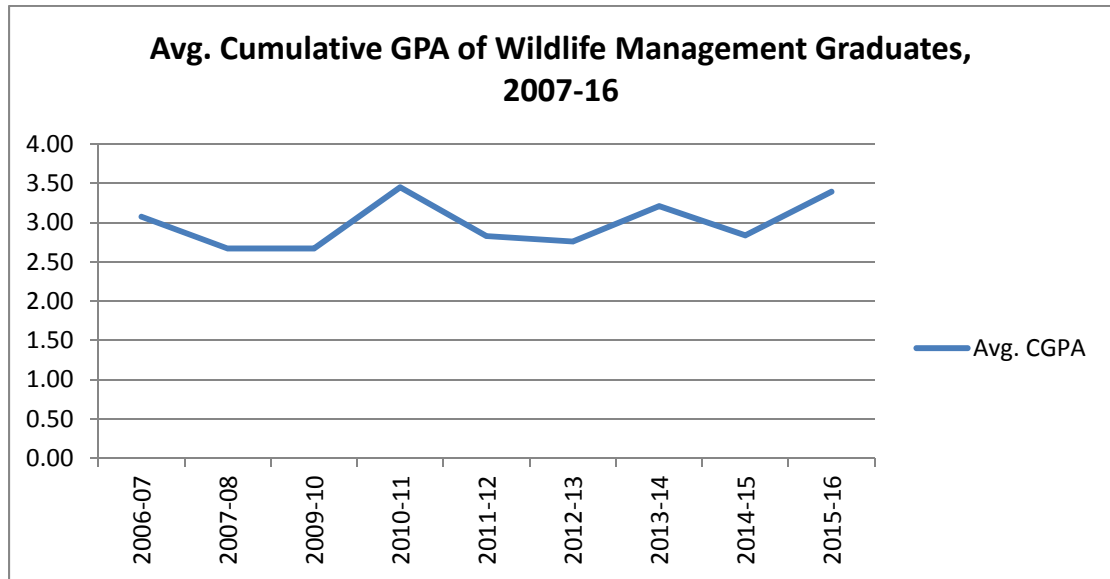


**GPA Distribution of SIS Graduates, 2006-2015**



If we examine the trend in average cumulative GPA for Forestry, Wildlife Management, and SIS graduates, they all show a generally stable or increasing trend. While GPA may not always be the best measure of student learning, these trends do tell us something about SFNR’s graduates.





**Associate of Science Degree in Land Surveying Technology:**

Determined for use as assessment tools are:

1. Required coursework.

The Land Surveying Technology curriculum consists of 65 hours and all students are required to take a sequence of coursework consisting of a surveying associate degree core curriculum and a block of supportive general education requirements. The students must pass these courses with a grade of C or better to graduate from the School with a Associate of Science degree in Land Surveying Technology.

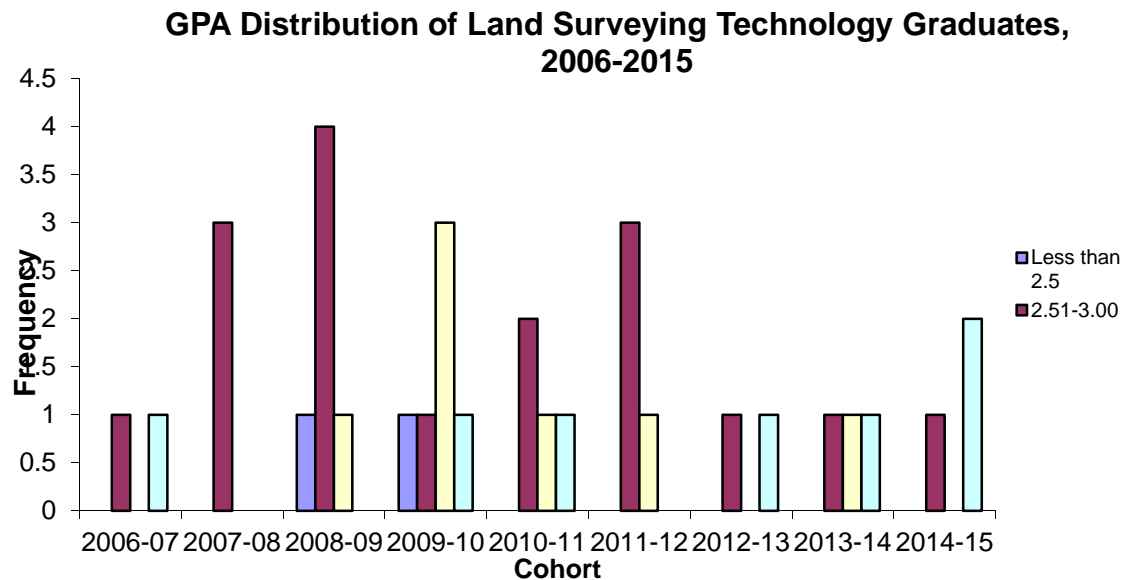
The sequence of courses in the Land Surveying Technology curriculum is designed to achieve the School's learning objectives mentioned above. The number of hours dedicated to each of these learning objectives is balanced against the relative importance of these objectives within the curriculum. This is a coursework only curriculum, and there is no required capstone course.

Faculty advisors within the School ensure that students complete their required course work in a timely manner. Advisors routinely check transcripts and run degree audits on their advisees to keep them on track for completion of their degree. Courses listed with a grade lower than C must be retaken for credit. SFNR students are required to re-take courses until grades of C or better are earned. A final check on graduating seniors is made by running degree audits to ensure that they have met all of their degree requirements.

Feedback from students about the Land Surveying Technology curriculum appeared positive. Students ranked the surveying faculty highly and rated some of the core courses as useful.

2. GPA distribution:

The following chart shows the cumulative GPA distribution of the School's Associate of Science in Land Surveying Technology graduates since the 2006-07 cohort.



### **M.S. Degree in Forest Resources:**

Determined tools for use as assessment are:

#### 1. Required coursework.

All students must complete a minimum of 24 credits of course work and 6 credits of graduate thesis. While courses that may be taken for graduate credit are somewhat flexible and depends on the student's area of specialization, a degree plan identifying all courses to be taken must be filed in advance. All courses included on a student's degree plan must be passed with a grade of C or better. Additionally, no more than two courses with grades below a B can be used to fulfill graduation requirements.

Each student's advisory committee members participate in the development of a customized degree plan. The Graduate Program Coordinator and individual major advisors check transcripts during pre-registration and registration periods. A final check of the student's transcript is made when students are ready for graduation.

The faculty advisor and advisory committee members have ample opportunities to communicate with students during the advising process. Communication can



encompass the student's progress through the graduate program, feedback to the student regarding his/her coursework and research, and the student's feelings regarding his/her project and the overall graduate experience at SFNR.

## 2. Seminar.

All graduate students participate in two seminar courses to enhance oral communication skills. Each student is required to choose an appropriate forest resource topic (usually a topic related to their thesis project) and make a professional presentation to faculty, staff, and students.

Student seminars are videotaped and evaluated by the lead instructor for the seminar course. These seminars are also attended by faculty members, staff, and other students. Ample feedback is provided by these attendees during the seminar.

This process provides feedback to the students and helps determine their ability to synthesize data, organize a professional presentation, and deliver the information to a group of people.

## 3. Quantitative and analytical skills.

All students are required to demonstrate quantitative and analytical competence through a series of two required applied statistics courses, other quantitative courses relevant to their area of study, and analysis and interpretation of information gathered in their thesis project. In addition, there are other elective graduate courses that have substantial quantitative components such as Advanced Forest Management, and Advanced Forest Economics.

Quantitative and analytical skills are assessed for each student by monitoring their progress in applied statistics courses and other quantitative courses pertinent to their program of study as outlined by their degree plan.

All of our students enrolled in our two applied statistics courses received a grade of B or better during 2006-2013. Many of our graduate students are currently analyzing data from their thesis projects. Their progress in this endeavor is being closely monitored by their faculty advisor and advisory committee members.

