

# School of Forestry and Natural Resources

## **Unit Assessment Report**

**2014-15**

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## SCHOOL OF FORESTRY AND NATURAL RESOURCES

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?**

**NOTE: The School of Forestry and Natural Resources is in the process of revising its student learning outcomes (SLOs) and the School's assessment program. The faculty is expected to meet sometime during fall semester and finalize these matters. The current version of the proposed learning objectives is as follows:**

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.

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The details of how we are going to assess student learning outcomes will be finalized by the faculty. However, the current thinking is that for SLOs 1 through 5, we are going to have assessments in selected courses spread throughout our curricula. For SLO 6, each major (i.e. option) will develop their own process of assessment, but it will probably resemble assessment methods used by the School in the recent past (i.e. linkages of course learning objectives so a student's performance and progress can be tracked).

However, since these plans have not yet been finalized, the rest of this report is based on our current assessment program.

The learning outcomes of the School of Forestry and Natural Resources are:

1. *To educate baccalaureate-level professionals in both forestry and wildlife management, with both the 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; furthermore, to provide an educational and professional basis for successful work performance and for assuming increasing administrative and managerial responsibilities to the middle management level and beyond.*
2. *To provide graduate-level educational opportunities in forest resources.*
3. *To provide students the opportunity to acquire the professional and academic competence in forestry or wildlife necessary to be nationally competitive in graduate studies.*
4. *To foster general education, a professional curriculum, and a collegiate environment that attracts and retains academically strong and professionally motivated students.*
5. *To promote an educational environment in which a strong orientation toward academic performance is encouraged, and where a dedication to the profession and its ethics is developed.*

In addition, the School's other professional objectives are:

1. *To support research programs at both the basic and applied levels that contribute to the body of knowledge in forestry and related natural resources, and which address the professional, scientific, and social needs of forestry and natural resources communities in the State, the region, and the Nation.*
2. *To maintain a program of extension and public service that transmits new and established knowledge and technology to appropriate clientele through workshops, seminars, symposia, continuing education programs, and publications.*

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, spatial information systems, land surveying, and graduate programs) have separate brochures that provide information on the requirements of

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the degree programs to prospective students. The combined SFNR brochure and the SIS program brochure 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 form 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 “*

This part of the UAM mission statement corresponds to SFNR's SLOs #1 and #2. 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 SLO #3. Through its academic curricula and extra-curricular activities the School seeks to provide the students professional and

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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 #4 and #5 and Professional Objective #1. 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 assessments techniques and analyses of data are described below.

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### 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. Therefore, choice of specific methods of assessment for individual courses are left up to individual instructors. Where appropriate, faculty members use pre and post tests.

Assessment of student performance at SFNR has two essential 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 School's assessment system is designed to produce measurements on students' achievement of specific learning objectives. At the end of each semester, data on course assessment are reported to the School Assessment Coordinator (Dr. Mehmood) through a short report. This report essentially contains information on student performance in achieving the core competencies. The Assessment Coordinator collects and analyzes these data for use by the unit and our accreditation agency for the forestry degree—the Society of American Foresters. As a part of this analysis, the coordinator prepares an annual summary for every course. Examples of these course assessment summaries are presented in Appendix II.

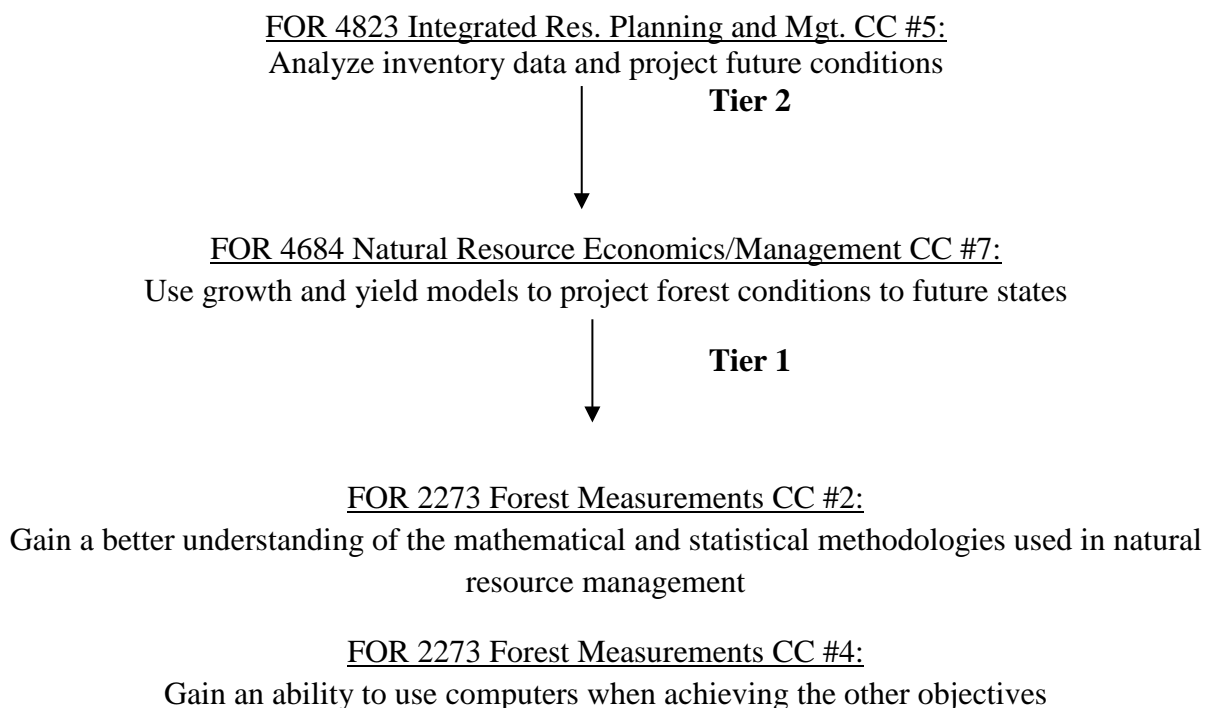
The second and equally important part of the School's assessment plan is at the program level. This part of the assessment plan starts with grouping the Schools' professional courses in each curriculum into three different levels. Level 1 consists of the foundational courses usually taken by sophomores. Level 2 courses are mid-level courses taken by juniors and seniors. Level 3 is always the capstone course for each curriculum. Once these groupings are made, linkages in core competencies are formed from capstone courses to level 2 courses and then to level 1 courses. If a student performs poorly in one of the core competencies, his/her performance in linked core competencies for level 2 and level 1 courses could then be examined and hopefully the student's deficiency could be explained. This information could be important for the School in refining its curricula and achieve SFNR's student learning objectives.

It will perhaps be useful to illustrate this with a specific example. For forestry and wildlife students, the capstone course is Integrated Forest Resource Management. This course has a total of 10 critical learning objectives. These are as follows:

- 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.

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Each of these learning objectives is linked to other learning objectives (core competencies) for courses that the students have previously taken. Student performance in the capstone course is hence linked to their performance in achieving the learning objectives of these earlier courses. For example, such linkages for capstone course learning objectives #5 are as follows.



Based on the course assessments supplied by individual instructors, the assessment coordinator is then able to track a student's performance in the program through related learning objectives/core competencies. For every student completing the capstone course, their performance is tracked and recorded through the use of these backward linkages for each capstone course core competency. While this information will not be useful for helping these specific students since they are already close to finishing their degree, the information can be used for making program-level changes, if necessary, which will benefit future students and strengthen SFNR degree programs. Example of this type of assessment is included in Appendix II.

It will perhaps be helpful to explain the course assessment reports in Appendix II with an example. The Appendix includes a report on the capstone course—Integrated Forest resource Management. Let us take learning objective (also called core competency) #6 as an example. This learning objective is “Assess abiotic and biotic components of forest ecosystems”. From the table it is clear that the average for all students since 2009 to accomplish this learning objective is 1.69. This means, on average students required 1.8 number of attempts to complete this objective. However, the cohort average for 2013 was 1.14. This means that in case of this learning objective the 2013 cohort performed better than the 2009-13 average.

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Analysis of mean number of attempts by students to complete the core competencies of the capstone course and these students' cumulative GPA at the time of graduation shows a statistically significant correlation of -0.56. This means that students with higher GPAs require lower number of attempts to complete the capstone core competencies.

Other measures used to gather data were: transcript reviews; competency reviews in labs and field practices. Additionally, student evaluation of instructors was also used as an integral part of the unit's more traditional assessment system.

### B. DEGREE-SPECIFIC ASSESSMENT

#### **B.S. in Forestry, Wildlife Management, and Spatial Information Systems:**

Tools identified for assessment are:

##### 1. Required coursework.

The forestry, wildlife management and SIS 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 curriculums 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 curriculums. After going through extensive coursework, seniors enroll in the School's one of two capstone courses—Integrated Resource Planning and Management 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. Competency in computer skills.



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The forestry curriculum is heavily dependent on computer usage. Most courses in the curriculum require basic knowledge of word processors and spreadsheet programs. Some require advanced skills such as the use of forest simulation programs, and Geographic Information System (GIS) software. All students are required to demonstrate computer competence through class and laboratory assignments using various computer software packages. Instructors review the student's performance on various assignments and provide feedback as necessary.

Forestry majors are taught computer skills that are necessary for them to complete requirements of individual courses. The degree and nature of computer skills taught vary by courses. Forest Measurements, Forest Inventory, Forest Ecology, Silviculture, Intro to GIS & GPS, Forest Economics, Natural Resource Management, Seminar, and the Integrated Resource Planning and Management courses all have a significant portion of their class and laboratory assignments requiring computer skills. Graded assignments reflect the competency of students' computer skills.

Although students' computer skills vary somewhat depending on their exposure to computers prior to enrolling forestry classes, forestry students have traditionally demonstrated computer skills at the level required to complete class assignments. While it may be an issue for some students, based on faculty feedback computer skills have not generally been a major obstacle to success in recent years. Ubiquitous use of computers both at home and in school may have contributed to a general level of comfort with computer usage. These students also have the benefit of up-to-date computing equipment and software programs at SFNR.

The wildlife management curriculum also requires substantial computer skills. Many courses in the curriculum require basic knowledge of word processors and spreadsheet programs. Some require advanced skills such as the use of Geographic Information System (GIS) software. All students are required to demonstrate computer competence through class and laboratory assignments using various computer software packages. Instructors review the student's performance on various assignments and provide feedback as necessary.

Due to heavy reliance on computers for data gathering and analyses, superior computer skills are critical for SIS majors. Most courses in the curriculum require basic knowledge of word processors and spreadsheet programs. Many require advanced skills such as the use of Geographic Information System (GIS) software, other digitizing and mapping programs, and statistical analysis software. All students are required to demonstrate computer competence through class and laboratory assignments using various computer software packages. Instructors review the student's performance on various assignments and provide feedback as necessary.

SIS majors are taught extensive computer skills that were critical for them to complete requirements of the curriculum. Most SIS core courses have a significant portion of their class and laboratory assignments requiring computer skills. Graded assignments have demonstrated excellent computer skills at the level required to complete class assignments. The SIS program also maintains state of the art computing equipment and software programs.

### 3. Capstone courses

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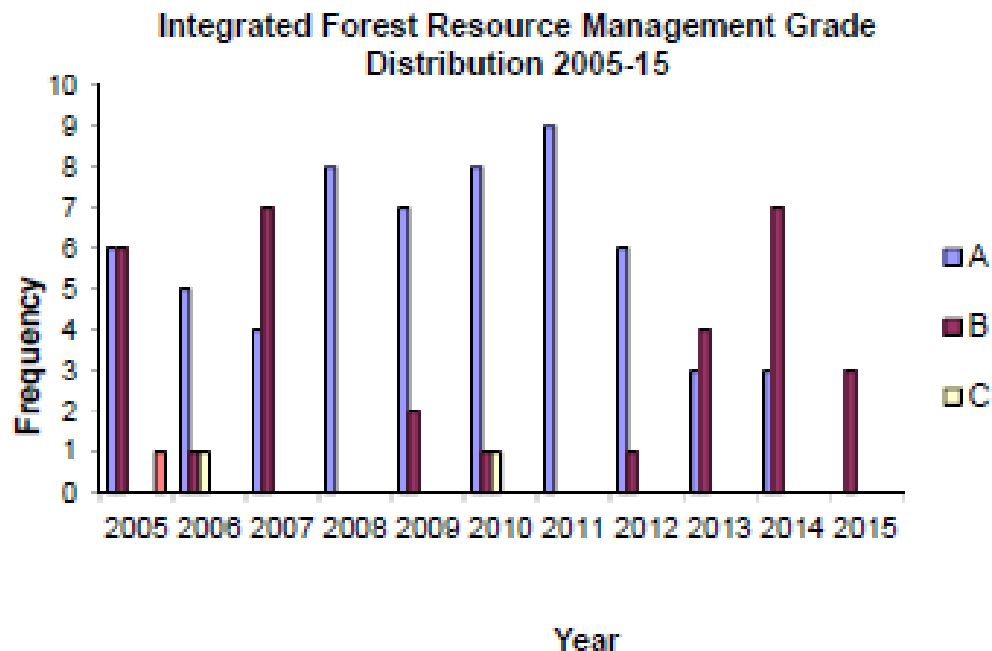
The forestry and wildlife management curriculums include a required integrated resource and planning management course that challenges students to integrate materials learned from previous courses in the development of a management plan that is presented to actual forest landowners. In order to be successful 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. It should be noted that this period of good performance also happens to coincide with the period that the current assessment system has been in place. Based on strictly anecdotal evidence, this is perhaps an indication that achievement of core competencies in individual courses does eventually produce better professionals at the degree level. In any case, 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.

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.

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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.

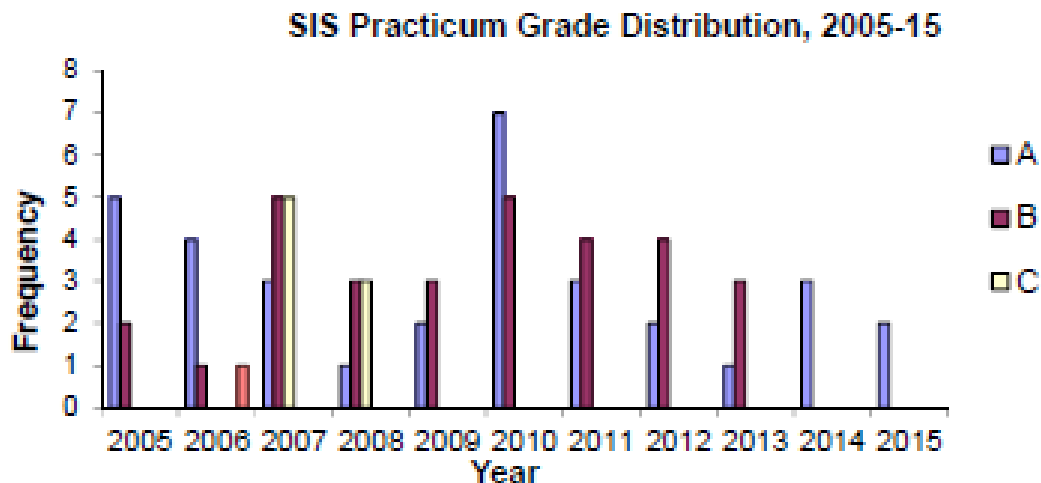
SFNR faculty agree that this assessment practice is useful in determining if students possessed the ability to synthesize data, organize a presentation, and deliver the information to a group of people.

