School of Forest Resources

Unit Assessment Report

2013-14

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The School of Forest Resources (SFR) offers undergraduate and graduate degrees in three major areas: Forestry, Wildlife Management, and Spatial Information Systems (SIS). SFR'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?

The learning outcomes of the School of Forest 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 attract and retain 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 SFR programs (forestry, wildlife management, spatial information systems, land surveying, and graduate programs) have separate brochures that provide information on the requirements of the degree programs to prospective students. The combined SFR brochure and the SIS program brochure are attached in Appendix III. The SFR 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 SFR students and faculty who demonstrate teaching and research activities at SFR to prospective students.

Current students are reached in a variety of different ways. All SFR 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 SFR faculty members also have web sites for their courses and these learning objectives are communicated to the students through these web sites.

Additionally, SFR graduate students are also in constant communication with their thesis advisors and graduate committee members. Graduate students receive ample

advice and mentoring needed to fulfill the requirements for their Master of Science degree.

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

School of Forest Resource's mission statement and goals contribute to the University's overall mission statement of seeking to enhance and share knowledge, to preserve and promote the intellectual content of society, and to educate people for critical thought. The following table presents a comparison of SFR'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 SFR'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 SFR's SLO #3. Through its academic curricula and extra-curricular activities the School seeks to provide the students professional and educational competencies. These skills prepare the students to become better professional, to communicate effectively, and if desired, to be able to pursue graduate studies.

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

This part of the UAM mission statement corresponds to SFR'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 Forest 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 SFR'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?

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

A. COURSE-SPECIFIC ASSESSMENT

Since the School offers several graduate, undergraduate, and associate degrees in fundamentally different subject areas, the nature of course content varies widely within the School. Therefore, choice of specific methods of assessment for individual

courses is left up to individual instructors. Where appropriate, faculty members use pre and post tests.

Assessment of student performance at SFR 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.

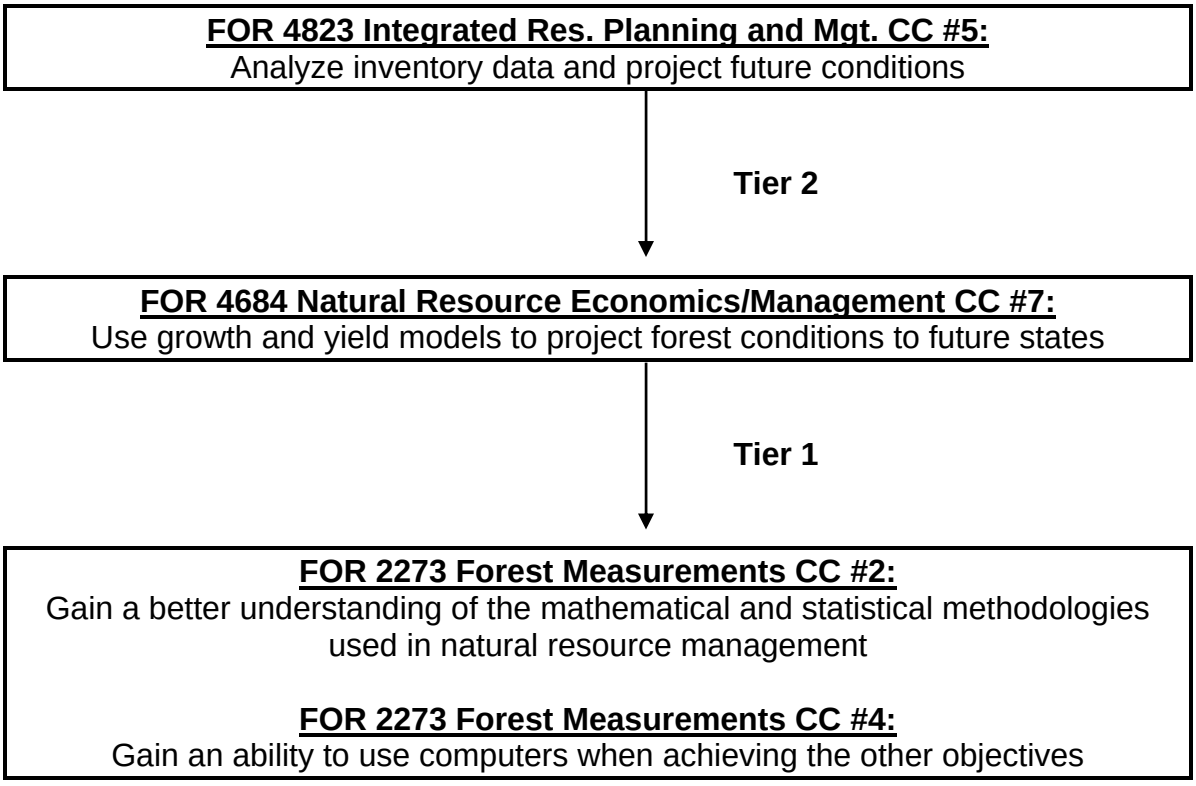
The second and equally important part of the School's assessment plan is at the program level. This part of the assessment plan starts with grouping the Schools' professional courses in each curriculum into three different levels. Level 1 consists of the foundational courses usually taken by sophomores. 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 SFR'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.

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 objective #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 SFR 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.

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 SFR 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. SFR 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.

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 SFR.

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.

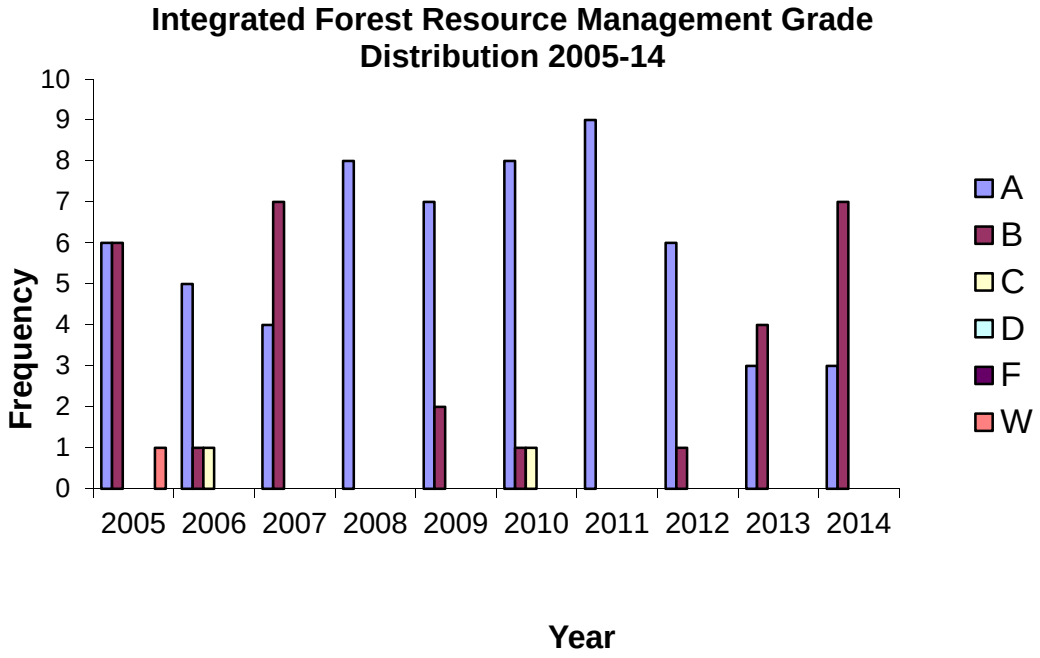
3. Capstone courses

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.



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.

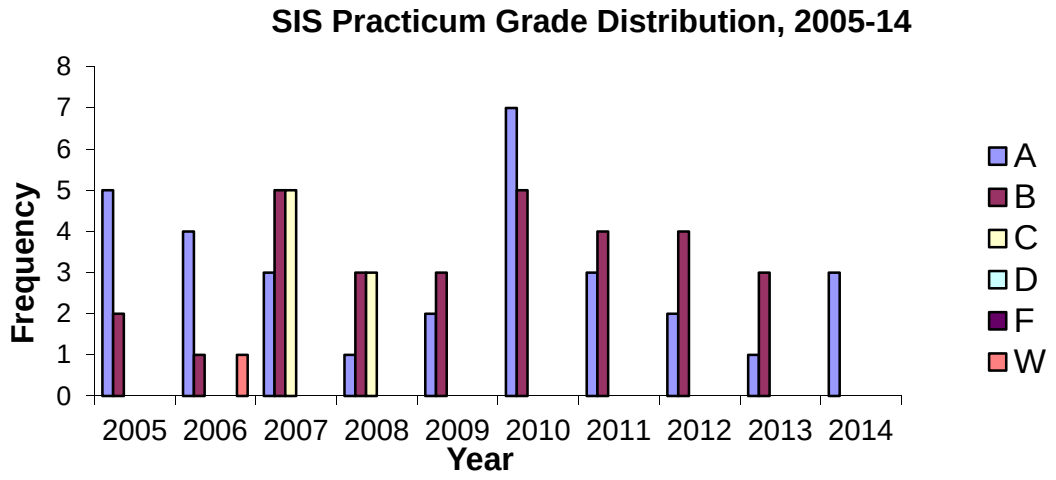
The most significant challenges for students centered on interpersonal issues connected with meeting mutually set deadlines, detail and quality of the work presented and fair division of labor within the teams. Instructors monitored the progress of the teams and offered technical as well as organizational 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.