## 4. Thesis.

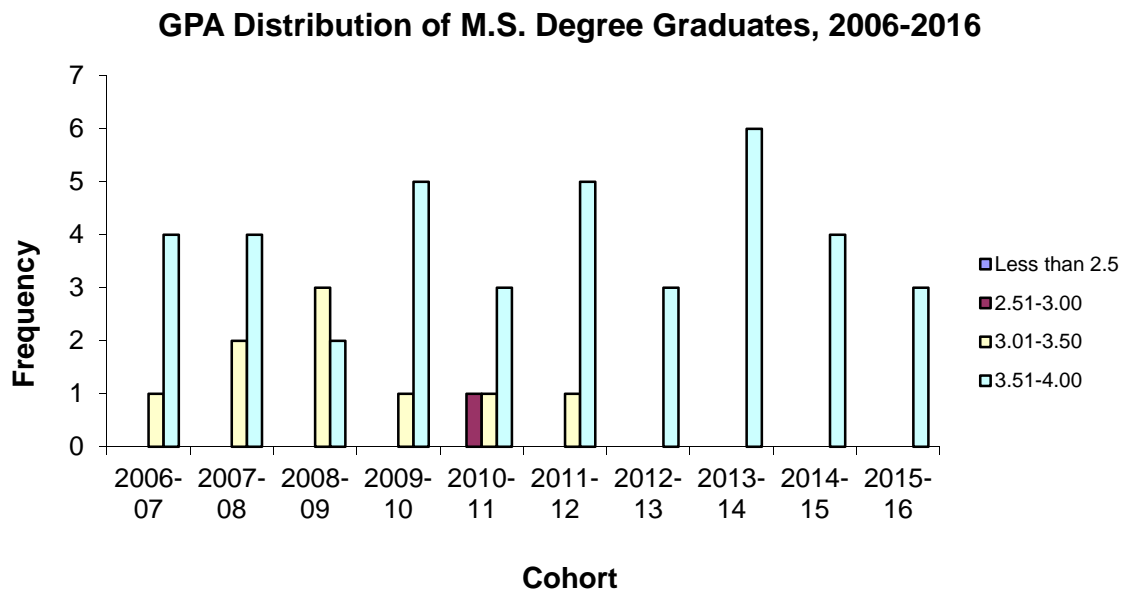
Students are required to define an appropriate topic for investigation; review relevant literature; develop a study plan; collect, analyze, and interpret data; test

hypotheses and draw conclusions; and write and defend a thesis. The final thesis product must be of the utmost quality in both research and document presentation. The drafts are submitted to the student's graduate committee of three to five members for review, comments, and suggested revision.

Each student's progress is monitored by their thesis chair and committee during the topic development; review of relevant literature; development of supporting study plan; collection, analysis, and interpretation of the data; hypothesis testing; development of conclusions; and development of the appropriate document design.

5. GPA distribution:

The following chart shows the cumulative GPA distribution of the School's Master of Science in degree recipients since 2006-07.



5. Oral comprehensive examination.

A student's graduate education culminates in an oral comprehensive examination, including a thesis defense that is administered by the student's advisory committee. The comprehensive examination typically covers, but is not limited to, material presented in and related to the thesis, course work, and other appropriate literature and information. Unanimous agreement of the graduate

advisory committee is required for a student to complete our graduate program and receive a Master of Science degree.

All of SFNR's graduating M.S. students passed their examination based on unanimous agreement of their advisory committee. The oral comprehensive exam maintained a high level of rigor and these exams are often attended either by the Dean or a faculty representative of the Dean.

The following is a sample of thesis topics for our Master of Science degree recipients since 2008:

“ECONOMIC IMPACT ASSESSMENT OF THE SHORTLEAF-BLUESTEM COMMUNITY RESTORATION PROJECT”

“SMALL MAMMAL HABITAT UTILIZATION OF A FEEDSTOCK AGROFOREST SYSTEM IN SOUTHEAST ARKANSAS”

“ROCKY MOUNTAIN BIGHORN SHEEP SPATIAL ECOLOGY”

“TRENDS IN CONSUMPTION AND PRICE OF WOOD-BASED AND CONVENTIONAL SOURCES OF ENERGY IN THE UNITED STATES”

“RELATIONSHIPS AMONG WHITE-TAILED DEER DENSITY ESTIMATES, HABITAT, AND SPATIAL SCALE”

“INDIVIDUAL TREE WEIGHT EQUATIONS FOR TOTAL GREEN BIOMASS AND TOTAL MERCHANTABLE PULPWOOD FOR PLANTATION COTTONWOODS IN EASTERN ARKANSAS”

“A JOURNEY NORTH: AMERICAN WOODCOCK SPRING MIGRATION CHRONOLOGY AND USE OF INDUSTRIAL FORESTS IN CENTRAL ARKANSAS”

“GPS COLLAR ERROR AND ITS IMPLICATIONS ON A WHITE-TAILED DEER STUDY ON CHOCTAW ISLAND WILDLIFE MANAGEMENT AREA, DESHA COUNTY, ARKANSAS”

“ASSESSING THE SPATIAL EXTENT AND SEVERITY OF FOREST DISTURBANCE EVENTS ON BIRD POPULATIONS IN THE OZARK NATIONAL FOREST, ARKANSAS”

“EFFECTS OF HEAT TREATMENT ON THE MECHANICAL PROPERTIES OF SELECTED WOOD SPECIES”

“A COMPARISON OF PIXEL-BASED AND OBJECT-BASED LAND USE/LAND COVER CLASSIFICATION METHODOLOGIES AT DIFFERENT RESOLUTIONS”

“ESTIMATING FINE ROOT BIOMASS IN A FAST GROWING, SHORT ROTATION WOODY BIOMASS PLANTATION IN THE LOWER MISSISSIPPI ALLUVIAL VALLEY”

“DEVELOPMENT OF NEAR INFRARED SPECTRAL MODELS FOR CHARACTERIZING THE PHYSICAL AND CHEMICAL PROPERTIES OF AMY SILT LOAM SOIL IN SOUTHEASTERN ARKANSAS”

**4. Other than course level/grades, describe/analyze other data and other sources of data whose results assist your unit to improve student learning.**

The School utilizes a variety other measures to collect data. These data are then used to modify and refine the School’s programs. These measures include analysis of test scores, senior exit interviews, alumni surveys, employer surveys, and student surveys in selected courses.

A statistical analysis of the ACT scores of recent SFNR graduates has found fairly strong positive correlation of these scores to their cumulative GPA. The results of the analysis are as follows.

<b>Comparison Pair</b>	<b>Correlation Coefficient</b>
ACT Composition – Cumulative GPA	0.73
ACT Reading – Cumulative GPA	0.67
ACT English – Cumulative GPA	0.65
ACT Science – Cumulative GPA	0.65
ACT Math – Cumulative GPA	0.81

While these results are not surprising, they do highlight the challenge in improving student learning. Each student has a unique set of abilities and deficiencies, and as such they do have impacts, whether positive or negative, on our efforts in student learning assessment.

Each graduating senior has been required to participate in an exit interview where the student and the unit head discuss the educational experience of the student. This survey forms a major component of student feedback in the School’s assessment system and provides the School with a graduating student’s perspective on our programs. However, due to scheduling problems this has become increasingly difficult. We are going to incorporate this into our capstone courses. Consequently, we do not have a summary of exit interviews for this year’s report. However, we do hope to include this in next year’s report.

The School also conducts periodic alumni and employer surveys. The School hosts an alumni breakfast during the Arkansas Forestry Association annual meeting. This event is typically held in September and has always been fairly well attended. We conducted a survey of the attendees in 2014. A sample survey instrument and a summary of the survey is attached in Appendix VI.

Data on job placement can also be useful in program assessment. Information on job/graduate school placement is currently not being formally collected by the School. If a graduating student was able to secure a job by his/her senior exit interview, then it would be indicated in the survey. However, anecdotal evidence gathered through personal communication indicate that forestry, wildlife management, SIS, and surveying graduates have always had high placement record. This is an indication that our graduates are qualified and competent to find gainful employment in the profession. This, in turn, is also indicative of the fact that our programs fill the employment requirements of many industrial, private and public employers.

Although job placement information for SFNR graduate students is currently not being collected formally, it is often received by the faculty through personal communication. It should be noted that several of our graduate students have been offered, and some have accepted, employment prior to their graduation.

The following table represents the current job placement records of our Master of Science degree recipients since 2005.