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

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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.

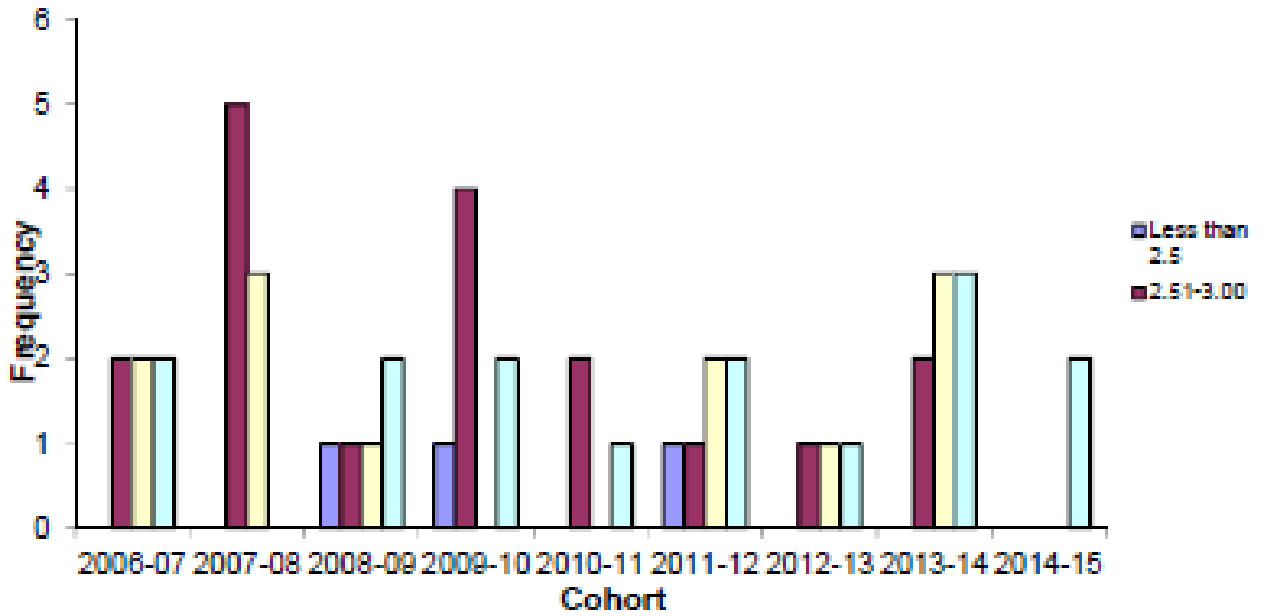


The Practicum course provides a unique, practical experience to the SIS students by working on a real-life project. Students have to use their knowledge of GIS and/or surveying acquired in previous semesters and answer management questions associated with their projects. Instructors monitor the progress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

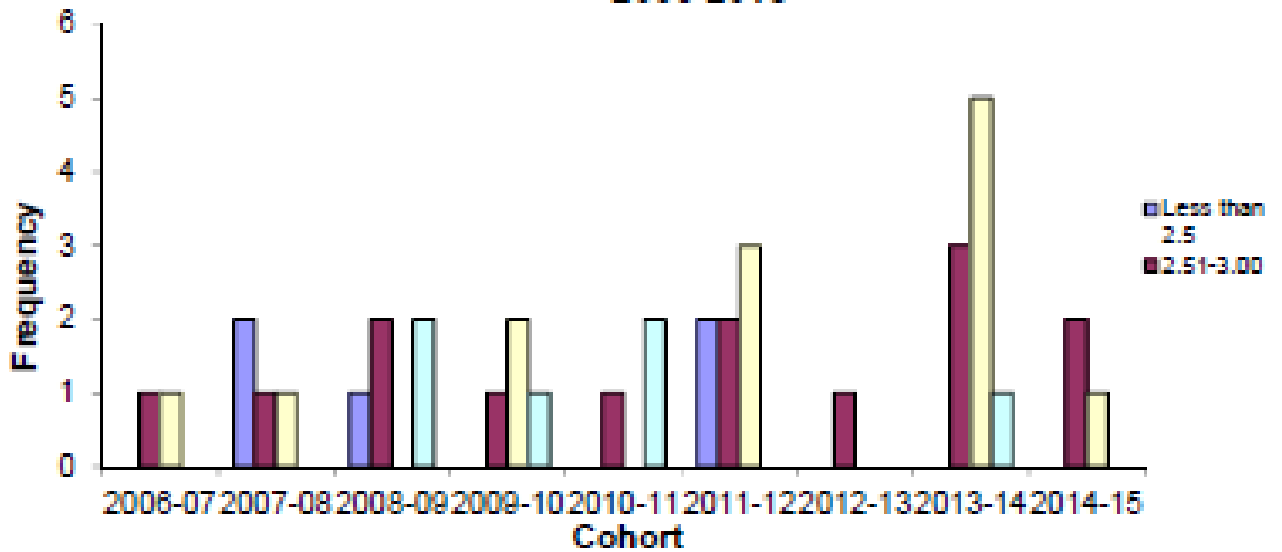
In graduate exit interviews, SIS students picked SIS Practicum as one of the most favorite and most useful of their professional education. They appreciated the opportunity to work with a variety of public and private collaborators.

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

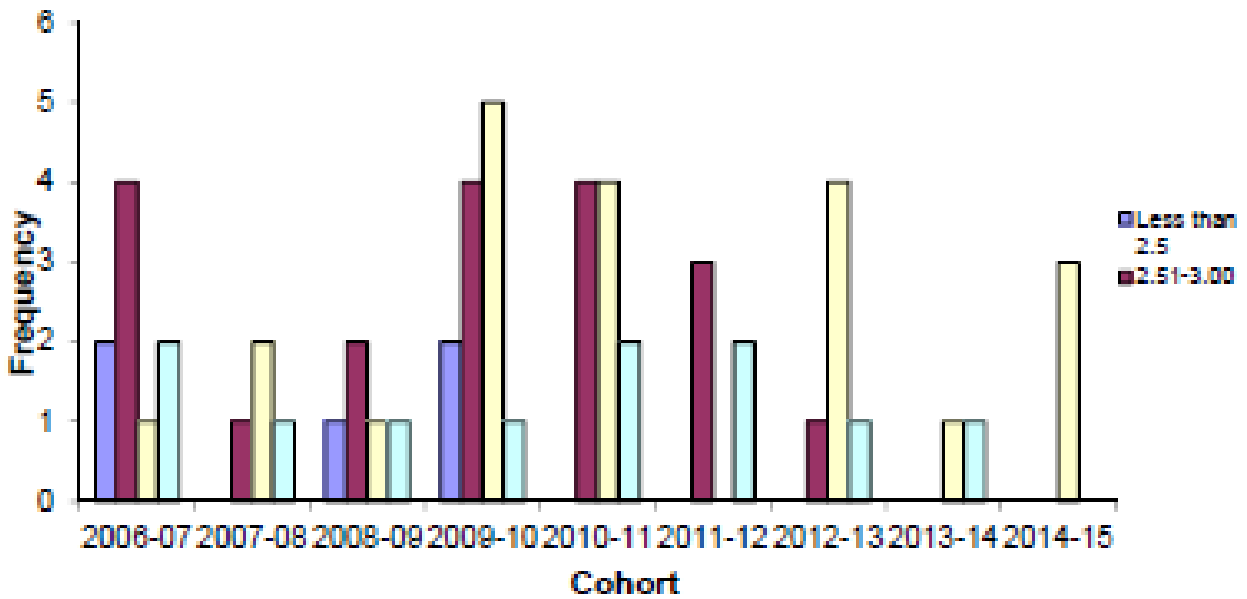
**GPA Distribution of Forestry Graduates, 2006-2015**



**GPA Distribution of Wildlife Management Graduates, 2006-2015**

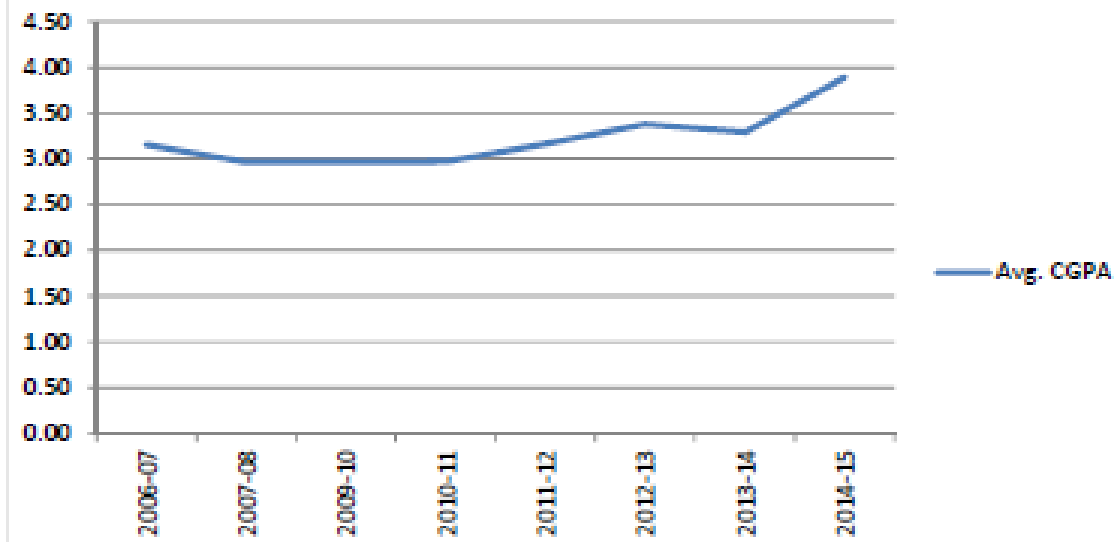


GPA Distribution of SIS Graduates, 2006-2015



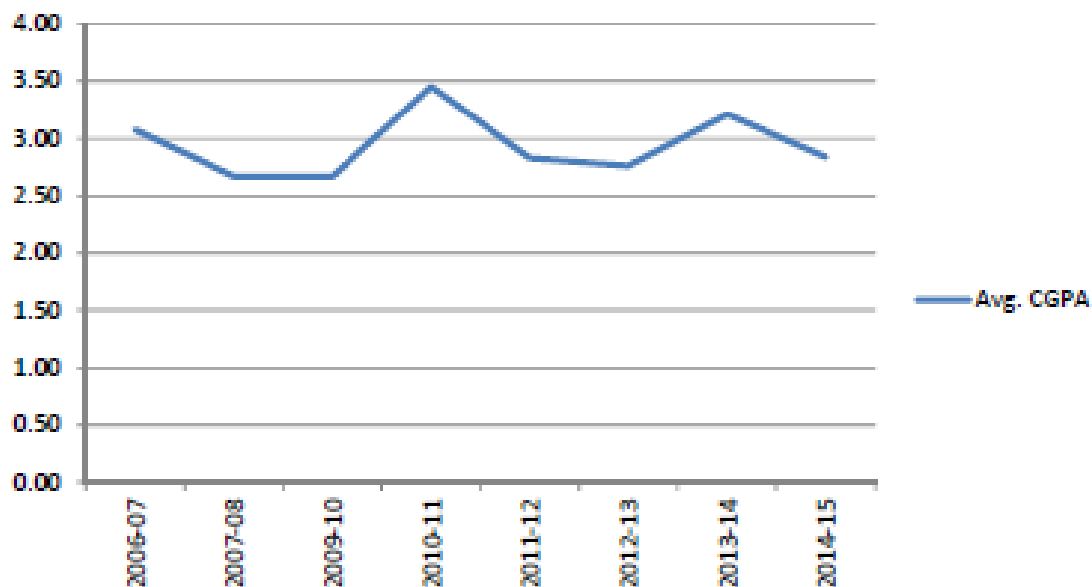
If we examine the trend in average cumulative GPA for Forestry, Wildlife Management, and SIS graduates, they all show a generally stable or increasing trend. While GPA may not always be the best measure of student learning, these trends do tell us something about SFNR’s graduates.

Avg. Cumulative GPA of Forestry Graduates, 2007-15

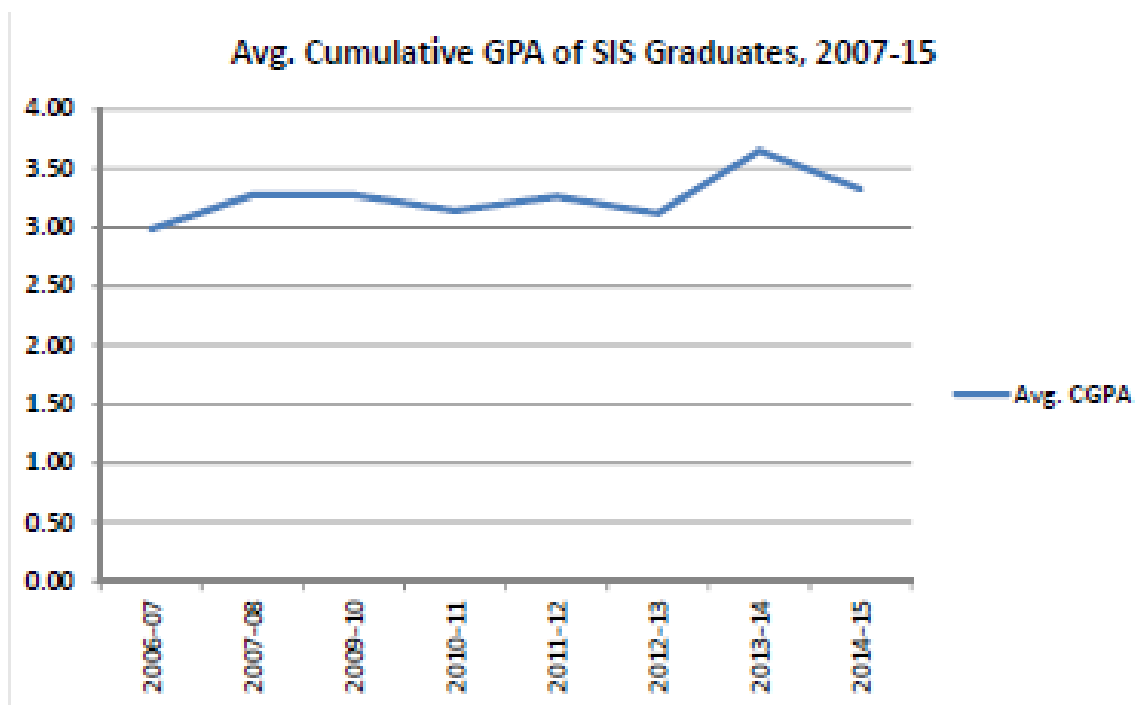


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**Avg. Cumulative GPA of Wildlife Management Graduates,  
2007-15**



**Avg. Cumulative GPA of SIS Graduates, 2007-15**



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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.