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

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

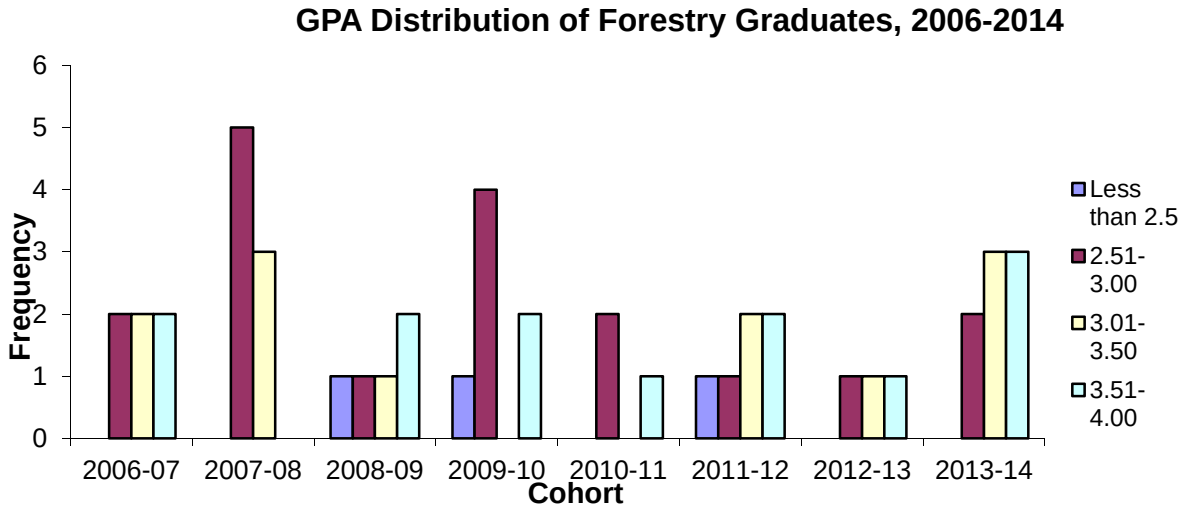
Individual students are assigned a project that requires tremendous amounts of planning, technical abilities, and decision-making abilities on the part of the students. These projects may or may not have had a natural resource component to them, and the nature of the project depends on the students area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

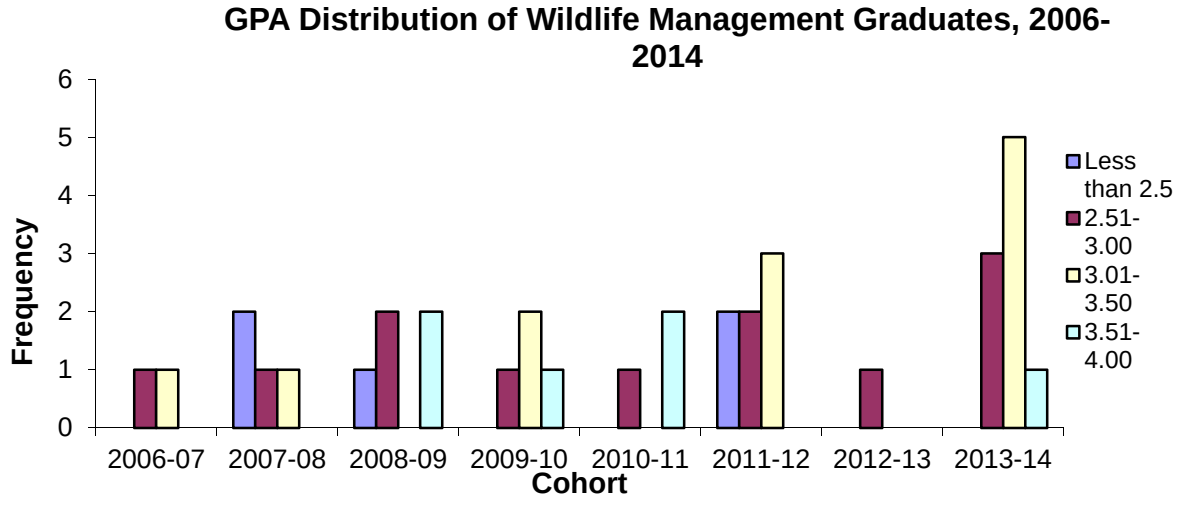


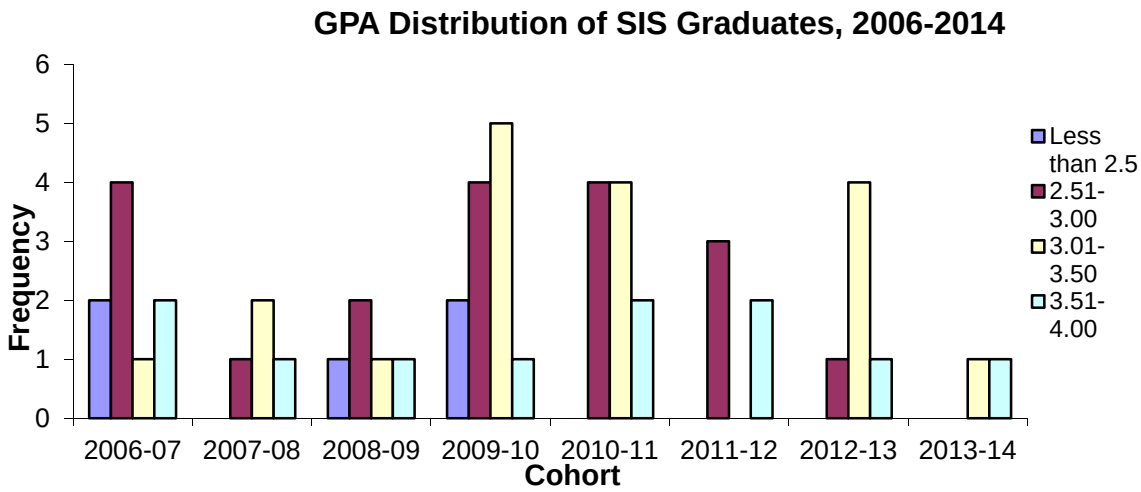
The Practicum course provides a unique, practical experience to the SIS students by working on a real-life project. Students have to use their knowledge of GIS and/or surveying acquired in previous semesters and answer management questions associated with their projects. Instructors monitor the progress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

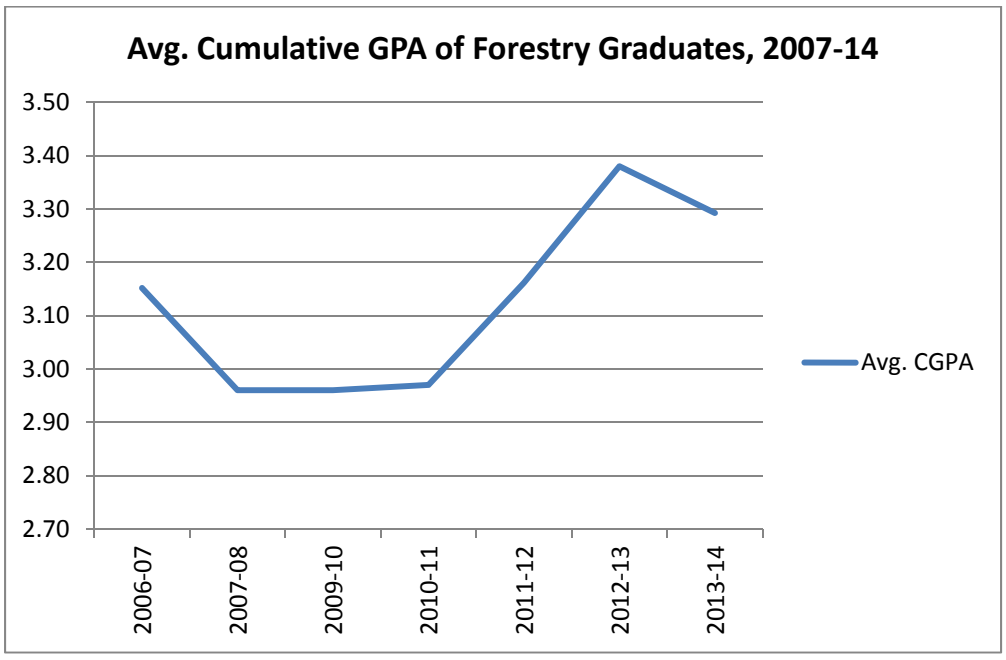
The following three charts show cumulative GPA distributions of the School's forestry, wildlife management, and SIS graduates since the 2006-07 cohort.