<b>Position</b>	<b>Employer</b>	<b>Location</b>
Ph.D. student	Mississippi State University	Starkville, MS
Ph.D. student	Louisiana State Univ.	Baton Rouge, LA

Ph.D. student	Oklahoma State Univ.	Stillwater, OK
Ph.D. student	Louisiana State Univ.	Baton Rouge, LA
Ph.D. student	Virginia Tech.	Blacksburg, VA
Research Technician	Michigan State University	Lansing, MI
Ph.D. student	University of Florida	Gainesville, FL
Ph.D. Student	Auburn University	Auburn, AL
Ph.D. Student	Oklahoma State Univ.	Stillwater, OK
Ph.D. Student	Mississippi State Univ.	Starkville. MS
Natural Res. Specialist	Virginia Tech.	Virginia
Research Forester	Weyerhaeuser Company	Columbus, Mississippi
Forester	International Paper Co.	Louisiana
Forester/GIS	Kingwood Forestry	Arkadelphia, Arkansas
Forestry Analyst	Mid-South Engineering	Hot Springs, Arkansas
Remote Sensing Specialist	U.S. Forest Service	Salt Lake City, Utah
Research Technician	U.S. Forest Service	Starkville, Mississippi
Fire Officer	U.S. Forest Service	Mio, Michigan
GIS Analyst	Michael Baker, Inc.	Washington, DC
Remote Sensing Specialist	Contractor to Federal Government	Columbia
GIS Specialist	NY State Department of Environmental Cons.	Albany, New York
GIS/Remote Sensing Analyst	Environmental Consulting Firm	Shreveport, Louisiana
GIS Program Manager	Arkansas Geographic Information Office	Little Rock, Arkansas
Cultural and Natural Resource Manager	Pea Ridge National Military Park, National Park Service	Pea Ridge, Arkansas
Research Technician	Upper Midwest Environ. Sciences Center, USGS	Onalaska, Wisconsin
Wildlife Biologist	ORISE – Fort Carson	Colorado Springs, CO

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Wildlife Biologist	APHIS - Wildlife Services	Homestead, Florida
Research Specialist	University of the South	Sewanee, Tennessee
Research Technician	Vanderbilt University	Nashville, Tennessee
Ph.D. Graduate Assistant	Texas Tech University	Lubbock, Texas
Biology Instructor	Missouri Valley College	Marshall, Missouri
Biology Instructor	Southern Arkansas Univ.	Magnolia, Arkansas
Biology Teacher	High School	Nashville, Tennessee
Resource Analyst	Hancock Timber Corp.	Charlotte, NC

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Some instructors use other forms of data such as student feedback to assess their own classes. Examples of two such feedbacks are presented in Appendix V.

Another interesting set of feedback came from local elementary school teachers when some SFNR students visited the elementary schools to participate in natural resource-related learning activities with the students. A report on this assessment is also included in Appendix V.

The information gathered from these sources has been instrumental in modifications and refinement of the SFNR curriculums. For example, previous employer surveys had indicated that while our students had excellent technical skills, their knowledge and understanding of social issues was somewhat lacking. This ultimately resulted in the addition of a course in the general area of sociology of natural resources.

**5. As a result of the review of your student learning data in previous questions, explain what efforts your unit will make to improve student learning over the next assessment period.**

The following are the assessment-related activities of the unite in the next year.

---

<b>What?</b>	<b>Who?</b>	<b>When/How often?</b>
Revise SFNR Assessment program	SFNR faculty	Summer 2017
Conduct intro course	Introduction to Natural	

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*Page*

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assessment	Resource Management instructors	Fall semester
Conduct capstone course assessment	Capstone course instructors	Fall and Spring semesters
Collect assessment data from faculty	Assessment coordinator	Fall and spring semesters
Prepare unit assessment report	Assessment Coordinator	Summer 2017

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The collection and analyses of assessment data are designed to provide us information on student learning. By examining trends in student performance on specific learning objectives, instructors can adjust course content and delivery to improve student learning. However, because of major curriculum changes the School’s assessment system needs to be overhauled. Such an overhaul has to start with the School’s SLOs so the assessment of student learning can be directly tied to those SLOs. We are currently going through this process. The draft SLOs have been listed at the beginning of this report.

**6. What new tactics to improve student learning will your unit consider, experiment with, research, review or put into practice over the next year?**

After almost two years of planning, implementing, and adjusting to major curriculum changes, we are now primarily focused on putting these changes into practice. As mentioned earlier, we plan to redesign our assessment program to better fit the School new curricula and the revised SLOs. But perhaps more importantly, we would like this new system to be less cumbersome and more practical. Our current system, despite all of its good intentions, has been somewhat difficult to implement due to frequent changes in instructors and courses, among other things.

We plan to assess for the students’ quantitative abilities, communication skills, and critical thinking. It is likely that we will select a few representative courses for each of this skills and assess and track each student on their progress.

**7. How do you ensure shared responsibility for student learning and assessment among students, faculty and other stakeholders?**

Responsibility for student learning and assessment is shared by the faculty, students, and administrators across all SFNR programs Students are given feedback throughout the semesters and their academic careers in the unit. This feedback may be in the



form of testing, observation, advising, or mentoring. We also have a student member on the assessment committee. 2013-14 membership of the SFNR Assessment Committee is as follows. Committee membership will be reshuffled during Faculty Development Week.

Dr. Sayeed Mehmood (Chair)  
Dr. Matt Pelkki  
Dr. Rob Ficklin  
(One Undergraduate Student)

Students provide their feedback through course evaluations. Instructors use these evaluations to improve their course delivery. These evaluations are also a part of the faculty evaluation process.

Graduating seniors meet with the Dean every year and provide their feedback on SFNR programs. A summary of the most recent exit interviews is included in this report as part of the answer to question #6.

A few instructors do conduct periodic surveys during the semester on assessment. Results from these surveys are then used by those instructors to improve course delivery. This method is only used by some instructors for their own purpose and the data are not used by the School since these surveys are specific to the individual courses.

**9. Describe and provide evidence of the efforts your unit is making to recruit/retain/graduate students in your unit and/or at the University.**

**Recruitment and Retention**

SFNR had a highly successful field day last year. High school students from throughout the region were invited and the event was extraordinarily well-attended. The SFNR faculty and students volunteered to help with the event. Stations representing different options in natural resources were set up and each station had informative and fun demonstration and/or games for the students. The following is a list of schools and number of students that attended the event.

---

SCHOOL	NUMBER OF STUDENTS
Star City	45
Drew Central	19
Harmony Grove	2
Watson Chapel	11

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***Page***

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Rison	7
Hamburg	10
Pine Bluff	20
Dumas	1
Genoa Central	3
Total	118

---

We plan to host continue this effort in the future. Hopefully, this will help in our recruitment efforts.

(The following section was prepared by Dr. Phil Tappe.)

Recruitment into natural resources programs has been a topic of special concern since nationwide forestry enrollments began declining in 1997. Only recently have enrollments begun recovering in some schools. Nationwide, wildlife enrollments have been steadily increasing, while forestry enrollment has finally begun to stabilize or increase slightly. Schools that have shown increased enrollment have typically offered additional natural resource options such as natural resource management or environmental science, and are often located on campuses of major land grant universities geographically located in well-populated areas.

This year the name of the School was changed from the School of Forest Resources to the School of Forestry and Natural Resources. The faculty have revised and reorganized our undergraduate academic programs, and these changes are being implemented in fall of 2015. At that time, we will be offering two B.S. degrees: Natural Resources Management with five options (Forestry, Wildlife Management & Conservation, Geospatial Science, Communications in Natural Resources, and Environmental Science); and Land Surveying. These changes should broaden opportunities for attracting new students.

*Specific retention actions by the School include:*

- **Student-Centered Instruction and Mentoring**

Exit interviews of graduating seniors indicate that faculty and staff of the School of Forestry and Natural Resources are truly committed to student success. Students recognize and appreciate this commitment, and highly value faculty and staff accessibility and willingness to help. Strong bonds often develop between instructors and students as they progress through the program. This helps create a supportive environment critical for retaining students. Additionally, faculty frequently hire students to help with research projects, and these opportunities provide valuable experiences for students. Active mentoring by faculty and exposure to exciting science-based work also aids in retention. This continued culture of a student-centered focus enhances retention

efforts of the School of Forest Resources.