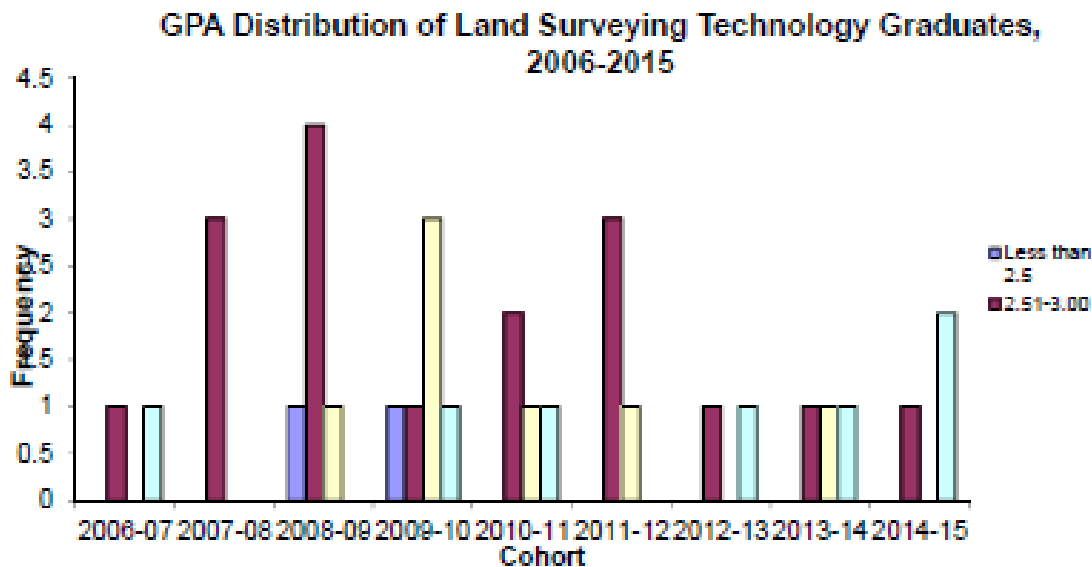
Feedback from students about the Land Surveying Technology curriculum appeared positive. Students ranked the surveying faculty highly and rated some of the core courses as useful.

2. Competency in computer skills.

Good computer skills are required for students in Land Surveying Technology. Many courses in the curriculum require basic knowledge of word processors and spreadsheet programs. Some require advanced skills such as the use of Geographic Information System (GIS) software. All students are required to demonstrate computer competence through class and laboratory assignments using various computer software packages. Instructors review the student's performance on various assignments and provide feedback as necessary.

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





### **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.

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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.

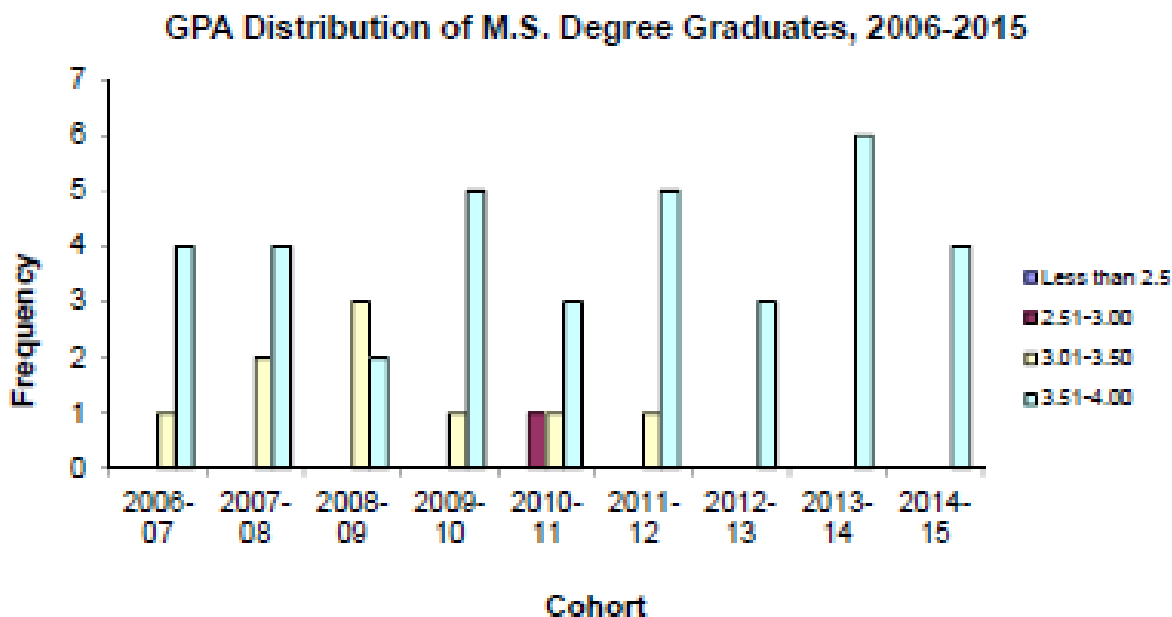
All of our students enrolled in our two applied statistics courses received a grade of B or better during 2006-2013. Many of our graduate students are currently analyzing data from their thesis projects. Their progress in this endeavor is being closely monitored by their faculty advisor and advisory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

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:

“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”

## SCHOOL OF FORESTRY AND NATURAL RESOURCES

“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”

“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”

“FACTORS INFLUENCING NONINDUSTRIAL PRIVATE FOREST OWNERS’ WILLINGNESS TO SUPPLY BIOMASS FOR WOOD-BASED BIOENERGY”

“ANALYSIS OF NON-INDUSTRIAL PRIVATE FOREST LANDOWNER’S POLICY PREFERENCES FOR PROMOTING RENEWABLE BIOENERGY”

“SMALL MAMMAL COMMUNITY CHARACTERISTICS AND MICROHABITAT ASSOCIATIONS ON A WETLAND RESTORATION SITE IN CHICOT COUNTY, ARKANSAS”

“ANT DIVERSITY OF ARKANSAS POST NATIONAL  
MEMORIAL”

**4. Based on your analysis of student learning data in Question 3, include an explanation of what seems to be improving student learning and what should be revised.**

The course-based assessment system is working well. In addition to helping us track student performance, the assessment also provides useful information for SFNR instructors. The instructors can compare student performance for individual CCs from year to year and adjust delivery of teaching materials accordingly.

SFNR’s forestry program underwent a 10-year accreditation visit in spring 2011. The team was impressed with our assessment system. In fact, the team had indicated that they were considering a recommendation to the Society of American Foresters that aspects of our system be adopted as a standard for all forestry schools in the nation.

SFNR’s teaching program has gone through some major changes. The curricula have been completely overhauled by the faculty with the goal of making the degree options more flexible and compatible with current trends within the discipline. As a result of this, the School’s assessment of student learning system also needs revision. We plan to design a new assessment system in the 2015-16 academic year. Discussions on this issue were initiated during this year’s faculty development week and it was decided that a faculty meeting on assessment will be scheduled during 2015 fall semester.

In the recent past, lessons from student performance assessment have played important roles in a number of unit decisions. We have made changes to the curriculum to make the unit’s educational programs more efficient. Examples of such changes include combining forest economics (3 credit hours) and forest management (3 credit hours) into one course (4 credit hours). This, along with other similar changes, has reduced the number of credit hours required to complete a forestry degree from 127 to 120.

**5. 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.

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| <b>Comparison Pair</b>           | <b>Correlation Coefficient</b> |
|----------------------------------|--------------------------------|
| ACT Composition – Cumulative GPA | 0.72                           |
| ACT Reading – Cumulative GPA     | 0.68                           |
| ACT English – Cumulative GPA     | 0.65                           |
| ACT Science – Cumulative GPA     | 0.66                           |
| 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 is 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, we were not able to schedule interviews with a significant number of graduates this past May. Consequently, we do not have a summary of exit interviews for this 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 V.

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 indicates 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.

## SCHOOL OF FORESTRY AND NATURAL RESOURCES

| <b>Position</b>             | <b>Employer</b>                            | <b>Location</b>         |
|-----------------------------|--|-------------------------|
| 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   |

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| <b>Position</b>                       | <b>Employer</b>   | <b>Location</b>      |
|---------------------------------------|---|----------------------|
| 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 |
| 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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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.

**6. 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.

| What?   | Who?                        | When/How often?                  |
|---|-----------------------------|----------------------------------|
| Collect course assessment report                  | Assessment Coordinator      | End of fall and spring semesters |
| Conduct capstone course assessment                | Capstone course instructors | Fall and Spring semesters        |
| Revise the SFNR SLOs                              | SFNR Faculty                | Fall 2015                        |
| Revise SFNR assessment of student learning system | SFNR faculty                | Fall 2015                        |
| Prepare unit assessment report                    | Assessment Coordinator      | Summer 2016                      |

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.

**7. What new tactics to improve student learning has your unit considered, experimented with, researched, reviewed or put into practice over the past year?**

The capstone course has been redesigned, renamed, and has been made into two 2- hour courses (NRM 4032 and 4062) the SFR seniors will take in their fall and spring semesters. Having the practicum over two semesters will allow our students to do longer and more comprehensive projects.

We have also decided to make the Natural Resource Economics class required for all of our options. Previously, this class was only required for forestry students. The faculty felt that all of SFNR graduates should enter the workplace with a good knowledge of natural resource economics and financial analysis.

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Our Summer Camp program, which includes a required course for forestry and wildlife management students called Contemporary Forest Resource Issues, provide opportunities for our students to experience current and important forest resource issues through field trips. During the summer of 2015, students traveled to different parts of the state with different instructors for on-site visits and discussion on these issues. The syllabus for this course is attached in Appendix IV, which includes a detailed itinerary. The 2014 Summer Camp had to be cancelled due to lack of adequate enrollment.

We have also made the decision to design a new degree in environmental science. This decision was made in response to the needs of the employers and also to enhance student recruitment and learning at SFNR. Once offered, this degree will prepare our students for the changing needs of the profession.

**8. 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  
 Currently Vacant (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**

## SCHOOL OF FORESTRY AND NATURAL RESOURCES

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’

## SCHOOL OF FORESTRY AND NATURAL RESOURCES

World Congress, an event held once every five years. IUFRO partnered with the Society of American Foresters and the Canadian Institute of Forestry/l'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.

(The response to this question was prepared by Dr. Phil Tappe.)

## 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 347B  
 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 ensuring and improving the quality of forestry education. Should you have any comments or questions, please direct them to Ms. Carol Redelheimer, CF, Director, Science and Education. She may be reached at (301) 897-8720 extension 240 or by email at [redelheimerc@safnet.org](mailto:redelheimerc@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



## Appendix II: Assessment Documents

### A. Sample of course assessment reports prepared by instructors

#### Assessment Reporting on Core Competencies for Spring 2014 Courses

Instructor: Robert L. Ficklin

#### Forest Soils

- a) Describe the nature of different types of soil parent materials;
- b) Define the components of soil color;
- c) Demonstrate the ability to identify the order in which a soil belongs based on a full taxonomic description;
- d) Identify soil textural classification based upon percentages of sand, silt, and clay;
- e) List the factors and processes involved with soil formation;
- f) Differentiate between 1:1 and 2:1 clay minerals on the basis of chemical structure;
- g) Describe the CEC and how it relates to soil fertility;
- h) Describe the processes of mineralization and nitrification;
- i) Identify the forms of N, P, and K taken up by plants;
- j) List the plant essential macronutrients and provide examples of the role of each of the nutrients in plant physiology;
- k) Identify at least three factors that influence the decomposition of organic matter;
- l) Define the components of the Universal Soil Loss Equation.

#### Core Competencies

| Student | 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**

## SCHOOL OF FORESTRY AND NATURAL RESOURCES

**Forest Soils- Laboratory**

- a) Define the components of soil color;
- b) Calculation of bulk density, gravimetric and volumetric water contents, and indirect derivation of all of these parameters when given appropriate information;
- c) Identify soil textural classification based upon percentages of sand, silt, and clay;
- d) Calculate the percentages of sand, silt, and clay in a sample based on sedimentation analyses;
- e) Identify soil map units (series) using a published soil survey;
- f) Calculate the quantity of N, P, and K present in a mixed fertilizer;
- g) Identify at least three factors that influence the decomposition of organic matter;
- h) Define the components of the Universal Soil Loss Equation and calculate the estimated loss of soil given specific conditions;
- i) Describe the mechanisms of soil erosion for both water and wind erosion.

## Core Competencies

| Student | A    | B    | C    | D    | E    | F    | G    | H    | I    |
|---------|------|------|------|------|------|------|------|------|------|
| A       | 1    | 1    | 1    | 2    | 1    | 1    | 2    | 1    | 1    |
| B       | 1    | 3    | 1    | 2    | 1    | 1    | 2    | 1    | 2    |
| C       | 1    | 1    | 1    | 1    | 2    | 1    | 1    | 1    | 1    |
| D       | 3    | 1    | 1    | 2    | 1    | 1    | 1    | 2    | 3    |
| E       | 1    | 1    | 1    | 1    | 1    | 1    | 2    | 1    | 1    |
| F       | 1    | 1    | 1    | 2    | 1    | 1    | 2    | 1    | 1    |
| G       | 1    | 1    | 1    | 2    | 2    | 1    | 2    | 1    | 2    |
| H       | 1    | 1    | 1    | 2    | 2    | 1    | 2    | 2    | 2    |
| I       | 1    | 1    | 1    | 1    | 1    | 2    | 2    | 1    | 1    |
|         | 1.22 | 1.22 | 1.00 | 1.67 | 1.33 | 1.11 | 1.78 | 1.22 | 1.67 |

## SCHOOL OF FORESTRY AND NATURAL RESOURCES

## 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 given 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 |



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## FOR 2033: Forest Soils

Instructor: Dr. Robert Ficklin

Offered every spring semester

## Core Competencies:

- a) Describe the nature of different types of soil parent materials;
- b) Define the components of soil color;
- c) Demonstrate the ability to identify the Order in which a soil belongs based on a full taxonomic description;
- d) Identify soil textural classification based upon percentages of sand, silt, and clay;
- e) List the factors and processes involved with soil formation;
- f) Differentiate between 1:1 and 2:1 clay minerals on the basis of chemical structure;
- g) Describe CEC and how it relates to soil fertility;
- h) Describe the processes of mineralization and nitrification;
- i) Identify the forms of N, P, and K taken up by plants;
- j) List the plant essential macronutrients and provide examples of the role of each of the nutrients in plant physiology;
- k) Identify at least three factors that influence the decomposition of organic matter;
- l) Define the components of the Universal Soil Loss Equation.