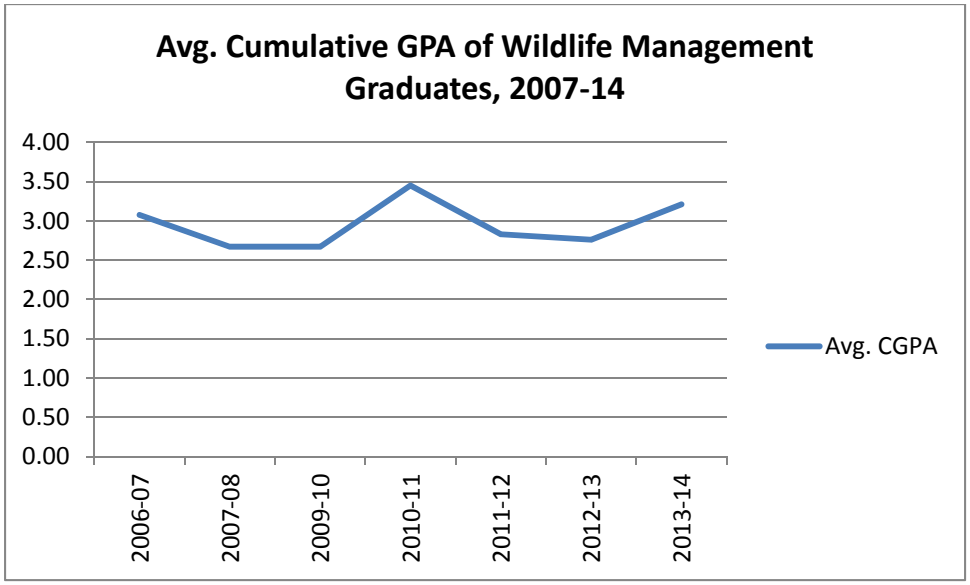


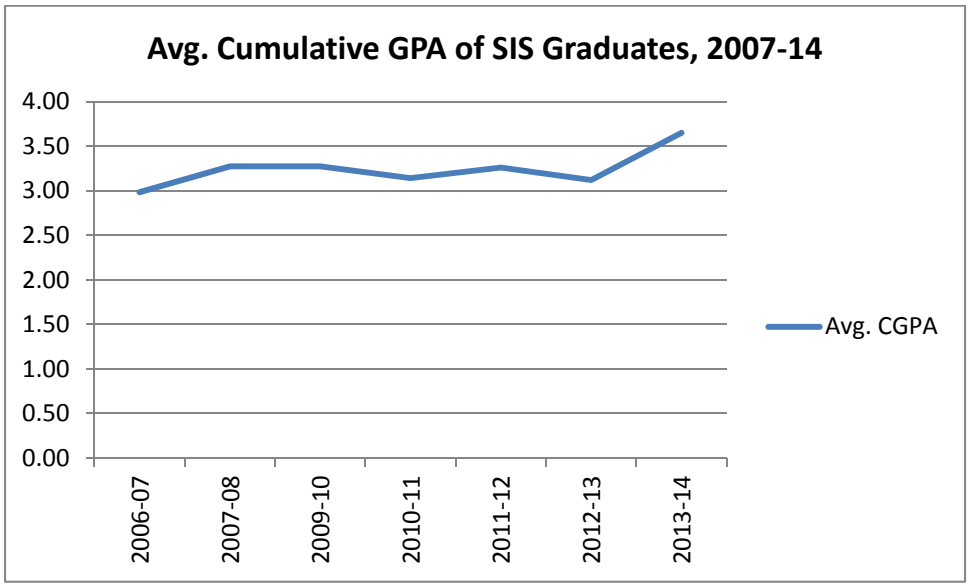




If we examine the trend in average cumulative GPA for Forestry, Wildlife Management, and SIS graduates, they all show a generally stable or increasing trend. While GPA may not always be the best measure of student learning, these trends do tell us something about SFR's graduates.







Associate of Science Degree in Land Surveying Technology:

Determined for use as assessment tools are:

1. Required coursework.

   The Land Surveying Technology curriculum consists of 65 hours and all students are required to take a sequence of coursework consisting of a surveying associate

degree core curriculum and a block of supportive general education requirements. The students must pass these courses with a grade of C or better to graduate from the School with a Associate of Science degree in Land Surveying Technology.

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

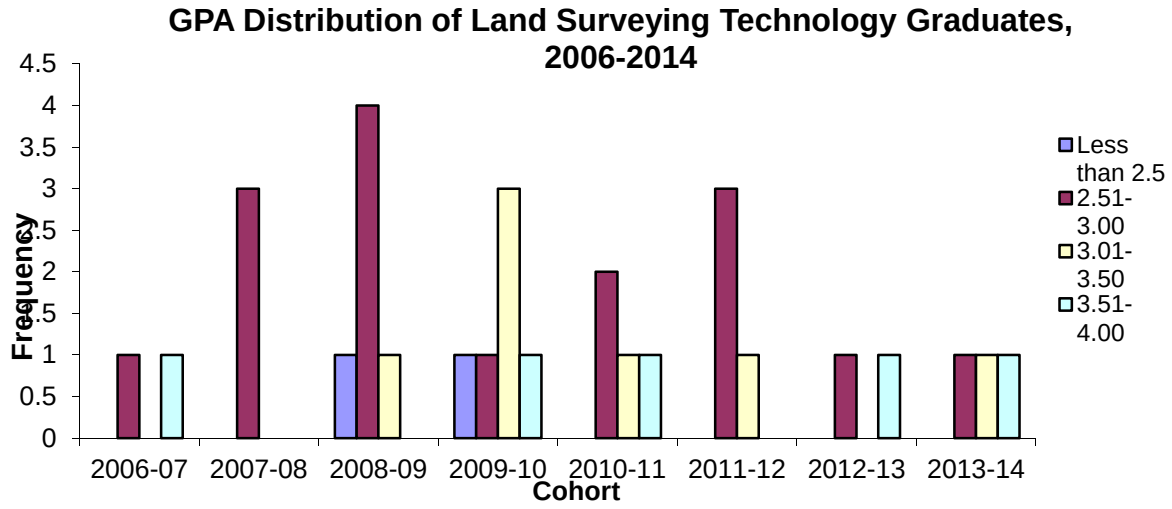
Faculty advisors within the School ensure that students complete their required course work in a timely manner. Advisors routinely check transcripts and run degree audits on their advisees to keep them on track for completion of their degree. Courses listed with a grade lower than C must be retaken for credit. SFR 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 cohort.



M.S. Degree in Forest Resources:

Determined tools for use as assessment are:

1. Required coursework.

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

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

   The faculty advisor and advisory committee members have ample opportunities to communicate with students during the advising process. Communication can encompass the student's progress through the graduate program, feedback to the student regarding his/her coursework and research, and the student's feelings regarding his/her project and the overall graduate experience at SFR.

2. Seminar.

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

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

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

3. Quantitative and analytical skills.

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

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

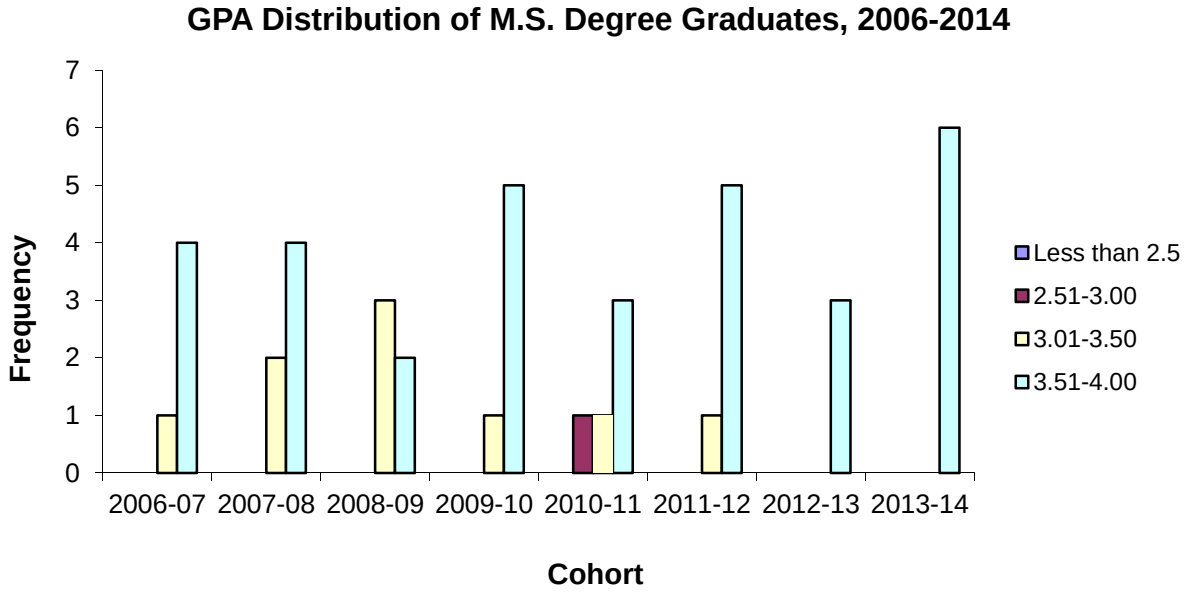
All of our students enrolled in our two applied statistics courses received a grade of B or better during 2006-2013. Many of our graduate students are currently analyzing data from their thesis projects. Their progress in this endeavor is being closely monitored by their faculty advisor and advisory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

4. Thesis.

Students are required to define an appropriate topic for investigation; review relevant literature; develop a study plan; collect, analyze, and interpret data; test hypotheses and draw conclusions; and write and defend a thesis. The final thesis product must be of the utmost quality in both research and document presentation. The drafts are submitted to the student's graduate committee of three to five members for review, comments, and suggested revision.