- **Strong Support of Extracurricular Activities**

The School of Forestry and Natural Resources supports several undergraduate organizations:

Forestry Club Spatial Information Systems Club Student Chapter of the Society of American Foresters Student Chapter of The Wildlife Society Xi Sigma Pi (forestry honor society)

A “Dean’s Student Leadership Council” is utilized to help enhance communication between School administration and students, and to discuss retention issues with student leaders.

These 2 extracurricular student organizations provide multiple opportunities for student bonding, leadership development and reinforcement of class room experiences. Consistently strong performances by student organizations in national competitions bring additional focus for students and have aided retention through the bonding that occurs and through the strong academic emphasis of the organizations. In 2014-15, several students traveled across the United States to participate in professional development events.

Students representing the UAM Student Chapter of the Society of American Foresters participated in the world's largest gathering of forestry professionals in Salt Lake City, Utah October 5-11. The students attended the International Union of Forest Research Organizations' World Congress, an event held once every five years. IUFRO partnered with the Society of American Foresters and the Canadian Institute of Forestry/Institut forestier du Canada to bring together over 3,500 forest scientists and managers from 85 countries, providing opportunities to exchange knowledge and network among professionals who study and manage forest resources around the globe. Six UAM students were able to meet leading forest scientists and other forest resources students from around the world, sit in on presentations, participate in discussions on global forest resources issues, and network with the global forest science community. Students representing the Student Chapter of The Wildlife Society participated in an annual wildlife conclave and quiz bowl sponsored by the Southeastern Section of The Wildlife Society and North Carolina State University.

Nine members of the UAM Student Chapter of The Wildlife Society attended a meeting of the Arkansas chapter of TWS at Arkansas State University in Jonesboro.

Student members of the Spatial Information Systems Club traveled to Little Rock to participate in the Arkansas Association of Professional Surveyors annual meeting.

Forestry Club students competed in the 58th annual Association of Southern Forestry Clubs Conclave competition at Mississippi State University and placed 4th overall.

- **Interdisciplinary Initiatives**

Undergraduate academic program changes to be implemented in fall 2015 will establish a degree program in natural resources with multiple options. One of the primary components of this program will be a common core of courses for all students. Through this core, there will be a strong emphasis on interdisciplinary efforts. Interdisciplinary programs can have a strong influence on recruitment and retention and are sought after by students because the students recognize the importance of interdisciplinary interaction.

**Appendix I: Society of American Foresters Letter of Accreditation**



January 9, 2012

**CONFIDENTIAL**

Dr. R. David Ray  
Provost and Vice Chancellor for Academic Affairs  
University of Arkansas at Monticello  
P.O. Box 3478  
Monticello, AR 71656

Dear Dr. Ray:

The Society of American Foresters (SAF) appreciates the University of Arkansas – Monticello's dedication to excellence in forest resources education and its continued support of specialized forestry accreditation review. The SAF Committee on Accreditation grants accreditation through 2021, for the Forestry Option within the Forest Resources curriculum leading to the Bachelor of Science (BS) degree as administered by the School of Forest Resources at the University of Arkansas - Monticello.

Please see the enclosed Summary Findings & Action report for detail.

The Society's goal is to maintain a responsive accreditation process; therefore, I encourage you to make any suggestions that may help to keep accreditation an effective tool for assessing and improving the quality of forestry education. Should you have any comments or questions, please direct them to Ms. Carol Redelsheimer, CF, Director, Science and Education. She may be reached at (301) 897-8720 extension 240 or by email at [redelsheimerc@safnet.org](mailto:redelsheimerc@safnet.org).

Sincerely,

Michael T. Goergen, Jr.  
Executive Vice-President and CEO

Cc: Dr. Philip Tappe, Dean, School of Forest Resources

Encl: SAF Committee on Accreditation Summary Findings and Action





Student	Core Competencies											
	a	b	c	d	e	f	g	h	i	j	k	l
A	2	1	2	1	2	1	1	2	1	1	1	2
B	1	1	1	1	1	1	1	1	1	1	1	2
C	1	1	2	1	1	2	2	1	1	1	1	2
D	1	1	1	1	1	1	1	1	1	1	1	2
E	2	2	1	1	2	1	1	1	1	1	1	1
F	1	3	2	1	3	2	1	2	2	1	1	3
G	1	2	2	1	2	1	1	1	1	1	1	1
H	2	1	2	1		1	1	1	2	2	2	2
I	2	2	2	1	3		1	2	1	1	1	1
J	2	1	2	1	2	1	1	1	1	1	1	2
K	2	2	2	2	3	2	3	1	1	1	1	1
	1.5	1.5	1.7	1.1	1.8	1.2	1.3	1.3	1.2	1.1	1.1	1.7

**Note: The numbers represent the number of attempts for satisfying the requirements of the CC**





B. Sample course assessment summary reports

**FOR 4823: Integrated Forest Resource Management**

Instructor: Dr. Robert Ficklin  
 Capstone; Offered every spring semester

**Core Competencies:**

Critical Learning Objectives:

- 1) Develop team internal objectives and shared assignments.
- 2) Work cooperatively in a professional manner.
- 3) Identify landowner objectives.
- 4) Design and implement comprehensive land and forest inventories including the ability to measure land areas and conduct spatial analyses.
- 5) Analyze inventory data and project future conditions.
- 6) Assess abiotic and biotic components of forest ecosystems.
- 7) Develop silvicultural prescriptions appropriate to management objectives.
- 8) Develop management plans addressing multiple objectives and constraints.
- 9) Integrate necessary financial, social and legal aspects into a management plan.
- 10) Communicate in written and oral formats to both expert and non-expert audiences.

**Type of Assessment:**

Multiple attempts; students are give up to 4 attempts over the course of the semester to achieve each learning objective.

**Student Performance Summary:**

Numbers represent mean number of attempts to achieve each learning objective.

		LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9	LO10
Comb. Mean	2009-12	1.00	1.31	1.00	1.20	1.23	1.80	1.11	1.74	1.80	1.74
Cohort	2009	1.00	1.44	1.00	1.00	1.00	2.00	1.00	2.00	2.00	2.00
	2010	1.00	1.40	1.00	1.20	1.10	1.90	1.00	1.90	1.80	1.50
	2011	1.00	1.22	1.00	1.33	1.33	1.89	1.00	1.89	1.89	1.56
	2012	1.00	1.14	1.00	1.29	1.57	1.29	1.57	1.00	1.43	2.00
	2013	1.00	1.29	1.00	1.29	1.43	1.14	1.43	1.00	1.43	1.86





# The School of Forestry and Natural Resources



The University of Arkansas  
at Monticello



## **Degree Programs**

- **Bachelor of Science in Natural Resources Management**

Options include:

- Forestry
- Wildlife Management & Conservation
- Geospatial Science
- Communications in Natural Resources
- Environmental Science

- **Bachelor of Science in Land Surveying**

- **Associate of Science in Land Surveying Technology**

- **Master of Science Degree in Forest Resources**

Emphasis Areas Include:

- Forest Science
- Wildlife Ecology & Management
- Geospatial Science
- Natural Resources Management



## About Our Program

## Scholarships & Financial Aid

## Career Opportunities

## How to Apply

**To apply to the School of Forestry and Natural Resources:**

- Contact the UAM Office of Admissions at (870) 460-1026 or (800) 844-1826. You can also send an email to [whiting@uamont.edu](mailto:whiting@uamont.edu)
- For more information about the School of Forestry and Natural Resources, contact us at (870) 460-1052 or email to [forestresources@uamont.edu](mailto:forestresources@uamont.edu)
- For information about financial aid, contact the Office of Financial Aid at (870) 460-1050 or email [finaid@uamont.edu](mailto:finaid@uamont.edu)

School of Forestry and Natural Resources  
[www.uamont.edu/sfnr](http://www.uamont.edu/sfnr)  
[forestresources@uamont.edu](mailto:forestresources@uamont.edu)  
(870) 460-1052

Office of Admissions  
[www.uamont.edu/admissions](http://www.uamont.edu/admissions)  
[whiting@uamont.edu](mailto:whiting@uamont.edu)  
(800) 844-1826

# UAM

THE UNIVERSITY OF ARKANSAS  
MONTICELLO



**SCHOOL OF FORESTRY  
AND NATURAL RESOURCES**

[WWW.UAMONT.EDU/SFNR](http://WWW.UAMONT.EDU/SFNR)



## **Appendix IV: Course Syllabi**

*University of Arkansas at Monticello*

*School of Forestry and Natural Resources*

**INTRODUCTION OF NATURAL RESOURCES MANAGEMENT**  
NRM 1002; SFNR ROOM A102 COURSE SYLLABUS, FALL 2015  
Lecture – Wed 12:10-1:00 Laboratory – Wed 1:10-4:00

### ***INSTRUCTOR***

Dr. Douglas Osborne *OFFICE:*  
SFNR, Room B117 *OFFICE*  
*PHONE:* 870-460-1448  
*EMAIL:* [Osborne@uamont.edu](mailto:Osborne@uamont.edu)

### ***OFFICE HOURS***

I maintain an open door policy; otherwise  
Tue, Thur. 8–9am & 2–3pm or by appointment.