**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.

|             |         | LO 1 | LO 2 | LO 3 | LO 4 | LO 5 | LO 6 | LO 7 | LO 8 | LO 9 | LO10 | LO11 | LO12 |
|-------------|---------|------|------|------|------|------|------|------|------|------|------|------|------|
| Comb . Mean | 2008-14 | 1.54 | 1.37 | 1.21 | 1.16 | 1.55 | 1.30 | 1.29 | 1.17 | 1.21 | 1.20 | 1.00 | 1.12 |
| Cohort      | 2008    | 2.11 | 1.80 | 1.50 | 1.55 | 1.00 | 1.10 | 1.11 | 1.00 | 1.00 | 1.33 | 1.00 | 1.00 |
|             | 2009    | 1.31 | 1.62 | 1.08 | 1.31 | 2.27 | 2.09 | 1.36 | 1.20 | 1.25 | 1.00 | 1.00 | 1.00 |
|             | 2010    | 1.33 | 1.00 | 1.11 | 1.00 | 1.00 | 1.40 | 1.44 | 1.11 | 1.33 | 1.56 | 1.00 | 1.22 |
|             | 2011    | 2.09 | 1.27 | 1.09 | 1.00 | 2.36 | 1.00 | 1.64 | 1.36 | 1.73 | 1.64 | 1.09 | 1.18 |
|             | 2013    | 1.55 | 1.55 | 1.73 | 1.09 | 1.82 | 1.18 | 1.27 | 1.27 | 1.18 | 1.09 | 1.09 | 1.73 |

## SCHOOL OF FORESTRY AND NATURAL RESOURCES

|  |      | LO<br>1  | LO<br>2  | LO<br>3  | LO<br>4  | LO<br>5  | LO<br>6  | LO<br>7  | LO<br>8  | LO<br>9  | LO1<br>0 | LO1<br>1 | LO1<br>2 |
|--|------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
|  | 2014 | 1.3<br>6 | 1.1<br>6 | 1.0<br>9 | 1.0<br>0 | 1.2<br>7 | 1.4<br>0 | 1.5<br>0 | 1.7<br>0 | 1.2<br>0 | 1.10     | 1.00     | 1.10     |

## SFNR Assessment of Student Learning Examples

Attached are examples of SFNR assessment of student learning. Data on SFNR learning assessment are analyzed through core competency (CC) linkages that begin from the core competencies for the course—Integrated Forest Resource Management. Attached documents include analyses for one particular student. **This student took the capstone course in spring 2013.** The “class average” numbers represent mean number of attempts to complete the requirements of a core competency, unless otherwise specified.

## SCHOOL OF FORESTRY AND NATURAL RESOURCES

**Student Name:** XXXX XXXXXXXXX  
**Student ID:** XXXXXXXXXX  
**Semester and Year First Enrolled:** Fall 2010  
**Year of Graduation:** May 2014  
**Transfer Student?** Yes  
**GPA:** 3.90

**FOR 4823 Integrated Res. Planning and Mgt. CC #4:**

Design and implement comprehensive land and forest inventories including the ability to measure land areas and conduct spatial analyses

*The student achieved the requirements of this CC in the 1st of 4 possible attempts (Class average: 1.29)*



Tier 2

**SIS 3814 Introduction to GIS, GPS, and Remote Sensing CC #5:**

Conduct spatial analyses based on geoprocessing tools (proximity, extract, overlay)

*The student achieved the requirements of this CC in the 1st of 4 possible attempts (Class average: 1.29)*



Tier 1

**FOR 2273 Forest Measurements CC #2:**

Gain a better understanding of the mathematical and statistical methodologies used in natural resource management

*No Data*

**FOR 2273 Forest Measurements CC #3:**

Learn how to implement sound inventory and sampling methodology of natural resources

*No Data*

**FOR 2291 Dendrology CC #2:**

Be able to identify a woody species by its fruit (60% accuracy)

*The student achieved the requirements of this by scoring 91% (Class average: 85%)*

**FOR 2291 Dendrology CC #3:**

Be able to identify a woody species by its twig characteristics (60% accuracy)

*The student achieved the requirements of this by scoring 88% (Class average: 76%)*

**Student Name:** XXXX XXXXXXXXXXXX  
**Student ID:** XXXXXXXXXXXX  
**Semester and Year First Enrolled:** Fall 2010  
**Year of Graduation:** May 2013  
**Transfer Student?** Yes  
**GPA:** 3.90

**FOR 4823 Integrated Res. Planning and Mgt. CC #5:**

Analyze inventory data and project future conditions

*The student achieved the requirements of this CC in the 2<sup>nd</sup> of 4 possible attempts (Class average: 1.43)*

↓ Tier 2

**FOR 4684 Natural Resource Economics/Management CC #7:**

Use growth and yield models to project forest conditions to future states

*The student achieved the requirements of this CC in the 3<sup>rd</sup> of 4 possible attempts (Class average: 1.67)*

↓ Tier 1

**FOR 2273 Forest Measurements CC #2:**

Gain a better understanding of the mathematical and statistical methodologies used in natural resource management

*No Data*

**FOR 2273 Forest Measurements CC #4:**

Gain an ability to use computers when achieving the other objectives

*No Data*

## SCHOOL OF FORESTRY AND NATURAL RESOURCES

**Student Name:** XXXX XXXXXXXXXXXX  
**Student ID:** XXXXXXXXXXXX  
**Semester and Year First Enrolled:** Fall 2010  
**Year of Graduation:** May 2014  
**Transfer Student?** Yes  
**GPA:** 3.90

**FOR 4823 Integrated Res. Planning and Mgt. CC #6:**

Assess abiotic and biotic components of forest ecosystems

*The student achieved the requirements of this CC in the 1st of 4 possible attempts (Class average: 1.14)*

Tier 2

**FOR 3592 Forest Hydrology CC #A1:**

**Watersheds Delineation:** Be able to delineate a watershed boundary on a USGS quad map, label the water divide, label the outlet, and determine the watershed order

*The student achieved the requirements of this CC*

**FOR 3592 Forest Hydrology CC #A2:**

**Basic Mapping Skills:** Be able to determine aspect, determine slope, measure stream length, watershed or polygon area, and use map scale

*The student achieved the requirements of this CC*

**FOR 3592 Forest Hydrology CC #B2:**

**BMP-SMZ:** Students will be able to delineate proper SMZ widths for non-ephemeral streams (Sect. 2.11-.13, p. 9 Arkansas BMP guidelines) and to maintain proper tree density (basal area) in SMZ (Sect. 2.14 p. 92.51 p. 10 Arkansas BMP guidelines)

*The student achieved the requirements of this CC*

**FOR 3592 Forest Hydrology CC #C3:**

**Stream Classification:** Students will be able to classify streams as perennial, intermittent, or ephemeral based on frequency of stream flow, as well as determine stream order and stream segment order based on stream system characteristics

*The student achieved the requirements of this CC*

**FOR 3513 Forest Ecology CC #3:**

The student will obtain a basic knowledge of forest ecosystem function including nutrient cycling, stand development, energy capture/flows, and carbon sequestration in forests

*Course not required*

**FOR 3513 Forest Ecology CC #4:**

Be able to calculate important ecological indices and parameters.

*Course not required*

**WLF 4712 Wildlife Management CC #2:**

Apply measures of habitat components to make management decisions

*No data*

**WLF 4712 Wildlife Management CC #5:**

List and describe required habitat components for selected species

*No data*

**FOR 3804 Forest Operations CC #C:**

Be able to calculate the appropriate size of culvert for a stream crossing

*The student achieved the requirements of this CC in the 1st of 3 possible attempts (Class average: 1.5)*

**FOR 3804 Fire CC #10:**

Know how to estimate fuel loading and know the importance of fuel size classes in fire management

*No data*

Tier 1

**FOR 2033 Forest Soils CC #b:**

Define the components of soil color

*The student achieved the requirements of this CC in the 1st of 4 possible attempts (Class average: 2.0)*

**FOR 2033 Forest Soils CC #d:**

Identify soil textural classification based upon percentages of sand, silt, and clay

*The student achieved the requirements of this CC in the 1st of 4 possible attempts (Class average: 1.9)*

**FOR 2041 Forest Soils Lab CC #a:**

Define the components of soil color

*The student achieved the requirements of this CC in the 1st of 4 possible attempts (Class average: 1.0)*

**FOR 2041 Forest Soils Lab CC #b:**

Calculation of bulk density, gravimetric and volumetric water contents, and indirect derivation of all these parameters when given appropriate information

*The student achieved the requirements of this CC in the 1st of 4 possible attempts (Class average: 1.43)*

**FOR 2041 Forest Soils Lab CC #c:**

Identify soil textural classification based upon percentages of sand, silt, and clay

*The student achieved the requirements of this CC in the 1st of 4 possible attempts (Class average: 1.18)*

**FOR 2041 Forest Soils Lab CC #d:**

Calculate the percentages of sand, silt, and clay in a sample based on sedimentation analyses

*The student achieved the requirements of this CC in the 1st of 4 possible attempts (Class average: 1.32)*



## SCHOOL OF FORESTRY AND NATURAL RESOURCES

**Student Name:** XXXX XXXXXXXXXXXX  
**Student ID:** XXXXXXXXXXXX  
**Semester and Year First Enrolled:** Fall 2010  
**Year of Graduation:** May 2014  
**Transfer Student?** Yes  
**GPA:** 3.90

**FOR 4823 Integrated Res. Planning and Mgt. CC #7:**

Develop silvicultural prescriptions appropriate to management objectives  
*The student achieved the requirements of this CC in the 1st of 4 possible attempts (Class average: 1.43)*



Tier 2

**FOR 4684 Natural Resource Economics/Management CC #8:**

Determine optimal rotations for trees and forest stands  
*The student achieved the requirements of this CC in the 1st of 4 possible attempts (Class average: 1.0)*

**FOR 4684 Natural Resource Economics/Management CC #9:**

Determine sustainable levels of allowable cut based on volume and area  
*The student achieved the requirements of this CC in the 1st of 4 possible attempts (Class average: 1.0)*

**FOR 4684 Natural Resource Economics/Management CC #11:**

Formulate simple forest-wide harvest schedules and mathematical models  
*The student achieved the requirements of this CC in the 1st of 4 possible attempts (Class average: 1.0)*

**FOR 3513 Forest Ecology CC #2:**

The student will be able to adequately summarize and analyze ecological information collected in the field. In addition they will be able to apply ecological concepts to explain variation in forest characteristics and ecosystem attributes  
*Course not required*

**FOR 3804 Forest Operations CC #b:**

Be able to use/create maps to locate areas within a harvest area that are suitable for landings/sets, skid roads, and main roads in compliance with Arkansas Best Management Practices (BMPs) for water quality  
*The student achieved the requirements of this CC in the 1st of 4 possible attempts (Class average: 1.21)*

**FOR 3804 Fire CC #6:**

Know and apply suitable firing systems to meet prescribed burn objectives  
*No data*

**FOR 3804 Fire CC #7:**

Know and apply appropriate smoke management strategies to meet specific burn objectives

*No data*

**FOR 3523 Herbicides CC #10:**

Write a herbicide prescription

*No data*

**FOR 4733 Forest Pest Management CC #5:**

Know and apply conventional ways of preventing and controlling important pests of southern pines

*No data*

**FOR 4733 Forest Pest Management CC #7:**

Know how to use silviculture to your best advantage in developing pest management strategies

*No data*



Tier 1

**FOR 2291 Dendrology II CC #1:**

Know and describe the silvical characteristics of the 27 woody species common to the southern U.S.

*The student achieved the requirements of this by scoring 93% (Class average: 82%)*

**FOR 3434 Silviculture CC #6:**

Be able to develop and write an herbicide prescription based on the quantity and type of vegetation

present

*No data*

**FOR 3434 Silviculture CC #7:**

Understand the different types of tillage treatments, and know the instances where their application is warranted

*No data*

**FOR 3434 Silviculture CC #9:**

Know and describe the purposes of thinning, and its impact on production, growth and yield

*No data*

**FOR 3434 Silviculture CC #10:**

Be able to describe (orally) and write a silvicultural system for both naturally and artificially regenerated

hardwood and pine species

*No data*

## SCHOOL OF FORESTRY AND NATURAL RESOURCES

**Student Name:** XXXX XXXXXXXXXXXX  
**Student ID:** XXXXXXXXXXXX  
**Semester and Year First Enrolled:** Fall 2010  
**Year of Graduation:** May 2014  
**Transfer Student?** Yes  
**GPA:** 3.90

**FOR 4823 Integrated Res. Planning and Mgt. CC #8:**

Develop management plans addressing multiple objectives and constraints  
*The student achieved the requirements of this CC in the 1st of 4 possible attempts (Class average: 1.0)*

Tier 2

**FOR 4684 Natural Resource Economics/Management CC #1:**

Make decisions based on marginal costs and benefits  
*The student achieved the requirements of this CC in the 1st of 4 possible attempts (Class average: 1.33)*

**FOR 4684 Natural Resource Economics/Management CC #12:**

Complete an integrated forest planning exercise for a single forest management unit  
*The student achieved the requirements of this CC in the 1st of 4 possible attempts (Class average: 1.0)*

**WLF 4712 Wildlife Management CC #3:**

Apply measures of habitat components to make management decisions  
*No data*

**WLF 4712 Wildlife Management CC #4:**

Identify appropriate population parameters and describe how they should be quantified in order to make population management decisions  
*No data*

**WLF 4712 Wildlife Management CC #5:**

Utilize information on habitat and population parameters in concert with sociological considerations to suggest appropriate management recommendations  
*No data*

**FOR 3804 Forest Operations CC #b:**

Be able to use/create maps to locate areas within a harvest area that are suitable for landings/sets, skid roads, and main roads in compliance with Arkansas Best Management Practices (BMPs) for water quality  
*No data*

**FOR 3804 Fire CC #11:**

Write a prescribed fire plan  
*No data*

**FOR 4733 Forest Pest Management CC #4:**

Use knowledge of insect, disease, and forest science to formulate pest management strategies  
*No data*

**FOR 4003 Natural Resource Policy CC #2:**

Ability to distinguish between major federal, state, and local forest resource policies and recognize how these laws and regulations govern the management of forest resources

*The student achieved the requirements of this CC by scoring 94% (Class average: 82%)*

**FOR 3592 Forest Hydrology CC #B3:**

**BMP-Stream Crossings:** Students will be able apply Arkansas BMP guidelines ( 3.90, 3.91, 3.92, 3.94, 3.95, p 20; Section 12.40, page 45) for installing culverts

*The student achieved the requirements of this CC*

**FOR 3592 Forest Hydrology CC #B4:**

**BMP- Rolling Dips & Water Bars:** Students will understand which of these two erosion control devices should be used for active and inactive roads, distances to use for each portion of the water control device, and out slope angles employed (Section 12.2 & 13.0 Arkansas BMP Guidelines)

*The student achieved the requirements of this CC*

**WLF 4722 Wildlife Ecology CC #B:**

Understand population processes that form the basis for applied management

**WLF 4722 Wildlife Ecology CC #C:**

Be able to apply principles of wildlife populations to specific problems of declining, small, or harvestable populations

Tier 1

**FOR 2033 Forest Soils CC #j:**

List the plant essential micronutrients and provide examples of the role of each of the nutrients in plant physiology

*The student achieved the requirements of this CC in the 1st of 4 possible attempts (Class average: 1.56)*

**FOR 2033 Forest Soils CC #k:**

Identify at least three factors that influence the decomposition of organic matter

*The student achieved the requirements of this CC in the 1st of 4 possible attempts (Class average: 1.0)*