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

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 SFR'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 list of thesis topics for our recent Master of Science degree recipients:

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

"ROCKY MOUNTAIN BIGHORN SHEEP SPATIAL ECOLOGY"

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

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

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

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

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

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

"EFFECTS OF HEAT TREATMENT ON THE MECHANICAL PROPERTIES OF SELECTED WOOD SPECIES"

"A COMPARISON OF PIXEL-BASED AND OBJECT-BASED LAND USE/LAND COVER CLASSIFCATION 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 SFR instructors. The instructors can compare student performance for individual CCs from year to year and adjust delivery of teaching materials accordingly.

SFR'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.

SFR's teaching program is currently going through 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 2014-15 academic year. Discussions on this issue will be initiated during the Faculty Development Week in August, 2014.

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 SFR graduates has found fairly strong positive correlation of these scores to their cumulative GPA. The results of the analysis are as follows.

Comparison Pair	Correlation Coefficient
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. All graduating seniors were interviewed by the unit head. The summary of these exit interviews is as follows.

SUMMARY OF EXIT INTERVIEWS WITH GRADUATING SENIORS
May 2014

11 Students Participated
5 (45%) Wildlife Management Graduates
3 (27%) Forestry Graduates
2 (18%) SIS Graduates (1 Surveying, 1 GIS)
1 (9%) Land Surveying Technology Graduate

Future Plans:
3 (27%) Graduate School
4 (36%) Employment
4 (36%) Undecided

Years to Complete Degree:
8 – 4 years; 1 – 3 years; 2 – 5-7 years

Reason for Choosing Major:
wanted to work with wildlife
FFA or 4-H experience
summer surveying experience
enjoy outdoors
EAST experience in High School

Work While in School:
9 (82%) worked while in school (all had at least one job on campus)
2 (18%) did not work while in school

Most Appreciated SFR Courses: (most cited reason was perceived relevance)
wood structure & forest products
route & construction surveying
plane & boundary surveying
forest ecology
wetlands ecology
wildlife techniques
dendrology
intro to GIS
silviculture
wildlife management

Least Liked SFR Courses: (most cited reason was perceived relevance)
intro to SIS; biometrics

Well-Liked SFR Instructors: (most cited reason was caring for students, assistance, and/or accessibility)
Dennis, Ficklin, Kissell, Pelkki, Watt, Webb

Most Valuable SFR Experience:
field trips, contemporary issues
hands on experiences, field exercises
travel to professional meeting
speaking in front of an audience
forest inventory
work on campus (within SFR)
forestry conclave, wildlife conclave

Participation in SFR Student Organizations:

8 (73%) participated (most cited reasons were networking and experiences)
3 (27%) did not participate

Suggestions for Improving SFR:
new surveying equipment
add civil 3D course
fewer courses
improve advising & posting of office hours
more “In-depth” courses
more hands-on experience
improve integrated course
allow students to use kitchen

Most Appreciated UAM General Education Courses: (most cited reasons were perceived relevance and prep for other courses; however, in general, gen ed courses were not well valued)
speech
math
geology
english
botany
technical writing

Least Liked UAM Courses: (most cited reason was lack of perceived relevance or the instructor)
art; psychology; physics

Most Appreciated Supportive Courses: (most cited reasons were perceived relevance and prep for other courses)
forage crops; C#; biology courses; CIS courses; mammalogy; comparative anatomy; herpetology

Well-Liked UAM Instructors: (most cited reason was caring for students, assistance, and/or accessibility)
Bacon, Edson, Evans, Francis, Hendrix, Hunt, Selby, Sharpe

Participation in UAM Student Organizations:
2 (18%) participated (SGA, Weevils for Christ)
9 (82%) did not participate

Suggestions for Improving UAM:
renovate math & science building
improve scheduling and registration process
better toilet paper
covered sidewalks

(Summary Prepared by Dr. Phil Tappe)

The School also conducts periodic alumni and employer surveys. The most recent data collected through these surveys were in late 2005 and early 2006. Our plans of conducting new surveys have been hampered by the lack of a reliable list of alumni and employer addresses. The School does host an alumni breakfast during the Arkansas Forestry Association annual meeting. This even is typically held in September and has always been well attended. We will conduct a survey of the attendees in 2014. This should give us some indication about alumni (and possibly some employers) opinion of our teaching program. A sample survey instrument 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 indicate that forestry, wildlife management, SIS, and surveying graduates have always had high placement record. This is an indication that our graduates are qualified and competent to find gainful employment in the profession. This, in turn, is also indicative of the fact that our programs fill the employment requirements of many industrial, private and public employers.

Although job placement information for SFR 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.

Position	Employer	Location
Ph.D. student	Louisiana State Univ.	Baton Rouge, LA
Ph.D. student	Oklahoma State Univ.	Stillwater, OK
Ph.D. student	Louisiana State Univ. Virginia Tech.	Baton Rouge, LA Blacksburg, VA

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

The information gathered from these sources has been instrumental in modifications and refinement of the SFR 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	Spring semester
Revise the SFR SLOs	SFR Faculty, Dean	During academic year 2014-15
Design and conduct a survey of employers and alumni at the 2014 AFA Annual Meeting	Assessment Coordinator	September, 2014
Revise SFR assessment of student learning system	SFR faculty	During academic year 2014-15

Prepare unit assessment report	Assessment Coordinator	Summer 2015

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. During the 2014-15 academic year, we plan to develop specific and measurable SLOs that reflect SFR's current academic programs.

An employer and alumni survey has been long overdue; however, the School has been debating the logistics of a survey that would be effective and meaningful, since no reliable list of these two populations exists. As mentioned earlier, this year we will survey the employers and alumni attending the annual Arkansas Forestry Association meeting in September. Hopefully, this survey will yield some useful information on the quality of SFR degrees and graduates, so that further adjustment of SFR curricula can be made to improve student learning.

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

In FOR/WLF 4823 Integrated Resource Planning and Management (the capstone course for forestry and wildlife management students), Dr. Ficklin incorporated a new exercise designed to help each group organize their thoughts on how to manage their respective tracts of land. As a part of exercise, each group took the instructor to various areas within their assigned tract of land, and then as a team describe the area in terms of various natural resource indicators. The instructor posed questions to the group to challenge their resource assessments and proposed management approach. This exchange allowed Dr. Ficklin to provide both feedback and suggestions for correcting oversights or errors. The instructor felt that conducting this exercise clearly improved the groups' final presentations and management plans.

SFR has been exploring the possibility of initiating/expanding our internship program. The first step for this is to develop agreements with potential employers. SFR is already or will soon be in conversations with the U.S. Forest Service, U.S. Fish and Wildlife Service, Natural Resource Conservation Service, Arkansas Forestry Commission, Arkansas Game and Fish Commission, other organizations and private companies regarding the potential of student internships. Internship programs can have a strong influence on recruitment and retention and are sought after by students

because of the hands on experience and employment potential gained through the programs.

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 2013, 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 SFR. 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 SFR 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 SFR 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 SFR 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

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.

In 2011 the School of Forest Resources combined the Forestry and Wildlife Management programs into one degree with two options. The faculty have revised and reorganized our natural resources programs, and plan to implement these changes by the fall of 2015 after receiving appropriate approvals. The proposed changes will broaden and rename our current forest resources major, and add new options in geospatial science, natural resources communication, and environmental science to complement our current options in forestry and wildlife management.

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 Forest 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 Forest Resources supports five 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)

In the fall of 2012, the "Dean's Student Leadership Council" was created to help enhance communication between School administration and students, and to discuss retention issues with student leaders. These 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 2013-14, several students traveled across the United States to compete in academic competitions. Students representing the Student Chapter of the Society of American Foresters competed in a national quiz bowl at the National Convention of the Society of American Foresters in Charleston, SC. 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 Clemson University. 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 57th annual Association of Southern Forestry Clubs Conclave competition at Virginia Tech University and placed 4th overall.