### ***COURSE DESCRIPTION***

This course introduces students to the School of Forestry and Natural Resources and to career fields within disciplines of Natural Resource Management. Students will explore diverse topics across curriculum options and career choices including wildlife management, environmental science, forestry, and natural resource communications. Students will gain knowledge and skills associated with natural resource management that will facilitate decisions regarding future academic and career pathways.

***PREREQUISITES:*** None.

***REQUIRED TEXT:*** None.

### ***LEARNING OBJECTIVES***

Upon successful completion of this course, you should be able to:

- (1) Distinguish among degree options and get connect with activities within the SFNR;
- (2) Describe membership benefits and ways to be involved in local, state, and national organizations;
- (3) Skillfully use field and laboratory techniques practiced by NR professionals;
- (4) Recognize major historical milestones, legislation, and influential people of NR Management;
- (5) Recognize the role of agencies, organizations, and industries in NR management;
- (6) Acknowledge understanding of practices in private industry and developments in urban forestry;
- (7) Demonstrate ability to navigate and identify use geospatial applications in natural resources;
- (8) Recognize environmental implications to land use practices and conservation solutions;
- (9) Demonstrate your understanding for managing people as a NR management professional.

### ***Methods of Achieving Objectives***

#### **Weekly Mini-Projects and Assignments:**

Students will be responsible for individual and team based mini-projects and/or assignments. Particular assignments are outlined in the schedule below, however detail for each will be provided at a later date.



**SCHOOL OF FORESTRY  
AND NATURAL RESOURCES**



## **SCHOOL OF FORESTRY AND NATURAL RESOURCES**

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### Examinations

During the course of the semester there will be 2 exams, a mid-term and a final. All material covered in class and in the lab is subject to exams.

**COURSE POLICIES AND PROCEDURES**

Students will be responsible for all material covered in class, as well as any outside reading assignments, regardless of attendance. Reports and other assignments will **not** be accepted if submitted after the due date unless prior arrangements are made. No exams or assignments may be made up unless the instructor is notified prior to the absence, exemptions may be made in the case of an emergency. **Three** unexcused absences will result in a letter grade reduction of a student’s overall course grade. **Four** unexcused absence will result in a student receiving a grade no higher than “D”.

**GRADING**

In order for the student to receive a grade of “C” or better in this course, successful completion of ALL core competencies (identified on weekly handouts) must be demonstrated on lab exercises and exams. Core competencies are linked to the course learning objectives and are used to assess an individual’s competency of key course components. They must be proven and/or demonstrated in order to receive a passing grade of a “C” or better. In other words, regardless of the number of points you receive in this course, the best grade you are entitled to receive if ALL core competencies are not meet is a “D”. However, demonstration of core competencies does not guarantee a particular grade, although mastery of core competencies during the semester will likely result in a better grade. During the semester, students will have at least two opportunities to demonstrate each core competency. After meeting all core competency requirements, a student will receive a grade as outlined below.

	<b>Points</b>	<b>% of Points</b>	<b>Grade</b>
Attendance/Participation	60 (15 @ 4 pts/wk.)	90 – 100	A
Mini-Projects/Assignment	165 (11 @ 15 pts/wk.)	80 – 89	B
Mid-term	40	70 – 79	C
Final	60	60 – 69	D
Total Possible Points	325	0 – 59	F

**Note:** UAM will no longer mail grade reports to all students. You may access your grades through WeevilNet on the UAM homepage, <http://www.uamont.edu/>.

**STUDENTS WITH DISABILITIES**

It is the policy of the University of Arkansas at Monticello to accommodate individuals with disabilities pursuant to federal law and the University’s commitment to equal educational opportunities. It is the responsibility of the student to inform the instructor of any approved accommodations at the beginning of the course. Any student requiring accommodations should contact the Office of Special Student Services located in Harris Hall, Room 120, phone 870-460-1026; TDD 870-460-1626; or fax 870-460-1926.

**PROFESSIONALISM STATEMENT**

Students in the School of Forestry and Natural Resources (SFNR) at the University of Arkansas-Monticello are pursuing courses of study that prepare them for careers as natural resource professionals. Professional education is much more than technical training and humanities courses. Collectively, these subjects constitute professional education. Since the School is dedicated to professional education rather than technical training, the faculty and staff have certain expectations of themselves and of SFR students with regard to professionalism and personal conduct in their preparation for careers in the natural resource professions. Thus, SFNR students and faculty are expected to exhibit conduct and attitudes appropriate to professionals.

Conduct and attitudes appropriate for professionals include, but are not restricted to: the UAM Code of Student Conduct published in the University catalog and attitudes appropriate for resource professionals of the 21<sup>st</sup> Century: namely, 1) respect for others and for their ideas, 2) appreciation for ethnic and gender diversity in the workplace, 3) sensitivity to environmental quality, and 4) adherence to professional ethics (e.g., The Wildlife Society Code of Ethics).

Instructors reserve the right to reduce student grades for unprofessional behavior. Disorderly conduct or disruptive behavior will not be tolerated in the School of Forestry and Natural Resources. Such conduct may result in dismissal from classes.

### **CHEATING AND PLAGIARISM REQUIREMENT**

#### Cheating

Students shall not give, receive, offer, or solicit information on examinations, quizzes, etc. This includes but is not limited to the following classes of dishonesty:

- a. Copying from another student's paper;
- b. Use during the examination of prepared materials, notes, or texts other than those specifically permitted by the instructor;
- c. Collaboration with another student during the examination;
- d. Buying, selling, stealing, soliciting, or transmitting an examination or any material purported to be the unreleased contents of coming examinations or the use of any such material;
- e. Substituting for another person during an examination or allowing such substitutions for oneself.

#### Collusion

Collusion is defined as **obtaining from another party**, without specific approval in advance by the instructor, assistance in the production of work offered for credit to the extent that the work reflects the ideas of the party consulted rather than those of the person whose name is on the work submitted.

#### Duplicity

Duplicity is defined as offering for credit identical or **substantially unchanged work in two or more courses**, without specific advanced approval of the instructors involved.

#### Plagiarism

Plagiarism is defined as **adopting and reproducing as one's own**, to appropriate to one's use, and to incorporate in one's own work without acknowledgement the ideas or passages from the writings or works of others.

For any instance of academic dishonesty that is discovered by the instructor, whether the dishonesty is found to be cheating, collusion, duplicity, or plagiarism, the result for the student(s) involved will be reported to the appropriate authority on UAM campus.