**FOR 2041 Forest Soils Lab CC #e:**

Identify soil map units (series) using a published soil survey

*The student achieved the requirements of this CC in the 1st of 4 possible attempts (Class average: 1.11)*

## SCHOOL OF FORESTRY AND NATURAL RESOURCES

**Student Name:** XXXX XXXXXXXXXXXX  
**Student ID:** XXXXXXXXXXXX  
**Semester and Year First Enrolled:** Fall 2010  
**Year of Graduation:** May 2014  
**Transfer Student?** Yes  
**GPA:** 3.90

**FOR 4823 Integrated Res. Planning and Mgt. CC #9:**

Integrate necessary financial, social and legal aspects into a management plan  
*The student achieved the requirements of this CC in the 1st of 4 possible attempts (Class average: 1.43)*

Tier 2  


**FOR 4684 Natural Resource Economics/Management CC #5:**

Calculate forest taxes  
*The student achieved the requirements of this CC in the 1st of 4 possible attempts (Class average: 1.0)*

**FOR 4684 Natural Resource Economics/Management CC #6:**

Value timber and non-timber products  
*The student achieved the requirements of this CC in the 1st of 4 possible attempts (Class average: 1.33)*

**WLF 4712 Wildlife Management CC #5:**

Utilize information on habitat and population parameters in concert with sociological considerations to suggest appropriate management recommendations  
*No data*

**FOR 3804 Fire CC #8:**

Know how to utilize some common methods of preventing wildfires, including using Arkansas' forest fire laws to your advantage  
*No data*

**FOR 4003 Natural Resource Policy CC #2:**

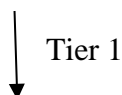
Ability to distinguish between major federal, state, and local forest resource policies and recognize how these laws and regulations govern the management of forest resources  
*The student achieved the requirements of this CC by scoring 94% (Class average: 82%)*

**FOR 3804 Forest Operations CC #a:**

Be able to identify the most cost-effective harvesting system when given equipment, personnel, inventory, and productivity information  
*No data*

**FOR 3804 Forest Operations CC #b:**

Be able to use/create maps to locate areas within a harvest area that are suitable for landings/sets, skid roads, and main roads in compliance with Arkansas Best Management Practices (BMPs) for water quality  
*No data*



**FOR 2022 Financial Analysis in Natural Resources CC #1:**

Understand the arithmetic of interest rates and formulate an appropriate hurdle rate  
*The student achieved the requirements of this CC in the 1st of 4 possible attempts (Class average: 1.5)*

**FOR 2022 Financial Analysis in Natural Resources CC #2:**

Calculate the present and future value of a single cash flow  
*The student achieved the requirements of this CC in the 1st of 4 possible attempts (Class average: 1.17)*

**FOR 2022 Financial Analysis in Natural Resources CC #3:**

Calculate the present and future value of a series of cash flows  
*The student achieved the requirements of this CC in the 1st of 4 possible attempts (Class average: 1.5)*

**FOR 2022 Financial Analysis in Natural Resources CC #5:**

Determine a project's rate of return  
*The student achieved the requirements of this CC in the 1st of 4 possible attempts (Class average: 1.0)*

**FOR 2022 Financial Analysis in Natural Resources CC #6:**

Determine a project's net present value and benefit cost ratio  
*The student achieved the requirements of this CC in the 1st of 4 possible attempts (Class average: 1.0)*

**FOR 2022 Financial Analysis in Natural Resources CC #7:**

Calculate a repeatable project's equal annual equivalent and soil expectation value  
*The student achieved the requirements of this CC in the 1st of 4 possible attempts (Class average: 1.0)*

**FOR 3123 Human Dimensions of Natural Resources CC #2:**

Ability to identify how society's values and choices have shaped use and management of  
natural  
resources over time

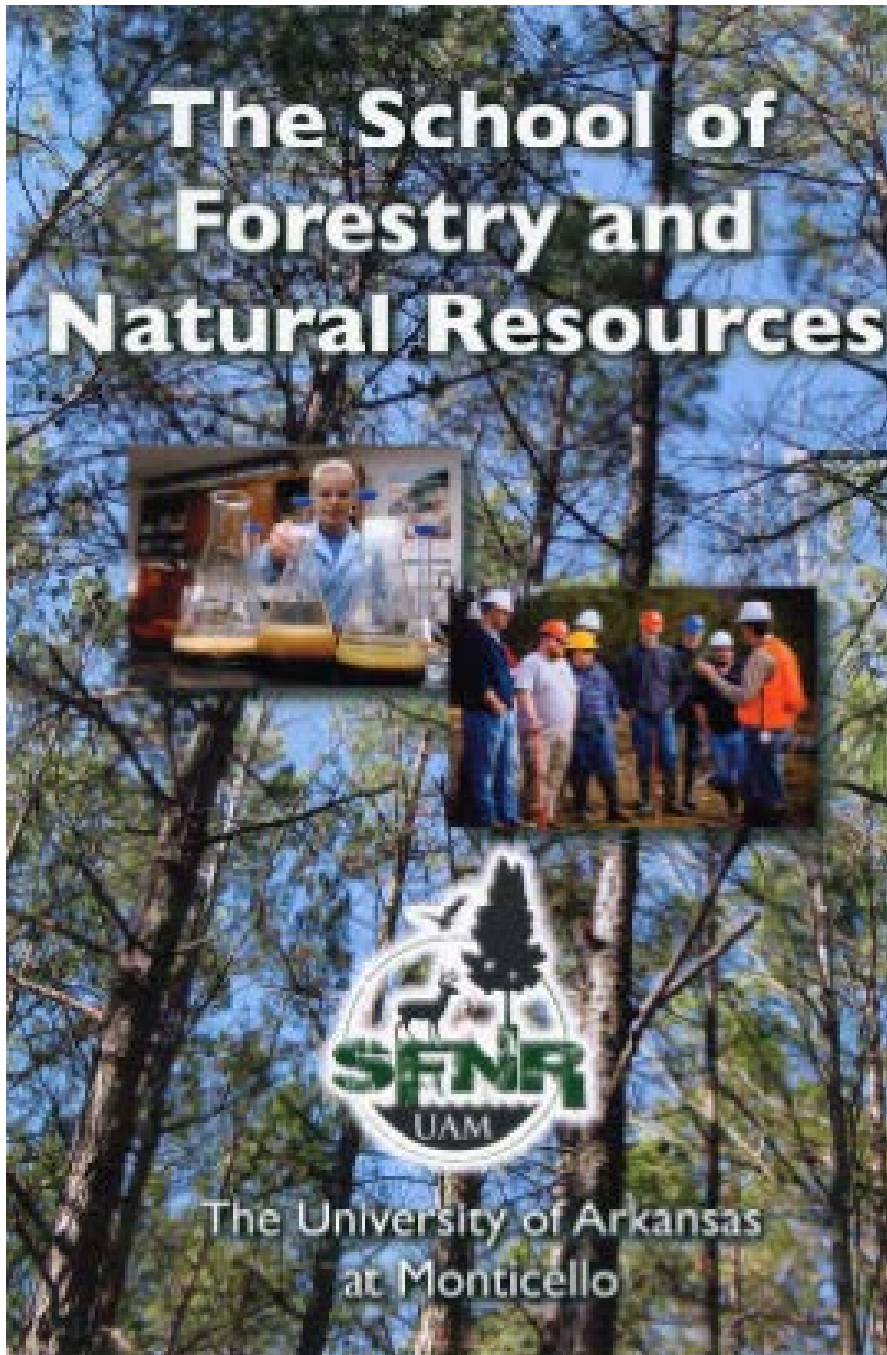
*The student achieved the requirements of this CC by scoring 95% (Class average: 83%)*

**FOR 3123 Human Dimensions of Natural Resources CC #3:**

Ability to recognize the importance of emerging natural resource issues along the wildland-  
urban  
interface

*The student achieved the requirements of this CC by scoring 96% (Class average: 86%)*

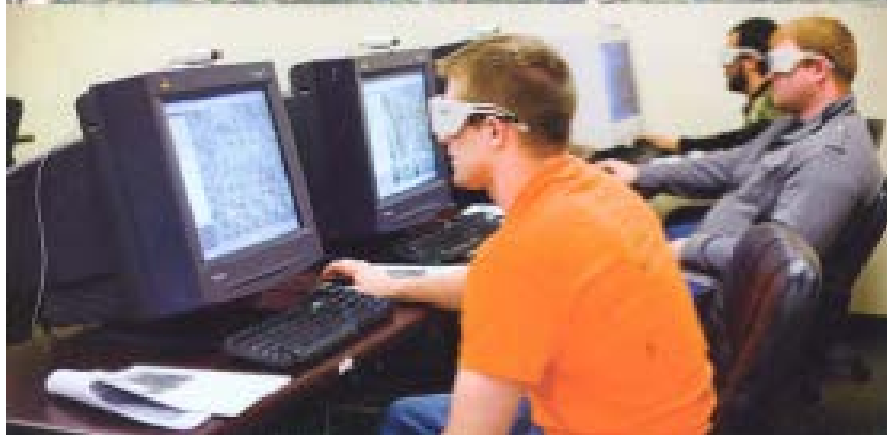
**Appendix III: Program Brochures**





## 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 [forestryresources@uamont.edu](mailto:forestryresources@uamont.edu)
- For information about financial aid, contact the Office of Financial Aid at (870) 460-1052 or email [finaid@uamont.edu](mailto:finaid@uamont.edu)

School of Forestry and Natural Resources  
[www.uamont.edu/sfnr](http://www.uamont.edu/sfnr)  
[forestryresources@uamont.edu](mailto:forestryresources@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

### Syllabus for Forest Soils Lecture- FOR 2033 (Spring 2014)

**Instructor:** Dr. Robert L. Ficklin  
B107 SFR  
Phone: 460-1692 (o); 573-808-2501 (h)

**Lecture Time and Location:** TH 11:10am to 12:30pm; Rm B207  
SFR

**Office Hours:** 8:00 to 10:00 a.m. Tuesday and Thursday and by appointment.

**Course Objectives:** To introduce future forest resource professionals to the complex interactions between the soil resource and forest biota. Upon completion of the course, students will have a fundamental understanding of the soil as a living body, and students will be familiar with soils terminology, soil/ plant water relationships, soil properties, and soil productivity.

**Evaluation Criteria:** Three 1-hour exams (25% each)  
Final Exam (20%)  
Participation (5%)

*Note: Learning the jargon of soil science is important for the communication of ideas between and among natural resource professionals. Similarly, learning the jargon of soil science is critical for the successful completion of this course. The definitions for all soil science terms are in the glossary of Brady and Weil.*

**Scale:** A=90-100    B=80-89    C=70-79    D=60-69    F<60

UAM will no longer mail grade reports to all students. You may access your grades through Campus. Connect on the UAM homepage, <http://www.uamont.edu/>. To have your grades mailed to you, complete the grade request form available in the Registrar's Office in Monticello or the Student Services offices in Crossett and McGhee.

#### **Expectations:**

1. Three *unexcused* absences will result in a drop of one letter grade.
2. A word processor must be used for all assignments.
3. Cheating and/or plagiarism will result in a zero on that assignment or test. *Cheating and plagiarism are both violations of the UAM Student Academic Conduct Code as defined in the Student Handbook (See Statement Below)*. Two incidents will result in administrative action, which may include expulsion from the class and/or the University.

## SCHOOL OF FORESTRY AND NATURAL RESOURCES

4. Disorderly conduct will not be tolerated. This course is designed to facilitate the development of forest resource professionals. Disorderly conduct will be handled in a manner appropriate for the disruption.

**Absences from Class and Announced Exercises:**

Although a formal roll-call may not be performed on a regular basis, the class will be counted and absences observed. Attendance is strongly encouraged. Students are held responsible for all material, handouts, and assignments presented in lecture and lab, **whether discussed in class or not**. A good record of participation in class will be taken into consideration for a student who is on the border-line between two grades.

**Prerequisites:** CHEM 1103 General Chemistry I or CHEM 1023 Introduction to Chemistry; MATH 1043 College Algebra

**Text (Required):** The Nature and Properties of Soils, 13th Edition; Nyle C. Brady & Ray R. Weil.

**or**

**Equivalent Text:** The Elements of the Nature and Properties of Soils, 2nd Edition; Nyle C. Brady & Ray R. Weil.

**Spring Break:** March 18th to the 22<sup>nd</sup>

**Final Exam:** May 1st, 12:45 to 2:45 (Wednesday)

**Students With Disabilities:**

It is the policy of the University of Arkansas--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.

Please note that the last line would change for technical campuses to include:

McGhee: Office of Special Student Services representative on campus; phone 870 222-5360; fax 870-222-4709.

Crossett: Office of Special Student Services representative on campus; phone 870 364-6414; fax 870-364-5707.

**Professionalism:**

Students in the School of Forestry and Natural Resources are pursuing courses of study that prepare them for careers as natural resources 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.

## SCHOOL OF FORESTRY AND NATURAL RESOURCES

Because 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, SFR 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,

1. The UA-M Code of Student Conduct published in the University catalog,
2. 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;
  - d. Adherence to professional ethics, e.g. the Society of American Foresters Code of Ethics.

**The instructor reserves the right to reduce student grades or withdraw a student from class for unprofessional behavior.**

#### 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.

## SCHOOL OF FORESTRY AND NATURAL RESOURCES

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.

---

### Lecture Topics:

- |  |   |                                      |
|--|---|--------------------------------------|
| 1. The soil as a living body                                   | } | <b>Exam I Materials</b>              |
| 2. Soil formation from parent materials                        |   |                                      |
| 3. Soil classification   |   |                                      |
| 4. Soil structure and physical properties                      |   |                                      |
| 5. Soil and the hydrologic cycle                               | } | <b>Exam II Materials</b>             |
| 6. Soil and plant water characteristics                        |   |                                      |
| 7. Soil colloid chemistry                                      |   |                                      |
| 8. Soil pH and nutrient availability for plant utilization     | } | <b>Exam III Materials</b>            |
| 9. Soil ecology/ biotic and abiotic interactions               |   |                                      |
| 10. Soil organic matter  |   |                                      |
| 11. Nitrogen, phosphorus, potassium, and micronutrients        |   |                                      |
| 12. Fertility management                                       |   |                                      |
| 13. Soil erosion and control                                   | } | <b>Final Exam</b><br>(Comprehensive) |
| 14. Soil quality and relation to sustainable site productivity |   |                                      |

### Specific Learning Objectives:

In accordance with the new outcomes-based assessment policy, all students are required to demonstrate proficiency in all core competencies in both portions of this course at least once during the semester. Failure to demonstrate proficiency in all core competencies will result in one of two options (determined by the instructor):

## SCHOOL OF FORESTRY AND NATURAL RESOURCES

- 1) A course grade of “D” may be assigned regardless of overall average;
- 2) A course grade of “I” may be assigned which later can be converted to the grade earned based on course average once proficiency in all core competencies have been demonstrated. The instructor will provide additional assignments so that the student can demonstrate mastery of the core competency/ competencies that was/ were not mastered during the regular semester. The time limit for this option is 4 weeks from the date of the final examination.