Interdisciplinary Initiatives

The program changes planned for 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

Society of American Foresters
Growing better all the time

January 9, 2012

CONFIDENTIAL

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

Dear Dr. Ray:

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

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

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

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

5400 Grosvenor Lane | Bethesda, MD 20814-2198 | (301) 897-8720 | toll-free (866) 897-8720 | fax (301) 897-3690 | www.safnet.org

Appendix II: Assessment Documents

A. Sample of course assessment reports prepared by instructors

Assessment Reporting on Core Competencies for Spring 2014 Courses

Page 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 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		1	2	1	2	1	1	2	1	1	1	2
B		1	1	1	1	1	1	1	1	1	1	2
C	2	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	1	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	2	2	2	1	2	1	1	1	1	1	1	1
H	1	1	2	1		1	1	1	2	2	2	2
I	1	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
	22 1.5	1.5	1.7	1.1	1.8	1.2	1.3	1.3	1.2	1.1	1.1	1.7

Page

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

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	2
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

B. Sample course assessment summary reports

FOR 4823: Integrated Forest Resource Management

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

Core Competencies:

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

Type of Assessment:

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

Student Performance Summary:

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

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

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.

		LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9	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
	2014	1.36	1.18	1.09	1.00	1.27	1.40	1.50	1.70	1.20	1.10	1.00	1.10

SFR Assessment of Student Learning Examples

Attached are examples of SFR assessment of student learning. Data on SFR learning assessment are analyzed through core competency (CC) linkages that begin from the core competencies for the capstone 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.

Student Name: XXXX XXXXXXXX
Student ID: XXXXXXXXX
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 #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 XXXXXXXXXX
Student ID: XXXXXXXXX
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 2nd 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 3rd 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

Student Name: XXXX XXXXXXXXXX
Student ID: XXXXXXXXX
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 #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)

Student Name: XXXX XXXXXXXXXX
Student ID: XXXXXXXXX
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 #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

Student Name: XXXX XXXXXXXXXX
Student ID: XXXXXXXXX
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 #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)

Student Name: XXXX XXXXXXXXXX
Student ID: XXXXXXXXX
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 #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

Tier 1

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

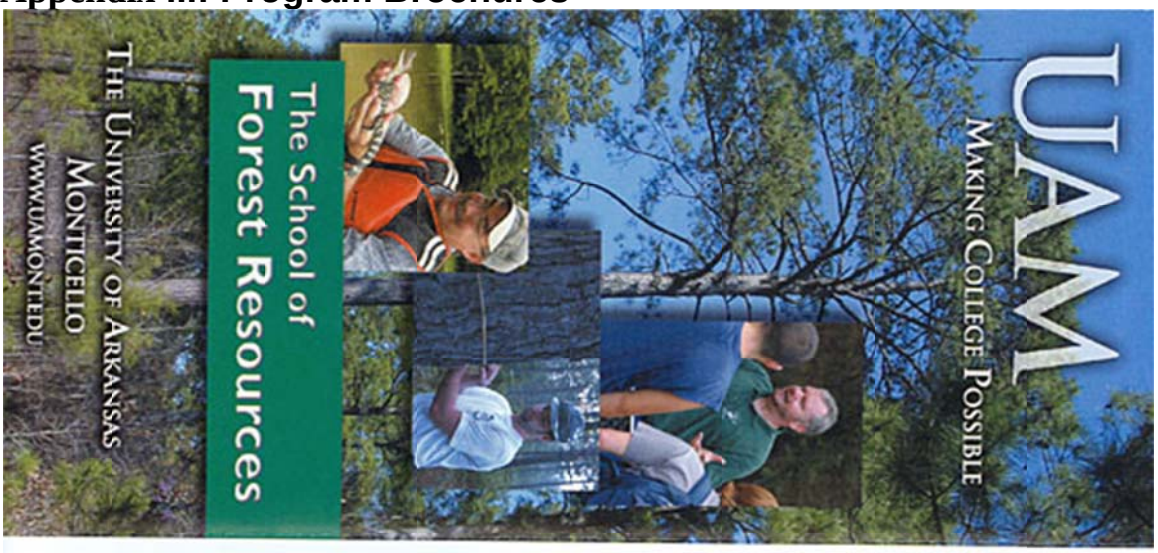
The student achieved the requirements of this CC by scoring 95% (Class average: 83%)

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



The University of Arkansas at Monticello

imagine the possibilities

Let's assume for a moment that you're interested in natural resource and environmental issues. Now imagine that you could pursue degrees in forestry, wildlife management, or spatial information systems while learning from some of the nation's top forest scientists, have access to world-class laboratory facilities, and do it in an atmosphere of small classes and personal, hands-on instruction.

Well imagine no more.

The School of Forest Resources at the University of Arkansas at Monticello offers all that and more. Since 1945, the UAM forestry program has built a reputation for academic excellence in teaching and research without losing the personal touch.

Our classes are small, our faculty is tough and demanding, and our laboratory facilities are top drawer. But there's much more to our program. Let's start with ...

our location

We're located in southern Arkansas, a region that includes some of the most productive industrial forests in North America as well as vast areas of national forests. The UAM campus itself includes almost 1,000 acres of forest land used to augment our research and teaching program. Our proximity to the forest industry allows our students to

The University of Arkansas at Monticello

interact with forestry professionals, gaining practical experience as well as making contacts which open up a wide variety of career choices once they graduate. And we share our facility with the Arkansas Forest Resources Center, a unit of the University of Arkansas System that provides an important link to the Arkansas Agricultural Experiment Station and Cooperative Extension Service.

what we offer

The School of Forest Resources is accredited by the Society of American Foresters, which means our program meets national standards of excellence. Our academic offerings, which are all based on sustainability and environmental quality, include the following degree programs:

- the bachelor of science degree in forestry;
- the bachelor of science degree in wildlife management;
- the bachelor of science degree in spatial information systems;
- the associate (two-year) degree in land surveying; and
- the master of science degree in forest resources.

We also offer minors in wildlife management, forestry, and natural resources.

the forestry degree

A bachelor of science degree in forestry will prepare you for a broad range of career opportunities involving management, conservation, and utilization of forest resources.

Unlike coal, iron, oil, and gas, the world's forests are a renewable resource, requiring sound management from professional foresters who understand complex and sometimes political issues involving ecology, economics and sociology.

The School of Forest Resources will educate you to manage forests while protecting them from wildfires, insects, diseases, erosion, extremes of weather, and human impact. You will learn about the enhancement and protection of wildlife habitat and aesthetic values that have become increasingly important in management strategies.

A degree in forestry may lead to careers with private forestry consulting firms, state or federal agencies, forest industry or other companies with large land holdings.

the wildlife management degree

A bachelor of science degree in wildlife management will give you a broad background in the management of wildlife resources. Our classroom instruction emphasizes basic and applied sciences as well as communication skills and social sciences. The foundation you receive will enable you to enter the wildlife management profession or pursue a graduate degree.

Career opportunities in wildlife management include managing a wildlife refuge or public recreation area as well as conducting research in wildlife populations, behavior or ecology. You may choose a career in public relations, providing information about research and management efforts to the general public as well as landowners and the news media.

the spatial information degree

The bachelor of science degree in spatial information systems will prepare you for careers in advanced information technologies using advanced computers and satellite technology to map geographic characteristics and land features. The School of Forest Resources is home to a state-of-the-art spatial analysis laboratory which combines the studies of geographic imaging and global positioning. A wide variety of career options are available for spatial information

The University of Arkansas at Monticello

specialists, including jobs in industry as well as public agencies, municipalities, city planning commissions, and agriculture business.

the associate degree in land surveying

The associate of science degree in land surveying is a two-year program to prepare you for a career as a professional surveyor. If you're interested in careers in either spatial technology or land surveying, be sure and let us know when you return the attached business reply card.

the master's degree in forest resources

Adding to the quality of our undergraduate education is the presence of a graduate program leading to the master of science degree in forest resources. Our graduate students have the opportunity to conduct research in areas such as biometrics, inventory, forest ecology, forest management and economics, geographic information systems and remote sensing, hydrology and water quality, operations and harvesting, policy and social issues, silviculture, and wildlife ecology and management.

Making College Possible

The University of Arkansas at Monticello

we're family

We believe our curriculum, faculty, and facilities combined with small classes and individual attention will allow you to learn and excel in an environment unlike any other natural resources school in the nation.