**Tentative Lecture/Discussion Schedule**

Wk.	Date	Wed. Lecture 12:10-1:00 pm	Wed. Lab 1:10-4:00pm	Assignment	Instructor(s)
1	19 Aug.	<b>Welcome Cookout Meet Faculty and Clubs</b>		Survey	All available Faculty Paul Freeman
2	26 Aug.	NR Communications: NR Agencies and Social Media	Communicating your NRs – Team video assignment	Video – bring phone, tablet, connect cable	Dr. Gharis CFR-C202 (2-3 pm)
3	2 Sept.	Opportunities to Get Involved <b>TWS Field Day</b> – field events		Team Lab Practical	UAM Chapter TWS Dr. Osborne Dr. White
4	9 Sept.	Opportunities to Get Involved – <b>Cory Bostic, AFC</b> <b>SAF/Forestry Club Field Day</b> – field events			SAF/Forestry Clubs Dr. Ficklin Dr. Pelkki <b>Osborne – Missouri</b>
5	16 Sept.	Field Techniques in Forest Management UAM West Block		Field Data Sheet	Dr. Bataineh Dr. Bragg
6	23 Sept.	Historical Perspectives of NRM and Conservation	North American Model for Wildlife Conservation – Video assignment	Video assignment	Dr. Osborne
7	30 Sept.	Arkansas Forestry Industries	Maxwell Hardwood Flooring Mill Tour		Dr. Mehmood Dr. Pelkki
8	7 Oct.	Urban Forestry		Mid-term	Chris Stuhlinger
9	14 Oct.	Radio Telemetry Lab (Section X)	Exploring Geospatial Applications in NR	Maps	Dr. Dennis CFR-C202 (2-4pm)
10	21 Oct.	Radio Telemetry Lab (Section Y)	Exploring Geospatial Applications in NR	Maps	Dr. Dennis CFR-C202 (2-4pm)
11	28 Oct.	Electro-Fishing Weevil Pond Diana Andrews – Fisheries Biologist Supervisor AGFC		Worksheet	Diana Andrews
12	4 Nov.	Aging and Measuring Deer – Boone & Crockett Scoring		Worksheet	Dr. White <b>Osborne – SEAFWA</b>
13	11 Nov.	Stream Bank Restoration and Cattle Production Environmental Quality			Dr. Paul Francis Greg Montgomery Chris Stuhlinger
14	18 Nov.	Human Dimensions and Surveys in NRM	Perspectives of Careers in Natural Resources	Survey	Dr. Gharis
15	25 Nov.	Chainsaw safety and Sawmill Demonstration			Dr. Patterson

16	2 Dec.	<b>Quiz Bowl Tournament</b>			Dr. Osborne
17	9 Dec.	Finals Week		Exam	

**NATURAL RESOURCES PRACTICUM II  
NRM 4062, SPRING 2016**

Instructors:

Dr. Robert L. Ficklin

B109 SFNR

Phone: 460-1692(o); 573-808-2501(h)

Email: [Ficklin@uamont.edu](mailto:Ficklin@uamont.edu)

Dr. Laurie Gharis

B208 SFNR

Phone: 460-1732 (o)

Email: [Gharis@uamont.edu](mailto:Gharis@uamont.edu)

Class times: Lecture: ARR

Lab: ARR

Office hours: Dr. Ficklin: Tuesdays and Thursdays 8:00 to 10:00am or by appointment

Dr. Gharis: M/W/F 8:00-9:00 AM and T/TR 2:00-3:00 PM or by appointment

Course Description:

2 hours: 6 hours laboratory

Integrated problem solving to apply biological, ecological, quantitative, economic, social, political, and administrative principles in solving natural resource management problems. This course is a capstone experience. Project planning, environmental impact assessments, and comprehensive resource management plan development are conducted in this course. There is an expectation of work outside of regular class meetings.

Prerequisites:

NRM 2082 and NRM 3014

Required Text: None

Critical Learning Objectives:

- 1) Develop team internal objectives and shared assignments.
- 2) Work cooperatively in a professional manner.
- 3) Identify landowner objectives.
- 4) Design and implement comprehensive land and forest inventories including the ability to measure land areas and conduct spatial analyses.
- 5) Analyze inventory data and project future conditions.
- 6) Assess abiotic and biotic components of forest ecosystems.
- 7) Develop silvicultural prescriptions appropriate to management objectives.
- 8) Develop management plans addressing multiple objectives and constraints.
- 9) Integrate necessary financial, social, environmental, and legal aspects into a management plan.
- 10) Communicate in written and oral formats to both expert and non-expert audiences.

Assignments / Grading:

The learning objectives are the criteria by which each assignment will be graded. For each assignment, students will receive a score for each learning objective. The benchmark assignments and their due dates are listed below (some dates may change as needed for logistical or other reasons).

**Rating Scale:**

Excellent = 4.0  
 Good = 3.0  
 Fair/Average = 2.0  
 Poor = 1.0  
 Unacceptable = 0.0

**Grading Scale:**

3.6-4.0 = A (90%+)  
 3.2-3.59 = B (80%+)  
 2.8-3.19 = C (70%+)  
 1.5-2.79 = D (60%+)  
 Below 1.5 = F

Benchmark Assignments	Due date	Learning objectives
1) Team guidelines and working plan		1, 2
2) Inventory plan		2, 3
3) First oral presentation to faculty		3, 4, 10
4) Forest inventory results		3, 4
5) Detailed forest health / protection analyses		4, 5, 6
6) Detailed wildlife management analyses		4, 5, 6
7) Silvicultural prescriptions / growth projections		5, 7, 8
8) Financial analyses for all management activities		5, 7, 8, 9
9) Written management plan		8, 9, 10
10) Second oral presentation to faculty		10
11) Peer assessment		2

No Classes: January 18, 2016; March 21-25, 2016

Last Day of Classes: April 26, 2016

**Work Required for Each Student:***Academic Engagement (90 hours):*

## Classroom work:

Attend class & present findings: 10 hours

Meet with faculty members regarding project: 10 hours

## Laboratory work in field:

Collection of field data: 40 hours

## Computer laboratory work:

Analysis of field data (forest health, wildlife, financial): 15 hours

Develop projections: 10 hours

Formulate recommendations: 5 hours

*Preparation (45 hours):*

Research and read relevant materials: 10 hours

Prepare oral presentations: 10 hours

Prepare components of final management plan: 15 hours

Write final management plan: 10 hours

*Overall Total Obligation: 135 hours***Course Policies**

1. Student attendance at formal class meetings is required.

2. Management plans handed in up to 3 days past the due date will be accepted, with a deduction of 20 points per day. Plans that are more than 3 days late will not be accepted.
3. Professors will not tolerate groups that do not work together and complete their assignments.
4. If you have difficulties or problems, do not wait to seek advice and assistance. If the group cannot perform its assigned duties, the likelihood of completing the management plan will not be good. Work well together and enjoy the project!

Notes:

1. It is the policy of the University of Arkansas at Monticello to accommodate individuals with disabilities pursuant to federal law and the University's commitment to equal educational opportunities. It is the responsibility of the student to inform the instructor of any necessary accommodations at the beginning of the course. Any student requiring accommodations should contact the Office of Special Student Services located in Harris Hall Room 120; phone 870 460-1026; TDD 870 460-1626; Fax 870 460-1926; email: whitingm@uamont.edu.
2. Students in the School of Forestry and Natural Resources are pursuing courses of study that prepare them for careers as natural resource professionals. Professional education is much more than technical training and encompasses professional resource education as well as general education, social science and humanities courses. Collectively, these subjects constitute professional education.

Since SFNR is dedicated to professional education rather than technical training, the faculty and staff have certain expectations of themselves and of SFNR students with regard to professionalism and personal conduct in their preparation for careers in the natural resource professions. Thus, SFNR students and faculty are expected to exhibit conduct and attitudes appropriate to professionals.

Conduct and attitudes appropriate for professionals include, but are not restricted to,

- The UAM Code of Student Conduct published in the University catalog,
- Attitudes appropriate for resource professionals of the 21<sup>st</sup> Century:
  - a. Respect for others and for their ideas;
  - b. Appreciation for ethnic and gender diversity in the workplace;
  - c. Sensitivity to environmental quality; and
  - d. Adherence to professional ethics, e.g., the Society of American Foresters Code of Ethics.

Instructors reserve the right to reduce student grades or withdraw the students from class for unprofessional behavior.

3. Cheating and plagiarism in any aspect of this class are not acceptable. Students involved in these activities may receive a zero for a particular assignment, or may be removed from the course with a failing grade (see accompanying pages).
4. Disorderly conduct is defined in the student handbook as "any behavior that disrupts the regular or normal functions of the University community, including behavior which breaches the peace or violates the rights of others." This action is prohibited under the Student



Conduct Code. Disorderly conduct or disruptive behavior will not be tolerated in SFNR. Such conduct may result in dismissal from classes.