Successful completion of this course is accomplished by fulfilling two sets of assessment requirements. First, a general understanding of all course materials such that 70% of all coursework is deemed “correct” is required. Second, students must illustrate mastery of key concepts that are central to tree ecophysiology.

***Mastery of the materials is shown by successfully completing the following core competencies:***

- a) Describe the nature of different types of soil parent materials;
- b) Define the components of soil color;
- c) Demonstrate the ability to identify the Order in which a soil belongs based on a full taxonomic description;
- d) Identify soil textural classification based upon percentages of sand, silt, and clay;
- e) List the factors and processes involved with soil formation;
- f) Differentiate between 1:1 and 2:1 clay minerals on the basis of chemical structure;
- g) Describe CEC and how it relates to soil fertility;
- h) Describe the processes of mineralization and nitrification;
- i) Identify the forms of N, P, and K taken up by plants;
- j) List the plant essential macronutrients and provide examples of the role of each of the nutrients in plant physiology;
- k) Identify at least three factors that influence the decomposition of organic matter;
- l) Define the components of the Universal Soil Loss Equation.



## **Syllabus for Forest Soils Laboratory- FOR 2041 (Spring 2014)**

**Instructor:** Dr. Robert L. Ficklin

B107 SFR

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

**Lab Time and Location:** T 1:40pm to 4:30pm; A110 SFR (Soils Lab)

**Office Hours:** 8:00 to 10:00 a.m. Tuesday and Thursday and by appointment.

**Course Objectives:** To introduce fundamental soil description, sampling, and analysis techniques. Upon completion of the course, students will be prepared to utilize published soil survey information, design and implement soil sampling designs, and interpret basic soil analytical data for integration into comprehensive forest resource management plans.

**Evaluation Criteria:** Two exams (25% each)  
Final Exam (30%)  
Laboratory Reports (15%)  
Participation (5%)

*Note: Learning the jargon of soil science is important for the communication of ideas between and among natural resource professionals. Similarly, learning the jargon of soil science is critical for the successful completion of this course. The definitions for all soil science terms are in the glossary of Brady and Weil.*

**Scale:** A=90-100    B=80-89    C=70-79    D=60-69    F<60

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**Expectations:**

5. Lab reports are due one week from the assignment date. Late reports will receive a 25% deduction.
6. Three *unexcused* absences will result in a drop of one letter grade. Missing five classes will result in expulsion from the course.
7. Failure to submit two lab reports will result in a zero for the lab section.
8. A word processor must be used for all assignments.
9. Cheating and/or plagiarism will result in a zero on that assignment or test. *Cheating and plagiarism are both violations of the UAM Student Academic Conduct Code as defined*

## SCHOOL OF FORESTRY AND NATURAL RESOURCES

*in the Student Handbook (See Statement Below)*. Two incidents will result in administrative action, which may include expulsion from the class and/or the University.

10. Disorderly conduct will not be tolerated. This course is designed to facilitate the development of forest resource professionals. Disorderly conduct will be handled in a manner appropriate for the disruption.

11.

**Professionalism:**

Students in the School of Forestry and Natural Resources are pursuing courses of study that prepare them for careers as natural resources 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.

Because 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, SFR 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,

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

**The instructor reserves the right to reduce student grades or withdraw a student from class for unprofessional behavior.**

**Absences from Class and Announced Exercises:**

Although a formal roll-call may not be performed on a regular basis, the class will be counted and absences observed. Attendance is strongly encouraged. Students are held responsible for all material, handouts, and assignments presented in lecture and lab, **whether discussed in class or not**. A good record of participation in class will be taken into consideration for a student who is on the border-line between two grades.

**Prerequisite:** CHEM 1103 & 1121 General Chemistry I or CHEM 1023 & 1031 Introduction to Chemistry; MATH 1043 College Algebra

**Text (Required):** The Nature and Properties of Soils, 13th Edition; Nyle C. Brady & Ray R. Weil.

**or**

**Equivalent Text:** The Elements of the Nature and Properties of Soils, 2nd Edition; Nyle C. Brady & Ray R. Weil.

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**Spring Break:** March 18th to the 22<sup>nd</sup>

**Final Exam:** May 6th, 1:00am to 3:00pm (Monday)

### Students With Disabilities:

It is the policy of the University of Arkansas--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.

Please note that the last line would change for technical campuses to include:

McGhee: Office of Special Student Services representative on campus; phone 870 222-5360; fax 870-222-4709.

Crossett: Office of Special Student Services representative on campus; phone 870 364-6414; fax 870-364-5707.

### 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.

## SCHOOL OF FORESTRY AND NATURAL RESOURCES

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.

### Laboratory Topics (by week):

1. Introduction to soil variability
2. Minerals, rocks and weathering
3. Soil color and texture I
4. Gravimetric water content and texture II
5. Bulk density and volumetric water content
6. Exam I
7. Soil strength and Atterberg Limits
8. Sampling scale and soil water potential experiment
9. Experimental evaluation of time domain reflectometry
10. Erosional processes I- The Dust Bowl
11. Exam II
12. Soil organic matter determination
13. Use and interpretation of soil surveys
14. Tests of soil chemical properties (wet chemistry)
15. Soil pH: determinations using water and salt solutions
16. Erosional processes II- definitions and modeling
17. Stream morphological responses to land management

## SCHOOL OF FORESTRY AND NATURAL RESOURCES

**Specific Learning Objectives:**

In accordance with the new outcomes-based assessment policy, all students are required to demonstrate proficiency in all core competencies in both portions of this course at least once during the semester. Failure to demonstrate proficiency in all core competencies will result in one of two options (determined by the instructor):

- 3) A course grade of “D” may be assigned regardless of overall average;
- 4) A course grade of “T” may be assigned which later can be converted to the grade earned based on course average once proficiency in all core competencies have been demonstrated. The instructor will provide additional assignments so that the student can demonstrate mastery of the core competency/ competencies that was/ were not mastered during the regular semester. The time limit for this option is 4 weeks from the date of the final examination.

Successful completion of this course is accomplished by fulfilling two sets of assessment requirements. First, a general understanding of all course materials such that 70% of all coursework is deemed “correct” is required. Second, students must illustrate mastery of key concepts that are central to tree ecophysiology.

***Mastery of the materials is shown by successfully completing the following core competencies:***

- m) Define the components of soil color;
- n) Calculation of bulk density, gravimetric and volumetric water contents, and indirect derivation of all of these parameters when given appropriate information;
- o) Identify soil textural classification based upon percentages of sand, silt, and clay;
- p) Calculate the percentages of sand, silt, and clay in a sample based on sedimentation analyses;
- q) Identify soil map units (series) using a published soil survey;
- r) Calculate the quantity of N, P, and K present in a mixed fertilizer;
- s) Identify at least three factors that influence the decomposition of organic matter;
- t) Define the components of the Universal Soil Loss Equation and calculate the estimated loss of soil given specific conditions;
- u) Describe the mechanisms of soil erosion for both water and wind erosion.

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## **FOR 4684 Natural Resource Economics and Management**

Last updated: Friday, October 09, 2015

Instructor: Dr. Matthew H. Pelkki

Office: A103

Phone: 460-1949 (office) 723-3779 (cell)

E-mail: PELKKI@uamont.edu

This syllabus can be found on the web at: <http://www.afrc.uamont.edu/pelkkim/teaching.htm>

### **COURSE MEETING TIMES AND LOCATION:**

T Th 1100 – 1230 C105

T 1340 – 1630 C202

### **PREREQUISITES / CO-REQUISITES**

Prerequisites: FOR 2022 Financial Analysis of Natural Resources, FOR 3434 Silviculture, ECON 2213

(Micro Economics) or equivalent, MATH 1073 (Compact Calculus) or equivalent, and FOR 3353 (Biometrics in NR) or equivalent.

### **COURSE DESCRIPTION AND PHILOSOPHY**

Forestry as a profession is founded not only on ecological principles but also on an understanding of human economic needs and how forest resources are used to meet those needs. Students will learn how markets distribute forest resources, how market failures affect resource distribution and how governments intervene to correct for market failures. Students will integrate silviculture, finance, mensuration, and human dimensions in the understanding and development of stand-level and forest level planning and management. Students will be introduced to these concepts through reading, lectures, and laboratory exercises; students will have the opportunity to demonstrate their grasp of the material through homework assignments, a management exercise, and examinations.

### **LEARNING OBJECTIVES**

Students will, by the end of the semester, be able to:

- (LO1) make decisions based on marginal costs and benefits,
- (LO2) construct supply and demand curves for forest products,
- (LO3) recognize market structures and understand supply and demand interaction
- (LO4) recognize market failures in natural resource economies and effects of government interventions,
- (LO5) calculate forest taxes,
- (LO6) value timber and non-timber products,
- (LO7) use growth and yield models to project forest conditions to future states,
- (LO8) determine optimal rotations for trees and forest stands,
- (LO9) determine sustainable levels of allowable cut based on volume and area,
- (LO10) compare forest planning and administration in public and private settings,
- (LO11) formulate simple forest-wide harvest schedules and mathematical models,
- (LO12) complete an integrated forest planning exercise for a single forest management unit.

### **REQUIRED TEXTS**

- Forest Resource Economics and Finance. 1996. W. David Klemperer, McGraw-Hill.
- Forest Management, 4th edition, 2001. Lawrence S. Davis, K. Norman Johnson, Peter S. Bettinger, and Theodore E. Howard. Waveland Press, Long Grove, IL. 804 p.

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**OFFICE HOURS AND HOW TO REACH ME**

**My formal office hours are on Tuesday and Thursday, from 1000-1100 hours.** If you cannot see me during this time, come to my office anyway. If am free at the moment, great! If I'm busy, we can set an appointment at the soonest convenient time for both parties. If you don't find me in my office and you need help, please leave a message! Answering student questions is important to me! I have voice mail at work and on my mobile phone, and E-mail. You can text me at my mobile phone number as well. I will return your call or message as soon as possible.

**ASSIGNMENTS AND GRADING**

**Learning objectives.** In order to closely assess each student's progress towards the 12 learning objectives, students will have multiple opportunities to demonstrate understanding in each learning objective throughout the semester. These opportunities will come through homework assignments, quizzes, and examinations. Problems used to designate understanding of a learning objective will be indicated on the assignment. **All students are required to demonstrate proficiency in all 12 learning objectives at least once in the semester.** Failure to demonstrate proficiency in each of the learning objectives will result in one of two options that are at the discretion of the instructor:

- 1) A course grade of "D" regardless of the overall average
- 2) A course grade of "I" which can be converted to the letter grade earned by the student (see the scale below) for all work when the student completes the necessary learning objectives through additional assignments. The time limit for this option is 4 weeks from the date of the final examination.

**Course grade.** For students that have demonstrated an understanding of each of the learning objectives, their course letter grade is determined by their overall average on the following assignments given during the semester:

1. Pretest on pre-requisites (first lab) 6%
2. Homework Assignments (8 at 3% each) 24%
3. Mid-term examinations (3 at 10% each) 30%
4. Forest management exercise 10%
5. Final Examination (1 at 30%) 30%

Course grades are assigned according to the scale below, without exceptions!

A 90 – 100%      B 80 - 89.99%      C 70 - 79.99%      D 60 – 69.99%      F < 60%

**COURSE WEB PAGE**

Important course information is located on the Internet. You are responsible for downloading and printing your own copies of handouts and assignments. You may also want to look at keys and you may print these out as well to assist you in studying for examinations.

<http://www.afrc.uamont.edu/pelkkim/teaching.htm>

**COURSE POLICIES**

1. **Excused Absences.** Excused absences include: 1) illness of the student, 2) serious illness or death of a family member, 3) official college trips, and 4), major religious holidays. For categories 1 and 2, I must be notified within 1 week of the absence, and verification

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may be required. For category 3, I must be notified at least 1 week prior to the event, and in the case of category 4, I must be notified, in writing, within the first week of class.

2. **Unexcused absences.** Attendance is mandatory for this class. Any student with more than 9 hours of unexcused absences, will be required to meet with the instructor and Dean of the school to determine if the student should be withdrawn from the course and receive a course grade of W. The student may appeal any withdrawal from the course with the Provost of the University.
3. **Withdrawing/Incompletes.** Any student with **excused** absences exceeding one-fifth of the class contact hours will be granted a "W" or an "I" on request.
4. **Late/Missed Assignments/Exams.** Unless otherwise stated or announced in class, assignments are due at the BEGINNING of class on the date listed. **No late assignments will be accepted without PRIOR approval from the instructor, unless that absence is both unplanned and excused (see excused absences, category 1 and 2, above).** In the case of unplanned, excused absences, the student must notify the instructor during the next attended class period and an extension will be made according to the circumstances.
5. **Make-up exams.** Make up exams will be given only for excused absences; all other missed exams result in a grade of zero. Students must meet with the instructor and arrange a day and time for make-up examinations.
6. **Mid-term notification of student grades.** At their request, I will inform any student of their current course grade prior to the last day to withdraw from class.
7. **Cheating/Plagiarism.** Both cheating and plagiarism are violations of the UAM Student Academic conduct Code and are defined in the Student Handbook. Violations of the Academic Code will be dealt with as specified by the Student Handbook and can range from an F grade in the course to suspension and expulsion from the University. The minimum punishment for either offense is a score of zero for the exercise. All assignments are individual exercises and copying will result in a zero grade.
8. **Food/Tobacco use.** In class, food and ALL FORMS of tobacco are prohibited. If you want to eat, chew or smoke, you must do this outside of class. Soft drinks or other non-alcoholic beverages are acceptable in class.
9. **Disruptive behavior.** Disruptive behavior diminishes the opportunity for learning by peers and in effect, is a theft of their tuition dollars. Students will receive ONE warning about disruptive behavior. At the second instance, the student will be asked to leave the class and will forfeit one letter grade from their final course grade. A third instance will result in expulsion (administrative withdrawal) from the class.
10. **Dress code.** As a sign of respect, I request that students **not wear hats in class.**
11. **Other.** Other unusual, legitimate problems that arise will be dealt with on a case by case basis. If you are having problems, see me and I will try to help you out.

### Grade Reporting Policy

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**School of Forestry and Natural Resources Professionalism Statement**

Students in the School of Forestry and Natural Resources are pursuing course 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 the School of Forestry and Natural Resources 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, SFR 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,

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

Instructors reserve the right to reduce student grades or withdraw students from classes for unprofessional or disruptive behavior (see course policies).