Being part of the School of Forest Resources means being part of a family. Our Forestry Club is one of the largest and most active organizations on campus. We also have a chapter of Xi Sigma Pi, the national honorary society for forestry, a student chapter of the Society of American Foresters, as well as the Wildlife Society.

for more information

If you would like more information about the School of Forest Resources, take a few minutes to fill out the attached card and return it to us. For more information, contact the UAM School of Forest Resources at (870) 460-1052, visit the University's internet website at www.uamont.edu or send us an e-mail at: SFRdean@uamont.edu

Making College Possible

UAM SCHOOL OF FOREST RESOURCES
ARKANSAS FOREST RESOURCES CENTER
P O BOX 3468
MONTICELLO, AR 71656

SPATIAL INFORMATION SYSTEMS AND LAND SURVEYING

Developing Geospatial Technology Leaders and Practitioners

Tel: 870 460 1052

UAM
The University of Arkansas at Monticello
Monticello · Crossett · McGehee

THE UNIVERSITY OF ARKANSAS AT MONTICELLO SPATIAL INFORMATION SYSTEMS AND LAND SURVEYING TECHNOLOGY DEGREES

Are you interested…

…in an exciting career in a high-technology field? Are you interested in being part of the information technology revolution of the 21st century? If so, you should consider UAM's degree program in Spatial Information Systems (SIS) and Land Surveying Technology.

What is Spatial Information Systems?

The term Spatial Information Systems is often used in a broad sense and generally includes, but is not limited to related technologies such as geographic information systems (GIS), remote-sensing (RS), global positioning systems (GPS), and land surveying.

Specifically, a GIS is a computerized database management system for capture, storage, retrieval, analysis, and display of locationally defined (spatial) data and related information. An understanding of SIS/GIS can allow an individuals to distinguish themselves among other job-seekers in their application area. It also provides a way to leverage their skills in the job market by adding a new capability to their professional toolkit. As well, some individuals become skilled in SIS in order to change or restart their careers.

The Spatial Information Systems Program at UAM will provide graduates with the tools needed to meet the growing demand in the geo-technology workforce. It is projected that there will be numerous opportunities available for graduates with expertise in GIS, GPS, RS and land surveying. Private companies, local, state and federal agencies, non-governmental organizations (NGOs) and academic institutions are all hiring graduates skilled in spatial technologies.

The SIS program provides students with a choice of two academic opportunities. The Spatial Information Systems (SIS) program leads to the Bachelor of Science (B.S.) degree and is a mixture of general education, computer based GIS, Remote Sensing, GPS, Digital Photogrammetry, and land surveying courses. The student has the option to concentrate in GIS or land surveying. Students may elect to pursue a two-year Associate of Science (A.S.) in Land Surveying Technology. The A.S. degree is a mixture of general education and land surveying courses.

History of Spatial Information Systems in The School of Forest Resources

The School of Forest Resources has been teaching photogrammetry, remote sensing and surveying for more than 30 years. In 1990, the School of Forest Resources established itself as a leader in computer geo-technologies when the faculty decided to build a Geographic Information System laboratory, now known as the Spatial Analysis Laboratory (SAL). In 1991, the School received a $100,000 gift from the Roy and Christine Sturgis foundation to purchase GIS hardware and software. In 1994, the University and School made another commitment to geo-technologies by creating a new faculty position in GIS and remote sensing to strengthen teaching and research in geo-technologies. In 1999, the School of Forest Resources received funds from the Arkansas State Legislature to start the SIS Program. In 2003, UAM received permanent funding for the SIS Program.

Spatial Information Systems (SIS) Courses

Introduction to Spatial Information Systems
Introduction to computer systems, geographic information systems (GIS), global positioning systems (GPS), remote sensing, surveying, and the Spatial Information Systems Program.

Block IIR NAVSTAR GPS Satellite

Boundary Surveying
History of Public Land Survey Systems (PLSS), evolution of the rectangular system of land subdivision, description and computation of land areas, past and current monumentation procedures, use of surveying instruments in field determination of property boundaries.

Geographic Coordinate Systems and Cartography
This course provides a technical introduction to spatial information design and thematic mapping. Lectures cover principles of scientific visualization, graphical design and mapping. In labs, students will design digital, static maps using computer aid design (CAD) software available on Windows workstations.

Plane Surveying
Measuring horizontal and vertical distances and angles, collection and adjustment of traverse data, area calculations, differential and trigonometric leveling, topographic surveys, and the creation of plats - manually and computer aided design generation. Partitioning of land, introduction to vector and matrix algebra, least squares adjustment of data, map projections and state plane coordinates, coordinate transformations, triangulations, standards of accuracy and error propagation. Global positioning systems surveying.

Survey Plats & Deeds
Writing deeds and preparing plats. Terminology used in metes and bounds, condominium, coordinate, and subdivision descriptions. Legal definitions, Arkansas state code for filing plats, required plat and deed information, deed and plat searches in county records.

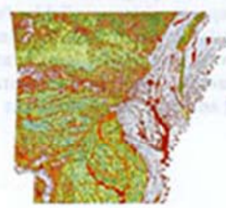
Route and Construction Surveying
Construction of horizontal, vertical and spiral curves, cuts and fills, volume determination, road layout and construction, building layout, design and layout of a subdivision; all computer assisted.

Introduction to GIS, GPS, and Remote Sensing
Introduction to geographic information systems using both raster and vector spatial data models, with hands on experience utilizing computers to aid problem solving. Application of global positioning systems in resource management, and integration of GIS and GPS are described and utilized. Introduces the basic concepts of remote sensing of the environment.

Advanced GIS I & II
These courses will cover advanced GIS and GPS software to further enhance the student's spatial skills. Map projections and coordinate systems in GIS are examined in depth along with network analysis for routing and transportation. Spatial analysis as a decision support tool will be employed. The use of advanced GIS/GPS software and hardware will be integrated into labs as well as the use, management, creation and storage of spatial data and metadata in GIS, object oriented programming language software for the development of algorithms to customize Geographic Information Systems to solve problems. Third party and Component Object Model (COM) compliant programming languages will be used to build and customize GIS applications. Customized applications will be incorporated into existing GIS Internet packages for display and presentation on the Internet.

Advanced Surveying
Partitioning of land, introduction to vector and matrix algebra, least squares adjustment of data, map projections and state plane coordinates, coordinate transformations, triangulations, standards of accuracy and error propagation. Global positioning systems (GPS) surveying.

Remote Sensing & Digital Remote Sensing
Remote Sensing concepts including, both electronic and analog sensor systems, land cover classification, rectifying and registering images, and digital mapping .



Arkansas Land Cover Vegetation Map

Spatial Statistics
This is an analytical, problem-based course that explores th field of spatial statistics. In lectures and laboratory exercise students will use statistical tools to determine patterns of spatial variability across a wide variety of data sets. Some o the topics that will be explored include distance sampling, universal kriging, cokriging, and inverse distance weighting

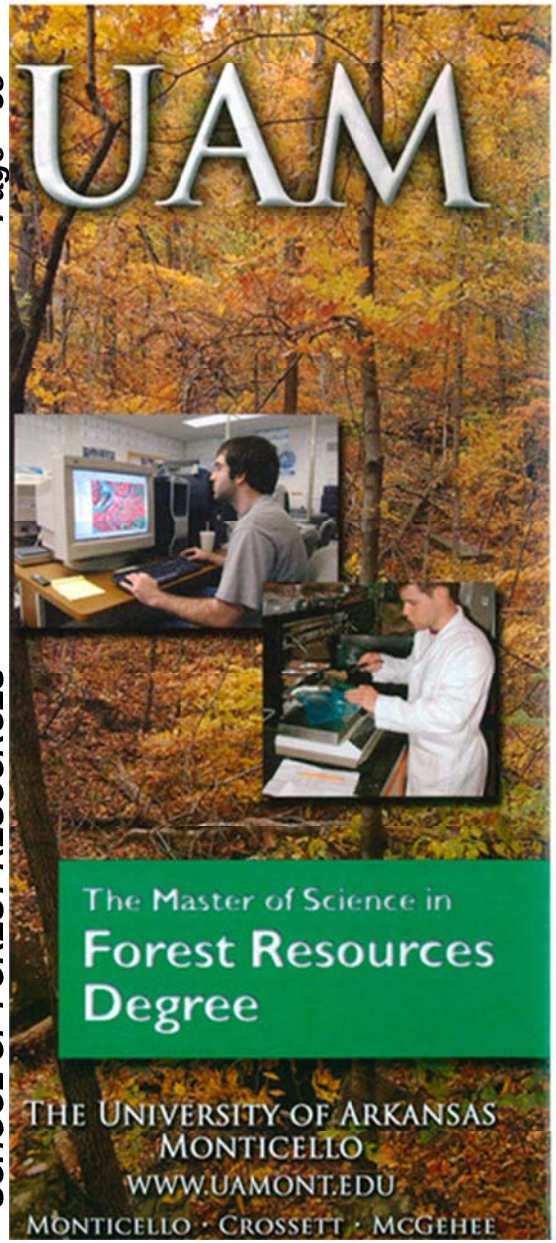
Law and Professionalism in Geomatics
Interpretation of legal statutes pertaining to surveying, mapping, cadastral and riparian rights, adverse possession, legal authority of spatial information systems personnel, preparation for court appearances, and conduct in court. Discussion of the moral and ethical principles guiding the professional conduct of spatial information system personn professional societies codes of ethics, moral and legal obligation to clients and community. Arkansas surveyor's code of ethics.