### Cheating and Plagiarism Requirement:

**Cheating:** The possession, receipt, use, buying or selling, or furnishing of unauthorized **help** while doing any of the following, but not limited to:

- Assignments
- Reports
- Term papers
- Quizzes
- Tests
- Providing answers
- Homework (e.g., copying homework assignments and/or answers)
- Use of pre-programmed calculators (e.g., formulas)

When in doubt about the acceptance of providing or getting help for the activities mentioned above, consult your instructor.

**Plagiarism:** The use of writings, concepts, or thoughts of **another**, which are specific information and not common knowledge, without acknowledging the source(s). As used above, **another** is any of the following, but not limited to:

- Any person
- Any text from a book, journal, magazine, or other printed material
- Any electronic source (internet source, word document file, or any digital data)

Examples of common knowledge compared to specific information are:

- The sun will rise tomorrow is common knowledge.
- The sun will rise at 6:01 a.m. on 1 July 2004 (NWS 2003) is specific knowledge.
- Florida, as a retirement state, has a lot of older people is common knowledge.
- As of 2002, 2,854,838 people over the age of 65 lived in Florida (U.S. Census Bureau 2003) is specific knowledge.

Direct quotations should be indicated using quotation marks and proper acknowledgement of the source. Paraphrasing is the use of writings, concepts, or thoughts of another rephrased in your words that captures the meaning of the original author. Cite the source of paraphrases also.

### Examples using quotations and paraphrasing:

**The original text from Leopold (1933) reads:** In hoofed mammals there is so far no visible evidence of any density limit except the carrying capacity of food.

**Correct direct quotation reads:** “In hoofed mammals there is so far no visible evidence of any density limit except the carrying capacity of food.” (Leopold 1933)

**Correct paraphrase reads:** Ungulates are density-dependent only in relation to forage (Leopold 1933).

**Plagiarized/incorrect quote reads:** In hoofed mammals there is so far no visible evidence of any density limit except the carrying capacity of food.

**Plagiarized/incorrect paraphrase may read:** Ungulates are density-dependent only in relation to forage.

Other examples of plagiarism include, but are not limited to:

- Failing to provide a reference (attribution).
- Copying graphics and pictures from the internet without a reference (attribution).
- Paraphrasing without a reference (attribution).
- Submitting someone else's work.

When in doubt about plagiarism consult your instructor.

#### Team Guidelines and Working Plan:

Each team needs to have a "work plan" that sets a schedule for when work items are going to be done. It also should allocate resources, in particular, personnel time, to specific tasks.

#### Work plan contents

- 1) Names and full contact information for every team member (phone numbers, e-mail addresses)
- 2) Agreed upon time for meeting on a regular basis for working on the plan. You don't have to meet at the exact same time each week, but if it is going to vary, you should schedule it in advance. In the work plan that you will present, a calendar must show your planned work schedule for the entire semester.
- 3) Agreed upon total hours of expected work per week by each team member.
- 4) Weekly schedule and goals for work completed on a weekly basis.
- 5) Major task assignments and personnel allocated to completing that task. You may designate 1 or more members to a task; you may also indicate a sub-team leader. For example, you might say, "Collecting digital soil maps and aerial photographs are assigned to John Doe (leader) and Jane Doe and will be completed by September 22<sup>nd</sup>."
- 6) You may also discuss how to deal with absentee team members or team members that are not meeting expected and agreed upon obligations.
- 7) Signatures of all team members is needed indicating that they agree to this work plan.

This is a planning tool. I know that you won't follow it exactly, but it is a starting point that gets you to all agree, as a team, how much time you will spend collectively, how you will break up the project into sub-tasks, when you will get things done, and how you will deal with conflict.

#### Guidelines for your Management Plan:

These guidelines are to help you organize and structure your written report. Note that the maximum length of the final plan is **20 pages** (not counting appendices and other supporting materials).

### 1. TIME HORIZON: 10 YEARS

Your management plan should cover actions and activities for a 10-year period. You should be able to describe the projected state of the forest at the end of your 10-year plan.

It is important to remember that some financial decisions will require you to estimate the bare-land value of your property in order to make correct decisions about the timing of timber harvests. So, while your plan only extends 10 years into the future, supporting analyses will have to estimate at least 1 full rotation into the future.

### 2. COPIES OF FINAL PLAN

Each team must prepare two copies of their plan. One copy will be given to the landowner; the second copy will be retained by the University. Should team members want their own copy of their plan to keep, the team must make those additional copies. You should also include a CD with an electronic version of the plan with each of the two required copies of the plan. The CD should be appropriately labeled and attached to the final document in a pocket holder or other arrangement so that it is not easily lost.

### 3. FIELD EQUIPMENT

Necessary field equipment can be checked out from UAM School Forester Mr. Bobby Webb.

### 4. GUIDELINES FOR PRINTING THE PLANNING DOCUMENT

The management plan is to have no more than 20 pages of line-and-a-half spaced text. Tables, figures, the plan budget, and the list of references are excluded from this 20 page text limit. The management document is written for the LANDOWNER, not for the FACULTY. If the landowner is not a forestry expert, you will have to present technical material in such a way that the landowner can understand the material.

Other requirements for the final document:

- Font size should be 12 point, use Times New Roman font for ALL text, tables, and figures.
- Use 1-inch margins for all pages; paper should be white, 8 ½ by 11 inch.
- All pages should be numbered at the bottom center of each page.
- Paper does not need to be archive quality – text can be on regular copy-quality paper. If you have color prints or graphs, you should use paper for color prints.
- Put tables and figures on separate sheet of paper in the report. All tables and figures must be numbered and have a title. Remember, table titles go at the top of the table, and figure titles go at the bottom of a figure. Tables and figures should be located on the page closest to their first reference in the text.
- Your management plan should list citations and references of important work in a “References” section that is part of your management plan. If you have required material (i.e. pesticide labels), you should include them as PDF files on a CD.
- Reports should be bound together. Three-ring binders are acceptable, but should be of

high-quality and be neat and clean in appearance.

You will need to provide 2 copies of the report, so make sure you plan enough time to make copies and print everything out. Printers run out of toner, paper, and are known to jam if you are trying to put everything together at the last minute. Allowances will NOT be made for these problems – you should plan around them and be prepared! Print color maps and figures out early and keep clean copies of them. You can print page numbers on figures after they have been printed by re-running them through a printer.

By typing or signing your name in the box below, you are stating, without condition, your compliance with the following in regard to all required coursework:

- (1.) All aspects of the UA-M Conduct Code have been followed with respect to all assignments, laboratory reports, or exams to be completed during this semester;
- (2.) The work you submit is yours and yours alone unless part of a group assignment or group laboratory report;
- (3.) You will not cheat or plagiarize at any time while completing your assignments, laboratory reports, or exams; and
- (4.) For exams, you will not discuss their content with any other student in the class until all students have completed the exam and the answers are made available.

Violation of any or all of these conditions, whether they are discovered or witnessed before, during, or after any assignments, laboratory reports, or exams have been taken and/or completed and submitted for grade, will constitute a violation of the UA-M conduct code and will be reported to and punishable by the UA-M Judicial System. The process is initiated through the Dean's office.

Signing or printing your name on assignments, lab reports, and exams during this semester means that you understand what you signed today in class and will be liable for your actions.

Signature:	Date:
Printed Name:	

\*See the body of the syllabus for definitions and examples.

## Appendix V Other Forms of Assessment

Please complete the following evaluation for the course entitled, “Human Dimensions in Natural Resources.” The purpose of this confidential evaluation is to improve the quality of this course and teaching effectiveness of your instructor through student feedback.

	Strongly Disagree	Disagree	Agree	Strongly Agree
The instructor stated objectives and expectations for this course.			11	12
The instructor was prepared for class.		1	11	11
The instructor was enthusiastic about teaching the course.			9	14
The instructor gave prompt and useful feedback.	1	1	14	7
The instructor consistently treated students with respect.	1		14	8
The course assignments were valuable aids to learning.	2	4	12	5
The course improved my knowledge of how humans connect with their environment.	2	2	13	6
I would like to take another course with this instructor.	2	6	13	2

Please describe what you liked about this course.