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**TENTATIVE COURSE SCHEDULE AND CONTENT**

| <b>B.Date</b> | <b>Meeting</b> | <b>Topic</b>  | <b>Homework</b> | <b>Reading</b> |
|---------------|----------------|---|-----------------|----------------|
| 08.23         | Lecture 1      | Course Introduction, Economic thought, forest economics   |                 | Econ Ch. 1     |
| 08.28         | Lecture 2      | Utility theory and marginal analysis                      |                 |                |
|               | Lab 1          | Pre-Test  |                 |                |
| 08.30         | Lecture 3      | Demand  | HW 1 Due        | Econ Ch. 2     |
| 09.04         | Lecture 4      | Supply  |                 |                |
|               | Lab 2          | Using Ptaeda growth model for loblolly pine               |                 |                |
| 09.06         | Lecture 5      | Supply and demand interactions                            | HW 2 Due        | Econ Ch. 3     |
| 09.11         | Lecture 6      | Free market, market failures and government interventions |                 |                |
|               | Lab 3          | FVS-1: Basic Simulations and data management              |                 |                |
| 09.13         | Lecture 7      | Short-run timber demand and supply                        |                 |                |
| 09.18         | Lecture 8      | Long-run timber demand and supply                         | HW 3 Due        |                |
|               | Lab 4          | Developing short run supply and demand curves for timber  |                 |                |
| 09.20         | Lecture 9      | Valuation and appraisal                                   |                 | Econ Ch. 11    |
| 09.25         | Lecture 10     | Valuing non-market forest outputs                         |                 | Econ. Ch. 14   |
|               | Lab 5          | Mid-term examination 1                                    |                 |                |
| 09.27         | Lecture 11     | Water resource economics                                  |                 |                |
| 10.02         | Lecture 12     | Taxation principles                                       | HW 4 Due        |                |
|               | Lab 6          | Application of forest taxes                               |                 |                |
| 10.04         | Lecture 13     | Wildlife economics  |                 |                |
| 10.09         | Lecture 14     | Arkansas and U.S. Forest Product Economies                |                 | Econ Ch. 13    |
|               | Lab 7          | Recreation Economics                                      |                 |                |
| 10.11         | Lecture 15     | Concepts of growth and yield                              | HW 5 Due        | Mgmt. Ch. 1&2  |
| 10.16         | Lecture 16     | Yield tables, stand table projection                      |                 | Mgmt. Ch 4     |
|               | Lab 8          | FVS-2: Management regimes and economic data               |                 |                |
| 10.18         | Lecture 17     | Biological rotation length                                | HW 6 Due        | Mgmt 359-376   |
| 10.23         | Lecture 18     | Rotation determination for a single-tree                  |                 |                |
|               | Lab 9          | Mid-term examination II                                   |                 |                |
| 10.25         |                | Field exercise preparation/ make- up day                  |                 |                |
| 10.30         |                | Field exercise/ make- up lab                              |                 |                |

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| <b>B.Date</b> | <b>Meeting</b>       | <b>Topic</b>   | <b>Homework</b> | <b>Reading</b>  |
|---------------|----------------------|--|-----------------|-----------------|
| 11.01         | Lecture 19           | Optimal level of reserve growing stock   |                 |                 |
| 11.06         | Lecture 20           | Even-aged rotation: starting with bare land                                    |                 | Mgmt<br>376-384 |
|               | Lab 10               | FVS-3: Working on management plan projections in FVS                           |                 |                 |
| 11.08         | Lecture 21           | Even-aged rotation: considering existing stands                                | HW 7 Due        |                 |
| 11.13         | Lecture 22           | Normal forest model and forest regulation                                      |                 | Mgmt<br>527-556 |
|               | Lab 11               | Thinking about the entire forest – a simple harvest plan simulated with Ptaeda |                 |                 |
| 11.15         | Lecture 23           | Methods for estimating sustainable cutting levels                              |                 |                 |
| 11.20         | Lecture 24           | Forest Planning concepts   |                 | Mgmt Ch<br>3    |
|               | Lab 12<br>Mgmt. Plan | Presentation of management plans by students                                   |                 |                 |
| 11.22         |                      | THANKSGIVING HOLIDAY   |                 |                 |
| 11.27         | Lecture 25           | Harvest Scheduling concepts  |                 |                 |
|               | Lab 13               | Solving complex management problems with linear programming                    |                 |                 |
| 11.29         | Lecture 26           | Harvest scheduling objectives  |                 |                 |
| 12.04         | Lecture 27           | Developing objectives for harvest scheduling                                   | HW 8 Due        | Mgmt. Ch<br>6   |
| 12.06         | Lecture 28           | Forest-wide constraints- importance and development                            |                 |                 |

Final examination date, time, and place: Tuesday, 11 December 2012 from 2012 1030 to 1230 in Room C105

## Advanced Global Positioning Systems (SIS 4193) Fall 2013

(3 credits, two 1 hour lectures, one 3 hour laboratory)

**Instructor:** Mr. Tom Jacobs  
A137C Forest Resources Building  
PHONE: 460-1694  
E-mail: [jacobst@uamont.edu](mailto:jacobst@uamont.edu)

**Office Hours:** MWF 10:10 – 12:00 PM, T 1:40 – 3:30

**Class hours:** **TH 8:10-9:00 AM**, Room C202, Forest Resources Building

**Lab Hours:** **T 4:40-7:30 PM**, Room C202, Forest Resources Building

**Prerequisites:** SIS 3814: Introduction to GIS, GPS, and Remote Sensing  
Math 1033: Trigonometry

**Required Text:** GPS for Land Surveyors, 3rd Edition, Jan Van Sickle. CRC Press, 2008.  
(ISBN: 978-0-8493-9195-8)

### Supplementary Text and Readings:

GPS Satellite Surveying A. Leick. Wiley, 2004. (ISBN: 0-471-05930-7)  
Understanding the GPS, G French. GeoResearch, Inc, 1996. (ISBN: 0-9655723-0-7)

**Supplies:** Field Book and CDs

### 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 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.

### Grade Reports:

UAM will no longer mail grade reports to all students. You may access your grades through Campus Connect on the UAM homepage, <http://www.uamont.edu/>. To have your grades mailed to you, complete the grade request form available in the Registrar's Office.

### Grades:

During the semester there will be one 100 point written exam and a 100 point written final. There will also be approximately 250 points for unannounced quizzes and lab assignments. Test and quiz material will include material discussed in class, reading assignments, and lab material. The final grade for the course will be determined by the following grade scale:

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90 – 100% A

80 – 89% B

70 – 79% C

60 – 69% D

0 – 59% F

**Core Competencies/Learning Objectives:**

The following learning objectives have been identified as important for this course. All students are required to correctly complete each of the learning objectives listed below during the semester. Opportunities to demonstrate that learning objectives have been met will be provided through tests, homework and lab assignments, and quizzes. Demonstration of learning objectives does not guarantee a certain grade, but will likely result in a better grade. Problems used to assess core competencies will be indicated on assignments. Given a course grade of “C” or better has been earned, failure to demonstrate all learning objectives will result in one of two actions which will be determined by the instructor:

1. A course grade of “D” regardless of the overall average, or
2. A course grade of “T” which will be converted to the letter grade earned after all learning objectives have been demonstrated. The time limit is at the discretion of the instructor, but will not exceed 4 weeks.

**Learning Objectives:**

1. Be able to think spatially and solve spatial problems
2. Understand the GPS error budget
3. Be able to describe the differences between Recreational, Mapping, and surveying grade GPS receivers
4. Understand what the NGS CORS Network and the NGS OPUS Utilities are and how they are used in surveying
5. Demonstrate proficiency in the use of a Recreational, Mapping, and Survey grade GPS receiver
6. Define GPS terminology
7. Be able to organize GPS data for a mapping project and produce a directory/disk independent ArcGIS map document on a CD/DVD for the project
8. Be able to communicate GPS concepts

**Instructor’s Tips:**

- ✓ Come to class willing to learn and take part in discussions
- ✓ Take good notes in class; ask questions if you don’t understand something
- ✓ Keep up with reading and homework assignments
- ✓ Study the material covered in class on a daily basis; don’t wait until the night before the exam to try to learn it all in one night

## SCHOOL OF FORESTRY AND NATURAL RESOURCES

**Instructor's Rules:**

- I. Discussion of assigned work between students is encouraged; however the work is to be done independently
- II. Cheating and plagiarism are violations of the UAM Student Conduct Code as defined in the student handbook and will result in a grade of zero for that assignment or exam for all parties involved
- III. If you plan to miss an exam, you must let me know ahead of time and explain why you cannot take the exam at the scheduled time. Unexcused absences will result in an exam grade of zero
- IV. Late assignments will be penalized 25%. Assignments more than a week late will not be accepted and will result in a grade of zero for that assignment
- V. The equipment used in the surveying laboratory is **very expensive** and in some cases fragile. *Handle all equipment with care*
- VI. The instructor reserves the right to change any course content due to time, weather, or any unforeseen limitations. Changes will be announced and should likewise be noted by the student on the attached course outline
- VII. **No food, drinks or tobacco of any form are allowed in the Computer Lab. No 'active' cell phones or 'active' pagers will be permitted during any class period or lab.** Bottled water or soft drinks in resealable bottles will be permitted during outside labs

**Web Sites:**

- All About GPS – Trimble Navigation Inc. tutorials - [www.trimble.com/gps/index.shtml](http://www.trimble.com/gps/index.shtml)
- How a GPS receiver works – [www.howstuffworks.com/gps.htm](http://www.howstuffworks.com/gps.htm)
- US National Geodetic Survey – [www.ngs.noaa.gov/](http://www.ngs.noaa.gov/)

## **PROFESSIONALISM STATEMENT, School of Forestry and Natural Resources, University of Arkansas at Monticello**

Students in the School of Forestry and Natural Resources (SFR) 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 the school is dedicated to professional education rather than technical training, the faculty and staff have certain expectations of themselves and of the SFR students with regard to professionalism and personal conduct in their preparation for careers in the natural resources professions. Thus, SFR students and faculty are expected to exhibit conduct and attitudes appropriate to professionals.

Conduct and attitudes appropriate to professionals include, but are not limited to:

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

## SCHOOL OF FORESTRY AND NATURAL RESOURCES

Arkansas State Board of Registration for Engineers and Land Surveyors Rules of Professional Conduct. (<http://www.state.ar.us/pels/conduct.html>)

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

**Disorderly Conduct:**

Disorderly conduct is defined in the student handbook as; “any behavior which disrupts the regular or normal functions of the university community, including behavior which breaches the peace or violates the rights of others”. Disorderly conduct or disruptive behavior **will not be tolerated** in the School of Forestry and Natural Resources and may result in the dismissal from classes.

| <b>Topic Assignments</b>  | <b>Tentative Weeks</b> | <b>Reading</b> |
|---|------------------------|----------------|
| <b>GPS Theory</b><br>Handouts<br>The GPS Signal<br>Types of GPS Codes                               | 1                      | Ch 1           |
| <b>Recreational Grade GPS</b><br>Positional accuracies  | 2-3                    | Ch 2 & 3       |
| <b>Mapping Grade GPS</b><br>Introduction to the Trimble Geo XH                                      | 4-5                    | Ch 4           |
| <b>Geodetic Coordinate Systems</b><br>The Geoid, Heights, Datums                                    | 6-7                    | Ch 5           |
| <b><u>Written Exam</u> – Tentative Week 8, during Lab (100 pts)</b>                                 |                        |                |
| <b>CORS Stations/ OPUS &amp; OPUS RS Utilities</b><br>Handouts<br>Components<br>GPS Data Processing | 8-9                    | Ch 6           |
| <b>Static GPS Surveying</b><br>Uses<br>Data Collection Methods                                      | 10-11                  | Ch 6           |
| <b>Baselines &amp; Integrating Survey Systems</b><br>Handouts<br>Fundamentals                       | 12-14                  | Ch 6           |
| <b>RTK GPS Surveying</b><br>Handouts<br>Data Collection Methods                                     | 15-16                  | Ch 7, 8        |

## SCHOOL OF FORESTRY AND NATURAL RESOURCES

| Topic Assignments  | Tentative Weeks | Reading |
|--|-----------------|---------|
| <b><u>Written Final Exam</u> (Comprehensive, 100 pts.)<br/>Wednesday, December 12; 8-10 AM</b> |                 |         |
| <b>Other Dates of Interest:</b>  |                 |         |
| Labor Day Holiday (no classes); September 3  |                 |         |
| ASPS Fall Short Course; September 27 - 28, Mt Magazine State Park, Paris, AR                   |                 |         |
| Last day to apply for May 2012 graduation; October 5   |                 |         |
| Last day to drop a class; October 31   |                 |         |
| Thanksgiving Holidays; November 21 – 23  |                 |         |
| Final Exam Week; December 10-14  |                 |         |

### 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.



## SCHOOL OF FORESTRY AND NATURAL RESOURCES

**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.

## **Syllabus for Contemporary Forest Resources Issues- FOR3562**

(Intersession: May 11-22, 2015)

### **Instructors:**

Dr. Mohammad Bataineh  
B107 SFR Complex  
460-1449(o); 903-388-3894 (cell)  
[bataineh@uamont.edu](mailto:bataineh@uamont.edu)

Dr. Hal O. Liechty  
B116 SFR Complex  
460-1452(o); 870-460-5747 (cell)  
[liechty@uamont.edu](mailto:liechty@uamont.edu)

### **Course Learning Objectives:**

1. Develop an appreciation of natural resources issues associated with hydroproduction of energy in Arkansas
2. Understand the environmental issues surrounding extraction of fossil fuels in north Arkansas;
3. Examine the prospects of biomass as a biofuel feedstock and the policy issues related to these markets
4. Better understand how carbon markets and carbon related policies impact natural resources management
5. Grasp the basics of the different environmental impacts of various types of energy production on the environment and natural resources in Arkansas
6. Become familiar with and be able to identify some of the invasive species currently impacting Arkansas’s natural resources
7. Increase awareness of future invasive threats
8. Understand and describe invasive species dispersal, life history, and host interactions
9. Describe detection and control methods of the discussed invasive species
10. Understand the legal aspects and ecological and economic consequences of invasive species
11. Become aware of the different sources of energy production in Arkansas
12. Appreciate social concerns with current and future energy production

## SCHOOL OF FORESTRY AND NATURAL RESOURCES

**Evaluation Criteria:** Open Notes Comprehensive Exam (65%)  
 Group Presentation Assignment (10%)  
 Individual Written Assignment (10%)  
 Participation & Professionalism (15%)

**Scale:** A=90-100    B=80-89    C=70-79    D=60-69    F<60

Course Policies- Conduct and Professionalism

All students are expected to follow the policies outlined in the UAM Conduct Code, as well as conduct themselves in a professional manner. This includes courtesy, timeliness, enthusiasm, participation, sharing of trip responsibilities, etc. In the event that a student's behavior is inappropriate, disruptive, and/or endangers others, the instructors will take appropriate action, including expulsion from the course. **Possession of alcohol, illegal drugs, and/or firearms in UAM vans or campgrounds is considered a serious violation of this policy and will result in expulsion from the course, and upon expulsion it is the responsibility of the student to secure their personal belongings and transportation.**

**Professionalism:**

Students in the School of Forest Resources are pursuing courses of study that prepare them for careers as natural resources 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.

Because 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, SFR 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,

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

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

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- assignments
- reports
- term papers
- quizzes
- tests

## SCHOOL OF FORESTRY AND NATURAL RESOURCES

- 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).

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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.

### **Students with Disabilities:**

It is the policy of the University of Arkansas--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

## SCHOOL OF FORESTRY AND NATURAL RESOURCES

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.

Please note that the last line would change for technical campuses to include:

McGehee: Office of Special Student Services representative on campus; phone 870 222-5360; fax 870 222-4709.