Digital Photogrammetry
Image mosaicing, digital orthophoto creation, aerial triangulation, single image and block triangulation, ground control, digital terrain modeling extraction, orthorectification, and mono and stereo terrain model editing.

Advanced GPS
Advanced concepts in recreational, mapping, and surveying GPS.

SIS Practicum
Integrated problem solving in GIS, remote sensing, GPS, ar surveying to solve real world problems. Students will work with a federal, state, local and private, or a non-profit agen using spatial technologies in their area of specialization to a solve a real world problem for that agency.

Advanced Topics & Undergraduate Research
Lectures and research in selected Spatial Information Syste topics.



THE UNIVERSITY OF ARKANSAS AT MONTICELLO

the degree

The University of Arkansas at Monticello offers a Master of Science degree in forest resources. The program is housed at the School of Forest Resources (SFR) and is associated with the system-wide Arkansas Forest Resource Center. SFR graduate students may choose to receive their degrees in one of the three concentration areas: Forest Sciences, Spatial Sciences, and Wildlife Ecology and Management. Specific research areas include, but are not limited to:

- *Spatial Ecology & Mgmt of Natural Resources*
- *Prescribed Fire Ecology*
- *Water Quality*
- *Below-Ground Ecological Processes*
- *Forest-Based Bioenergy*
- *Private Forest Landowner Issues*
- *Economics of Natural Resource Management*
- *Social / Policy Issues*
- *Wildlife Ecology & Management*
- *Spatial Modeling*
- *Ecosystem Services*
- *Wildland-Urban Interface Issues*

degree requirements

Prospective students with baccalaureate degrees in forestry, wildlife science, SIS, or any other natural resource-related areas are encouraged to apply. Minimum admission requirements include a 2.7 GPA in last 60 hours of undergraduate work and acceptable Graduate Record Examination (GRE) scores. In addition, international applicants must have minimum TOEFL score of 550 (paper-based) or 213 (computer-based). Once admitted, graduate students are required to complete 30 semester hours of graduate work including up to 6 hours of thesis.

graduate assistantships

A limited number of graduate assistantships are available to well-qualified applicants. The assistantships include an annual stipend plus tuition. To be considered for one of these assistantships, students are encouraged to apply early.

how to apply

Prospective students are strongly encouraged to communicate with a faculty member in their area of interest. A list of SFR faculty can be found on the web at http://www.afrc.uamont.edu/sfr/people.htm. All application materials for the graduate program can also be found on the web at http://www.afrc.uamont.edu/sfr/graduate_education.htm. Paper copies of the application forms may be obtained by completing and mailing the attached postage-paid card.

the School

The School of Forest Resources is located on the campus of the University of Arkansas at Monticello, in the southeast part of the state. Forest resource education was established on this campus in 1945. The School offers undergraduate degrees in forestry, wildlife management, and spatial information systems. Arkansas, the natural state, contains a wide variety of forest ecosystems within its borders—planted and natural pines on the coastal plains, bottomland hardwoods of the Mississippi alluvial valley, and the upland hardwood ecosystems of the Ozark and Ouachita mountains. These forests provide excellent opportunities for a wide variety of research topics. The School has state-of-the-art computer facilities, the Spatial Analysis Laboratory, and other laboratory facilities.

The School's educational objectives are:

· To educate baccalaureate-level professionals in both forestry, wildlife management, and spatial information systems.

· To provide graduate-level educational opportunities in forest resources.

· To provide students the opportunity to acquire the professional and academic competence in forestry, wildlife, and spatial information systems necessary to be nationally competitive in graduate studies.

· To foster general education, a professional curriculum, and a collegiate environment that attract and retain academically strong and professionally motivated students.

· 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.

the Center

The Arkansas Forest Resources Center integrates the educational objectives of the School with research and outreach objectives of the University of Arkansas system as part of its land grant mission. The Center is an important link to the Arkansas Agricultural Experiment Station and the Cooperative Extension Service. The Center includes faculty members from around the state with expertise in teaching, research, and extension.

the community

Monticello is a small, friendly community of about 9,000 located in the southern part of the state. The campus has a strong tie to the community. Excellent opportunities for outdoor recreation abound within a short distance of the campus. The cities of Pine Bluff and Little Rock are moderate drives from Monticello and offer ample opportunities for shopping, dining, sports and cultural activities.

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.

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 22nd

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

Students With Disabilities:

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

Cheating and **P**lagiarism **R**equirement

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

- assignments
- reports
- term papers
- quizzes
- tests
- providing answers
- homework (e.g., copying homework assignments and/or answers)
- use of pre-programmed calculators (e.g., formulas)

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

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

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

Examples of common knowledge compared to specific information are:

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

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

Examples using quotations and paraphrasing:

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

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

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

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

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

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

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

When in doubt about plagiarism consult your instructor.

Lecture Topics:

1. The soil as a living body
2. Soil formation from parent materials
3. Soil classification — **Exam I Materials**
4. Soil structure and physical properties

5. Soil and the hydrologic cycle — **Exam II**
6. Soil and plant water characteristics — **Materials**
7. Soil colloid chemistry
8. Soil pH and nutrient availability for plant utilization
9. Soil ecology/ biotic and abiotic interactions — **Exam III**
10. Soil organic matter — **Materials**
11. Nitrogen, phosphorus, potassium, and micronutrients
12. Fertility management
13. Soil erosion and control — **Final**
14. Soil quality and relation to sustainable site productivity — **Exam** (Comprehensive)

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):

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

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:

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 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.

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    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:

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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.

Spring Break: March 18th to the 22nd

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

Students With Disabilities:

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- tests
- providing answers
- homework (e.g., copying homework assignments and/or answers)
- use of pre-programmed calculators (e.g., formulas)

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- any person
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Examples of common knowledge compared to specific information are:

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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.

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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.

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- 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

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 "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:

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.

FOR 4684 Natural Resource Economics and Management

Last updated: Friday, August 01, 2014

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.

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 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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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.

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

TENTATIVE COURSE SCHEDULE AND CONTENT

B.	Date	Meeting	Topic	Reading Homework
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	Econ Ch. 2	
	HW 1 Due			
09.04	Lecture 4	Supply		
	Lab 2	Using Ptaeda growth model for loblolly pine		
09.06	Lecture 5	Supply and demand interactions	Econ Ch. 3	HW 2 Due
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 I**		
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	Mgmt. Ch. 1&2	HW 5 Due
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	Mgmt. 359-376	
	HW 6 Due			
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			
11.01	Lecture 19	Optimal level of reserve growing stock		
11.06	Lecture 20	Even-aged rotation: starting with bare land	Mgmt. 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. 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. 3	

	Lab 12 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	Mgmt. Ch 6	HW 8 Due
	Lab 14	**Mid-term examination III**		
12.06	Lecture 28	Forest-wide constraints – importance and development		

Final examination date, time, and place: Tuesday, 11 December 2012 from 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

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:

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 "I" 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

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
- ➢ How a GPS receiver works – www.howstuffworks.com/gps.htm
- ➢ US National Geodetic Survey – www.ngs.noaa.gov/

PROFESSIONALISM STATEMENT, School of Forest Resources, University of Arkansas at Monticello

Students in the School of Forest 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 21st 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 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 Forest Resources and may result in the dismissal from classes.

Course Outline/Schedule:

Topic	Tentative Weeks	Reading Assignments
GPS Theory Handouts The GPS Signal Types of GPS codes	1	Ch. 1,

Recreational Grade GPS Positional accuracies	2-3	Ch. 2 & 3
Mapping Grade GPS Introduction to the Trimble Geo XH	4-5	Ch. 4
Geodetic Coordinate Systems The Geoid, Heights, Datums	6-7	Ch. 5

Written Exam - Tentative Week 8, during Lab (100 pts)

CORS Stations / OPUS & OPUS RS Utilities Handouts Components GPS Data Processing	8-9	Ch. 6,
Static GPS Surveying Uses Data Collection Methods	10-11	Ch. 6
Baselines & Integrating Survey Systems Handouts Fundamentals	12-14	Ch. 6,
RTK GPS Surveying Handouts Data Collection Methods	15-16	Ch. 7, 8,

Written Final Exam (Comprehensive, 100 pts.), Wednesday, December 12; 8 – 10 AM

Other Dates of Interest:

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 <u>rephrased in your words</u> that captures the meaning of the original author. Cite the source of paraphrases also.

<u>Examples using quotations and paraphrasing</u>:

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.