Please describe what would make this course better.

Other comments:

Please complete the following evaluation for the course entitled, “Human Dimensions in Natural Resources.” The purpose of this confidential evaluation is to improve the quality of this course and teaching effectiveness of your instructor through student feedback.

	Strongly Disagree	Disagree	Agree	Strongly Agree
The instructor stated objectives and expectations for this course.			11	12
The instructor was prepared for class.		1	11	11
The instructor was enthusiastic about teaching the course.			9	14
The instructor gave prompt and useful feedback.	1	1	14	7
The instructor consistently treated students with respect.	1		14	8
The course assignments were valuable aids to learning.	2	4	12	5
The course improved my knowledge of how humans connect with their environment.	2	2	13	6
I would like to take another course with this instructor.	2	6	13	2

Please describe what you liked about this course.

Please describe what would make this course better.

Other comments:

## Teacher evaluation

### Evaluation of Environmental Education Laboratories

Please evaluate your college students' performance. Performance will be rated from strongly disagree to strongly agree. Write each student's name into the applicable box. For example, if you agree that Sally was knowledgeable regarding the laboratories, put her name under agree for this question.

Rating	Strongly disagree	Disagree	Agree	Strongly Agree
The student was knowledgeable regarding the laboratories.			6	22
The student maintained a positive and professional attitude and manner during the laboratories.			2	26
The student began and finished laboratories on time.			5	23
The classroom was engaged during the laboratories.			5	23
I would choose this student to deliver laboratories in my classroom in the future.			4	24

#### Comments.

- \* is great with the kids. The other two students were knowledgeable but quiet.
- Both did a great job!! The students really enjoyed the lessons & learned a lot!
- Both young men did an excellent job! Thanks for collaborating this opportunity with us.
- All three of these students did awesome! I would love for any of them to come back!
- Please come back anytime!



- My kids enjoyed them so much!
- This was a great group. They complimented each other.

## Student Evaluation

**Evaluation of Environmental Education Laboratories**

Directions: Please place an X in the box that best describes your answer. Add any comments that you might have under the comment section.

<b>Standard/Rating</b>	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Agree</b>	<b>Strongly Agree</b>
My professor adequately prepared me for the laboratories.		2	17	7
I feel better prepared to communicate with others about natural resources after teaching these laboratories.		1	17	8
I feel better prepared to connect others to natural resources after teaching these laboratories.		1	19	6
The laboratories added value to the Human Dimensions in Natural Resources' class.		2	12	12
I would like to do more work like this in future classes.	1	5	11	9

## Comments:

- A lot of fun
- I enjoyed teaching the young kids about my field of study. I know now they have been exposed to wildlife, whether they pursue a career in it or not.
- Just not much on teaching & some of it was over the kids' heads. Would be better for 2<sup>nd</sup> to maybe 6<sup>th</sup> grade.
- While I did learn and have fun interacting with the younger generation, the experience did feel rushed and was harder to teach with three people.
- I had a great time being a role model for those kids.
- Would like to do it again it was interesting displaying my knowledge of natural resources to others.
- I enjoy working with children. I would like to do it again!
- A lot more preparation should be included or the teachers should put their own spin on it.
- I really enjoyed this class. However, some of the laboratories weren't designed for this age group.

Pictures







## Appendix VI

### School of Forest Resources

#### 2014 Alumni Survey

Please indicate the degree to which you agree or disagree with each of the following statements. (CHECK **ONE** FOR EACH)

Statement	Strongly agree	Somewhat agree	No opinion	Somewhat disagree	Strongly disagree
To stay competitive, a forestry curriculum should emphasize breadth of knowledge as opposed to depth of knowledge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The ability to think critically is more valuable than the ability to think technically	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is necessary for all professional foresters to be skilled in collaborative decision-making approaches	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Written and oral communication skills are the most important component in a forester's career	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Understanding natural resource policy is as important to the forestry profession as understanding silviculture	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Every graduate needs to know GIS to stay competitive	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
All forestry undergraduates should have a good working knowledge of wildlife ecology and management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The forestry curriculum at UAM puts too much emphasis on technical skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
UAM forestry graduates have a good working knowledge of computers and computer systems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Rank the following knowledge areas by importance (1 being most important).

Knowledge Area	Rank
Environmental regulations	
Dispute resolution	
Outdoor recreation	
Dendrology	
Fire	
Ecology	
Soils	
Silviculture	
Wildlife ecology and management	
Measurements and Inventory	
GIS	
Economics	
Operations and harvesting	

**Which of the following best describes your current employment status?**

- Forest Industry       Forestry Consultant       State Agency  
 University       Graduate Student       Federal Agency  
 Non-forestry       Retired       Unemployed

**Name two major strengths of UAM forestry education.**

1. \_\_\_\_\_
2. \_\_\_\_\_

**Name two major weaknesses of UAM forestry education.**

1. \_\_\_\_\_
2. \_\_\_\_\_

**List two skills you consistently use as part of your employment that you acquired at UAM.**

1. \_\_\_\_\_

2. \_\_\_\_\_

**List two skills you consistently use as part of your employment that you DID NOT acquire at UAM.**

1. \_\_\_\_\_

2. \_\_\_\_\_

### Summary of the 2014 Survey

Statement	Strongly agree	Somewhat agree	No opinion	Somewhat disagree	Strongly disagree
To stay competitive, a forestry curriculum should emphasize breadth of knowledge as opposed to depth of knowledge	7.69%	61.54%		30.77%	
The ability to think critically is more valuable than the ability to think technically	42.86%	42.86%	7.14%	7.14%	
It is necessary for all professional foresters to be skilled in collaborative decision-making approaches	30.77%	69.23%			
Written and oral communication skills are the most important component in a forester's career	38.46%	61.54%	7.69%		
Understanding natural resource policy is as important to the forestry profession as understanding silviculture		28.57%	14.29%	57.14%	
Every graduate needs to know GIS to stay competitive	46.15%	53.85%		7.69%	
All forestry undergraduates should have a good working knowledge of wildlife ecology and management		57.14%	14.29%	28.57%	
The forestry curriculum at UAM puts too much emphasis on technical skills		7.69%	46.15%	23.08%	23.08%
UAM forestry graduates have a good working knowledge of computers and computer systems	21.43%	21.43%	57.14%		

Rank the following knowledge areas by importance (1 being most important).

Knowledge Area	Mean Rank
Environmental regulations	7.42
Dispute resolution	8.25
Outdoor recreation	11.25
Dendrology	6.42
Fire	8.58
Ecology	8.92
Soils	7.92
Silviculture	3.00



Wildlife ecology and management	9.67
Measurements and Inventory	3.83
GIS	5.92
Economics	3.50
Operations and harvesting	5.25

**Which of the following best describes your current employment status?**

Forest Industry	46.15%	Forestry Consultant	46.15%
State Agency		University	
Graduate Student		Federal Agency	
Non-forestry		Retired	7.69%
Unemployed			

**Name two major strengths of UAM forestry education.**

Good technical knowledge	3
Silviculture	2
Inventory, measurements	3
Exposure to forestry	1
Faculty	2
Decision making skills	1
GIS	1
Economics	1
Facilities	1
Graduate program	1
Practical	1

**Name two major weaknesses of UAM forestry education.**

Communications, writing	4
Lack of business training	1
Recognition outside of AR	2
Location	1
Poor technical skills	1
Negotiation training (lack of)	1
Availability of faculty	1
Faculty with no industry experience	1
Poor basics in hardwood mgt.	1
Lack of work ethic training	1
Lack of leadership training	1

Faculty availability to industry	1
Math skills	1
Constantly changing faculty	1
Lack of understanding of markets	1

**List two skills you consistently use as part of your employment that you acquired at UAM.**

Silviculture	2
Forest management	2
Measurements	5
Communications	5
Economics	2
Critical thinking	1
GIS	1
Dendro	1
Computer savvy	1

**List two skills you consistently use as part of your employment that you DID NOT acquire at UAM.**

Communication	3
Negotiations/contracts	2
Business management	6
Real estate	2
Economic thinking	2
GIS, GPS	2
Computer use	1
Purchasing/selling	1
Map reading	1
Harvest and thinning mgt.	1
Forest Certification	1