Crossett: Office of Special Student Services representative on campus; phone 870 364-6414; fax 870 364-5707.

**RULES, REGULATIONS, REQUIREMENTS**

- 1) BE ON TIME! Our schedule is tight and everyone will need to meet timeline attached. If there is a problem call an instructor.
- 2) You are required to pack a lunch and/or pay for some dinners (see schedule). Bring money for these dinners and any snacks you want.
- 3) Rooms at 4-H Center will be shared: All rooms are non-smoking; No alcohol allowed; bedding and towels provided; no TV or phones.
- 4) Meal times at 4-H Center are posted in the schedule. You will need to be prompt– no outside food may be brought in (except snacks in your room).
- 5) No firearms allowed, no illegal drugs allowed, no tobacco products allowed.
- 6) If you have an emergency and cannot make any activities or need to depart from the location of the class, you will need to contact one of the instructors immediately.
- 7) Bring hardhats, safety glasses, ear plugs, field shoes/leather shoes, and rain gear. No shorts are allowed and you must be dressed appropriately at all times. Tennis shoes are not allowed for any of our field tours.
- 8) Bring reading materials, games, etc. to occupy yourself during off hours; there may be some hiking/fishing/canoeing opportunities at the 4-H Center.
- 9) Your cell phones must be off during presentations by our hosts. The only time that you are allowed to use a cell phone is during meals, during travel to and from field locations, and during lunch. If the use of cell phones (in any form) becomes a problem, the instructors retain the right to collect the phones at the start of the day and return them to the students after the activities for that day is completed.
- 10) All students are required to purchase a rite-in-the rain field book to take notes. Below is a link that shows that type of book required and also a source for this book. We have also have requested the book store to purchase them. [http://www.forestrysuppliers.com/product\\_pages/Products.asp?mi=70935&itemnum=49367](http://www.forestrysuppliers.com/product_pages/Products.asp?mi=70935&itemnum=49367)
- 11) While staying at the Ferndale, 4-H Center students should conduct themselves in such a way that they do not disturb other groups, individuals, or 4-H Center employees during the evenings.

## SCHOOL OF FORESTRY AND NATURAL RESOURCES

Contemporary Issues Itinerary- 2015

| <b>Date</b>        | <b>Day</b> | <b>Arrive</b> | <b>Depart</b> | <b>Topic</b>                                    | <b>Destination</b> | <b>Travel Time</b> | <b>Topic Time</b> | <b>Speaker</b>                   |
|--------------------|------------|---------------|---------------|---|--------------------|--------------------|-------------------|----------------------------------|
| <b>11-<br/>May</b> | <b>M</b>   | 8:00          | 9:00          | Orientation                                     |                    |                    |                   |                                  |
|                    |            | 9:00          | 10:00         | Invasive Pests: Impacts on Arkansas             |                    |                    |                   | Jon Barry (501-201-0731)         |
|                    |            | 10:00         | 11:00         | Invasive species: past patterns, future threats |                    |                    |                   | Robert Wiedenmann (479-575-2476) |
|                    |            | 11:00         | 12:00         | Student Research                                |                    |                    |                   |                                  |
|                    |            | 12:00         | 13:00         | Lunch on Your Own                               |                    |                    |                   |                                  |
|                    |            | 13:00         | 14:00         | Student research                                |                    |                    |                   |                                  |
|                    |            | 14:00         | 14:30         | Progress Review                                 |                    |                    |                   |                                  |
|                    |            | 14:30         | 17:30         | Student research / presentation development     |                    |                    |                   |                                  |
|                    |            | 17:30         | 18:30         | Barbeque (SFR provided)                         |                    |                    |                   |                                  |
|                    |            | 18:30         | 20:00         | Presentation and discussion                     |                    |                    |                   |                                  |
| <b>12-<br/>May</b> | <b>T</b>   |               | 8:00          | Leave Campus                                    |                    |                    |                   |                                  |
|                    |            | 9:15          | 11:15         | Drax, Morehouse Biomass, 7070 Carl Road         | Bastrop, LA        | 1:15               | 2:00              | Russell Hatcher (318-732-4080)   |

## SCHOOL OF FORESTRY AND NATURAL RESOURCES

| Date          | Day       | Arrive | Depart | Topic  | Destination                     | Travel Time | Topic Time | Speaker  |
|---------------|-----------|--------|--------|--|---------------------------------|-------------|------------|--|
|               |           |        |        | Lunch<br>U_Pack                                |                                 |             | 0:30       |  |
|               |           | 12:25  | 13:55  | Japanese climbing fern<br>(Lygodium japonicum) | Crossett AR                     | 0:40        | 1:30       | Don Bragg,<br>USFS<br>(870-224-5477)               |
|               |           | 14:45  | 16:45  | Feral hog trap demonstration                   | UAM campus                      | 0:50        | 2:00       | Rebecca McPeake,<br>Coop Exten<br>(501-551-7337)   |
| <b>13-May</b> | <b>W</b>  |        | 8:00   | Leave Campus                                   |                                 |             |            |  |
|               |           | 8:20   | 10:00  | Native invasive                                | Warren Prairie Natural Area, AR | 0:20        | 1:40       | Bryan Rugar,<br>Natural Heritage<br>(501-682-1587) |
|               |           | 11:00  |        | Lunch (GP)                                     |                                 |             |            |  |
|               |           |        | 13:00  | Use of Wood for Energy (GP)                    | GP, Crossett, AR                |             | 2:00       | Teresa Walsh<br>(870-305-5144)                     |
|               |           | 13:30  | 16:30  | Various invasive plants and insects            | Crossett, AR                    | 0:30        | 3:00       | Conner Fristoe,<br>Plum Creek<br>(870-567-5352)    |
|               |           | 17:30  |        | Arrive on Campus                               |                                 | 1:00        |            |  |
|               |           |        |        |  |                                 |             |            |  |
| <b>14-May</b> | <b>TH</b> |        | 8:00   | Leave Campus                                   |                                 |             |            |  |
|               |           | 9:25   | 11:55  | Emerald Ash Borer                              | Camden AR                       | 1:25        | 2:30       | Mohammad, Sam<br>Kim SPB<br>(501-219-6312)         |

## SCHOOL OF FORESTRY AND NATURAL RESOURCES

| Date          | Day      | Arrive | Depart | Topic  | Destination    | Travel Time | Topic Time | Speaker  |
|---------------|----------|--------|--------|--|----------------|-------------|------------|--|
|               |          |        |        | Lunch U-Pack                                     |                |             | 0:30       |  |
|               |          | 13:25  | 15:25  | Feral hog hunting                                | Magnolia AR    | 1:00        | 2:00       | George Dixon, Choctaw Hog Hunting Ranch (870-299-0467) |
|               |          | 17:25  |        | Arrive on campus                                 | Monticello AR  | 2:00        |            |  |
| <b>15-May</b> | <b>F</b> |        | 8:00   | Leave Campus                                     |                |             |            |  |
|               |          | 9:30   | 11:00  | Green Trees, Conservation & Carbon Sequestration | Cornerstone AR | 1:30        | 1:30       | Andy Johnson (870-254-2733)                            |
|               |          | 11:45  |        | Lunch (Dennis Carmen)                            | Humnoke AR     | 0:45        | 0:30       |  |
|               |          |        | 14:15  | Rice Irrigation & Greenhouse Gases               | Humnoke AR     |             | 2:00       | Dennis Carmen (501-416-0859)                           |
|               |          | 15:00  | 17:00  | Cooks Lake, Asian Carp                           | Cosscocoe AR   | 0:45        | 2:00       | Casey Cox, Arkansas Game and Fish (501-416-2163)       |
|               |          |        | 18:00  | Dinner (U-Pay)                                   | Pine Bluff AR  | 1:00        | 0:45       |  |
|               |          | 19:45  |        | Arrive on Campus                                 | Monticello AR  | 1:00        |            |  |
| <b>17-May</b> | <b>S</b> |        |        | Travel to 4-H Center ON YOUR OWN                 | Ferndale, AR   |             |            |  |
|               |          | 15:00  |        | 4-H Center Check-In                              |                |             |            |  |

## SCHOOL OF FORESTRY AND NATURAL RESOURCES

| Date          | Day      | Arrive | Depart | Topic  | Destination | Travel Time | Topic Time | Speaker   |
|---------------|----------|--------|--------|--|-------------|-------------|------------|---|
|               |          | 16:00  | 16:45  | Meet in Room 4-H Center Conference Room I                              |             |             |            |   |
|               |          | 17:00  | 18:00  | Dinner, New York Pizza   |             |             |            |   |
|               |          | 18:30  | 21:30  | Computer Lab Open  |             |             |            |   |
| <b>18-May</b> | <b>M</b> | 7:30   | 8:00   | Breakfast 4-H Center   | Ferndale AR |             |            |   |
|               |          | 8:00   | 8:30   | Review of Activities (4-H Conference Room I)                           |             |             |            |   |
|               |          | 8:30   | 9:30   | Overview of Energy Production Arkansas                                 |             |             |            | Greg Hamilton<br>Director, Senior Res.<br>Econ.<br>UALR<br>(454-0640) |
|               |          | 9:30   | 10:30  | Environmental Impacts of Energy Development: Past, Present, and Future |             |             |            | Tommy Inebnit<br>USFWS<br>(501-282-1824)                              |
|               |          | 10:30  | 11:30  | Sierra Club and the Clean Energy Revolution                            |             |             |            | Glenn Hooks Dir.<br>AR Sierra Club<br>(501-744-2674)                  |
|               |          | 11:30  | 12:15  | Lunch (4-H Center)   |             |             |            |   |
|               |          | 13:30  | 16:00  | Hot Spring Energy Facility, 696 Black Branch Rd., Malvern, AR          | Malvern AR  | 1:15        | 2:30       | Hugh McDonald & Sally Graham<br>(501-313-9111)                        |



## SCHOOL OF FORESTRY AND NATURAL RESOURCES

| Date          | Day      | Arrive | Depart | Topic   | Destination  | Travel Time | Topic Time | Speaker   |
|---------------|----------|--------|--------|---|--------------|-------------|------------|---|
|               |          | 17:00  |        | Arrive 4-H Center                                   | Ferndale, AR | 1:00        |            |   |
|               |          |        |        | Dinner on Your Own                                  |              |             |            |   |
|               |          | 18:30  | 21:30  | Computer Lab Open                                   |              |             |            |   |
| <b>19-May</b> | <b>T</b> |        | 7:30   | Breakfast 4-H Center                                | Ferndale, AR |             |            |   |
|               |          |        | 8:00   | Leave 4-H Center                                    | Ferndale, AR |             |            |   |
|               |          | 9:15   | 11:45  | Blakely Mountain Dam, 1111 Blakely Dam Rd. Royal AR | Royal, AR    | 1:00        | 2:30       | Kimberly Bogart (501-463-8127)                              |
|               |          |        |        | Pack Lunch On Van (4-H Center Prepared)             |              |             |            |   |
|               |          | 13:45  | 16:00  | Swepco 3711 Highway 355 S Fulton, AR 71838          | Fulton, AR   | 2:00        | 2:15       | Jennifer K. Harland, External Affairs Swepco (903-736-3389) |
|               |          |        | 18:00  | Arrive at 4-H Center                                | Ferndale, AR | 2:00        |            |   |
|               |          |        |        | Dinner on Your Own                                  |              |             |            |   |
| <b>20-May</b> | <b>W</b> |        | 7:30   | Breakfast 4-H Center                                | Ferndale, AR |             |            |   |
|               |          |        | 8:00   | Leave 4-H Center                                    | Ferndale, AR |             |            |   |
|               |          | 9:00   | 12:30  | Southwest Energy, 1000 SWN Dr., Conway AR 72032     | Conway, AR   | 1:00        | 3:30       | Dave Evans, SW Energy (501-278-0728)                        |
|               |          | 12:30  | 13:30  | Southwest Provides Lunch                            | Damascus, AR |             |            |   |

## SCHOOL OF FORESTRY AND NATURAL RESOURCES

| Date          | Day       | Arrive | Depart | Topic  | Destination     | Travel Time | Topic Time | Speaker  |
|---------------|-----------|--------|--------|--|-----------------|-------------|------------|--|
|               |           | 14:30  | 16:30  | Gulf Mountain WMA  | Scotland, AR    | 1:00        | 2:00       | Matt Mourot<br>(501-450-0748)                            |
|               |           |        | 18:00  | Dinner (U-Pay)   | Little Rock, AR | 1:30        |            |  |
|               |           | 19:30  |        | Arrive 4-H Center  |                 |             |            |  |
| <b>21-May</b> | <b>TH</b> |        | 7:30   | Breakfast 4-H Center                                     | Ferndale, AR    |             |            |  |
|               |           |        | 8:00   | Leave 4-H Center   | Ferndale, AR    |             |            |  |
|               |           | 10:00  | 11:30  | Various plant invasive                                   | Mount Ida, AR   | 2:00        | 1:30       | Mary Rodgers<br>(870-867-2101 x129)                      |
|               |           | 11:30  | 12:00  | Pack Lunch (4-H Center Prepared), River Bluff Float Camp |                 |             | 0:30       |  |
|               |           | 12:05  | 12:30  | Roadside Chemical Treatment                              | Kruger Fields   |             | 0:30       |  |
|               |           | 12:45  | 13:30  | Mechanical Treatments                                    | Mauldin Fields  | 0:15        | 0:30       |  |
|               |           | 14:20  | 17:20  | Various plant invasive                                   | Hot Springs, AR | 0:50        | 3:00       | Shelley Todd,<br>National Park Service<br>(501-620-6751) |
|               |           | 18:30  |        | Dinner (U-Pay)   | Hot Springs, AR |             |            |  |
|               |           | 19:30  |        | Arrive at 4-H Center                                     | Ferndale, AR    | 1:00        |            |  |
| <b>22-May</b> | <b>FR</b> |        | 7:30   | Breakfast 4-H Center                                     | Ferndale, AR    |             |            |  |
|               |           | 8:00   | 8:30   | Load Personal Items in Personal Vehicles                 |                 |             |            |  |
|               |           | 8:30   | 11:30  | Final Assessment, 4-H Conference                         |                 |             |            |  |

## SCHOOL OF FORESTRY AND NATURAL RESOURCES

| <b>Date</b> | <b>Day</b> | <b>Arrive</b> | <b>Depart</b> | <b>Topic</b>  | <b>Destination</b> | <b>Travel Time</b> | <b>Topic Time</b> | <b>Speaker</b> |
|-------------|------------|---------------|---------------|---------------|--------------------|--------------------|-------------------|----------------|
|             |            |               |               | Center Room I |                    |                    |                   |                |
|             |            | 11:30         |               | Depart        |                    |                    |                   |                |

## Appendix V

### 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"/> |

## SCHOOL OF FORESTRY AND NATURAL RESOURCES

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

| <b>Knowledge Area</b>           | <b>Rank</b> |
|---------------------------------|-------------|
| 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      |

## SCHOOL OF FORESTRY AND NATURAL RESOURCES

**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 |

## SCHOOL OF FORESTRY AND NATURAL RESOURCES

|                   |   |   |
|-------------------|---|---|
| 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 |