Syllabus for Contemporary Forest Resources Issues- FOR3562

(Intersession: May 13-24, 2013)

Instructors:

Dr. Robert L. Ficklin
B107 SFR Complex
460-1692(o); 573-808-2501(cell)
Ficklin@uamont.edu

Mr. Chris Stuhlinger
B213 SFR Complex
460-1749(o); 870-723-5181 (cell)
Stuhlinger@uamont.edu

Course Objectives:

Week One:

1. To understand the challenges and issues associated with unique habitat management;
2. To understand some of the current issues related to the manufacturing of wood products and wood procurement;
3. To understand current nursery tree production issues for rural and urban tree planting; to learn about hardwood tree improvement programs;
4. To understand some of the conflicts associated with timber production, wildfire risk, and a wildland/urban watershed protection program;
5. To examine current natural resource –related legislative issues

Week Two:

6. To understand the mechanisms by which caves and associated subterranean geologic features are formed in karst landscapes;
7. To learn how fauna have adapted to cave ecosystems and to learn how and why monitoring subterranean water is an important component of the management of karst landscapes;
8. To integrate information regarding geologic formations in the Arkansas Ozarks and Ouachitas both with past depositional and uplift events and with present hydrology and stream/river morphology that continuously reshapes the landscapes of the region;
9. To explore methods of forest management for restoring upland oak communities and for managing bottomland hardwoods to benefit wildlife;
10. To understand the environmental issues surrounding extraction of fossil fuels in north Arkansas;
11. To gain a basic understanding of the importance of urban forestry programs;
12. To examine the prospects of biomass as a biofuel feedstock and the policy issues related to these markets

Evaluation Criteria: Comprehensive Exam (80%): Percentage evenly split between the subjects covered each week
Participation (20%): 10% for each week

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

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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,
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    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.

Cheating and **P**lagiarism **R**equirement

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- 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.

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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.

Specific Learning Objectives:

In accordance with the 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):

5) A course grade of "D" may be assigned regardless of overall average;

6) 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 outlined as core competencies.

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

a) Understand and describe the factors involved in the extraction of fossil fuels in north Arkansas;

b) Compare and contrast commercial and public (state) nursery operations for seedling and landscape tree production;

c) What are the conflicts between timber production and watershed protection – understanding and describing the importance of forests in producing clean water resources;

d) Define "karst" topography, and describe why land management in karst landscapes may have profound impacts on groundwater quality and aquifers;

e) List three adaptations that cave fauna have developed in response to the conditions within cave ecosystems;

f) Be able to compare and contrast the underlying geology of the Ozarks and Ouachitas- areas that constitute much of Arkansas;

g) Be familiar with and able to describe the factors involved in manufacturing forest products;

h) Describe methods of fuel reduction in the WUI, and ways to protect homes from wildfire;

i) Understand and describe the benefits of an urban forestry program in a community;

j) Be familiar with and list some of the pros and cons of DFCs (Desired Forest Conditions)

Contemporary Issues Itinerary- 2013

Week One: Monday-Friday, May 13-17, 2013 (breakfast May 13 and 14 and all lunches and dinners on your own)

Instructor:
Mr. Chris Stuhlinger

Monday, May 13:

8:15 a.m. Meet SFR – UAM (review syllabus)
8:30 a.m. Leave UAM
9 a.m. Warren Prairie Natural Area – Natural Heritage Commission: Red-cockaded woodpecker habitat; prescribed fire use (AFC)
Bill Holimon, Chief of Research
2 p.m. Monticello – JP Price Lumber Company: small-diameter mill operations
William Skipper, Sawmill Manager

Overnight in Monticello

Tuesday, May 14:

8 a.m. Meet and leave SFR – UAM (John Cumper follow, Andrew Warriner meet Fordyce)
9 a.m. Fordyce – Georgia-Pacific OSB mill operations
John Covert, Asset Availability Leader
2 p.m. Bluff City – ArborGen Fred C. Gragg SuperTree Nursery: nursery operations and tree improvement
Chase Weatherly, Assistant Nursery Manager

Overnight at Ferndale

Wednesday, May 15:

7:30 a.m. Breakfast
8 a.m. Leave Ferndale
9 a.m. Hot Springs – Garvan Woodland Gardens operations
Bob Byers, Associate Executive Director
1:30 p.m. Overview of the Arkansas Forestry Commission
Joe Fox, AFC State Forester
3 p.m. Hot Springs National Park visitor center (on our own)

Overnight at Ferndale

Thursday, May 16:

7:30 a.m. Breakfast
8 a.m. Leave Ferndale
8:30 a.m. Little Rock – Central Arkansas Water: water treatment and watershed management issues
Sharon Sweeney and Randy Easley, Director of Water Quality
2 p.m. Alotian property – wildland-urban interface issues, fire risk, fuel reduction
Kyle Cunningham, Forestry Extension Instructor, Univ. of Arkansas

Overnight at Ferndale

Friday, May 17:

7:30 a.m. Breakfast
8 a.m. Leave Ferndale
8:30 a.m. Little Rock – Arkansas Forestry Association: forest industry and legislative issues
Max Braswell, AFA Executive Vice President
10 a.m. AFC headquarters – FireWise Communities
Kevin Kilcrease, Firewise Coordinator
2 p.m. Bemis Tree Farm: commercial landscape nursery operations
Donna Bemis, Bemis Tree Farm

Overnight at Ferndale

Weekend: Saturday-Sunday, May 18-19, 2013 (all lunches and dinners on your own)

Instructor:
Dr. Robert L. Ficklin
Office 460-1692; cell 573-808-2501
Ficklin@uamont.edu

Saturday, May 18:

7:30 a.m. Breakfast
8 a.m. Leave Ferndale
9 a.m. Mt. View – Blanchard Springs Caverns

Overnight at Ferndale

Sunday, May 19:

7:30 a.m. Breakfast
8 a.m. Leave Ferndale
9 a.m. Pinnacle Mt. State Park
1 p.m. Little Rock - AG&FC Nature Center and Wetlands Park

Overnight at Ferndale

Week Two: Monday-Friday, May 20-24, 2013 (all lunches and dinners on your own)

Instructors:

Dr. Robert L. Ficklin and Mr. Chris Stuhlinger

Monday, May 20:

7:30 a.m. Breakfast
8 a.m. Leave Ferndale
9 a.m. Camp Robinson – oak woodland restoration
Harris Brake – Desired Forest Conditions
Martin Blaney, AG&FC

Overnight at Ferndale

Tuesday, May 21:

7:30 a.m. Breakfast
8 a.m. Leave Ferndale
9 a.m. Conway – Southwestern Energy: natural gas production and its impacts
David Evans, SWN
1:30 p.m. Little Rock – Pinnacle Arborist Supplies: arboriculture and urban forestry
Pete Rausch, Proprietor, Arborist, and former LR urban forester
3:00 p.m. Little Rock – AFC Headquarters: Urban and Community Forestry
Patti Erwin, AFC UCF Coordinator

Overnight at Ferndale

Wednesday, May 22

7:30 a.m. Breakfast

Check out by 8 a.m.

8 a.m. Leave Ferndale
9 a.m. Little Rock – AFC Baucum Nursery: state nursery operations and hardwood tree improvement
Dave Bowling, AFC Reforestation Manager
2 p.m. Rohwer – Biomass production: cottonwood/switchgrass study
Dr. Matt Pelkki, UAM SFR

Overnight in Monticello

Thursday, May 23

10:00 a.m. to 12:00 p.m. Examination (open notes)

Dismissed

Things to keep in mind:

1) BE ON TIME! Call your instructor if you will be delayed.

2) Bring money for lunch (10 days), dinner (8 days) and snacks

Also bring change for laundromat

3) Rooms at 4-H Center will be shared: 2 rooms for men, 1 room for women
All rooms are non-smoking; No alcohol allowed; bedding and towels provided; no TV or phones

4) Meal times at 4-H Center are PROMPTLY at 7:30 am for breakfast (any special dietary needs?) – 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 leave sight of the main buildings at the 4-H Center during off hours, tell your instructor first

7) Bring hardhat, safety glasses, ear plugs, leather shoes for mill tours (hardhat only for Price)

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) Bring rain gear and field shoes/boots, also rubber boots.

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	☐	☐	☐	☐	☐
The ability to think critically is more valuable than the ability to think technically	☐	☐	☐	☐	☐
It is necessary for all professional foresters to be skilled in collaborative decision-making approaches	☐	☐	☐	☐	☐
Written and oral communication skills are the most important component in a forester's career	☐	☐	☐	☐	☐
Understanding natural resource policy is as important to the forestry profession as understanding silviculture	☐	☐	☐	☐	☐
Every graduate needs to know GIS to stay competitive	☐	☐	☐	☐	☐
All forestry undergraduates should have a good working knowledge of wildlife ecology and management	☐	☐	☐	☐	☐
The forestry curriculum at UAM puts too much emphasis on technical skills	☐	☐	☐	☐	☐
UAM forestry graduates have a good working knowledge of computers and computer systems	☐	☐	☐	☐	☐

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

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