

PROGRAM ASSESSMENT

FOR

SPATIAL INFORMATION SYSTEMS

SCHOOL OF FOREST RESOURCES

UNIVERSITY OF ARKANSAS AT MONTICELLO

2011

Table of Contents

1. SIS Program Goals, Objectives, and Activities	4
Educational Objectives	6
Other Professional Objectives.....	9
General Comments	10
 2. Spatial Information Systems Curriculum	 13
Degree Requirements	13
A.S. in Land Surveying Technology	14
B.S. in Spatial Information Systems.....	15
General Education.....	15
Major Requirements.....	17
Supportive Requirements	25
Free Electives	27
Relationship Between Program Content and SIS Trends	29
Surveying	29
GIS.....	31
Recommended Sequence of Courses.....	34
Schedule of Course Offerings	40
Process for Introduction of New Courses	42
Course Syllabi	4
 3. Program Faculty Information.....	 44
Program Faculty Information	44
Academic and Professional Competency	50
Academic Credentials for Adjunct/Part-time Faculty Teaching Program Courses	51
Faculty Evaluation Procedure	51
Average Number of Courses and Credit Hours Taught	53
 4. Program Resources	 54
Institutional Support Available for Faculty Development.....	54
Administrative Support.....	54
Financial Support for Teaching, Research, Service, and Extension.....	55
Professional Development of Full-time SIS Program Faculty.....	58
Available Library Resources.....	61
Availability, Adequacy, and Accessibility of Campus Resources	61
Resources Available through the School of Forest Resources.....	61
Resources Available through UAM Campus	64
SIS Program Equipment Purchases for Past 3 Years	66

5. Majors/Declared Students.....	69
Number of Students in SIS Program During the Past 3 Years.....	69
Strategies to Recruit, Retain, and Graduate Students.....	69
Number of SIS Graduates over the Past 3 Years	71
6. Program Assessment	72
Program Assessment Process.....	72
SIS Capstone Requirements.....	74
Evaluations of Teaching	76
Transfer Students.....	76
Student/Alumni/Employee Satisfaction Surveys	77
SIS Program Alignment with Job Market.....	77
Continuing Education and/or Job Placement for SIS Graduates	78
7. Program Effectiveness.....	80
Program Strengths	80
Areas where Improvement is Needed.....	81
Program Improvements Accomplished over the Past 3 Years.....	82
Planned SIS Program Improvements.....	82
8. Institutional Review Team	83
Appendices	
Appendix 1. Summary of general education course and restricted electives for students pursuing degrees in Spatial Information Systems through the School of Forest Resources at the University of Arkansas at Monticello	84
Appendix 2. Description of areas of study within the Spatial Information Systems Program and their relationship to specific degree options.	91
Appendix 3. Syllabi for courses required for students pursuing degrees in Spatial Information Systems through the School of Forest Resources at the University of Arkansas at Monticello.....	96
Appendix 4. Background and experience information for Spatial Information Systems faculty within the School of Forest Resources at the University of Arkansas at Monticello.....	220
Appendix 5. School of Forest Resources faculty evaluation form	242
Appendix 6. Equivalent courses for students transferring from other Arkansas institutions of higher education into the School of Forest Resources to pursue a degree in Spatial Information Systems.....	246

1. SPATIAL INFORMATION SYSTEMS PROGRAM GOALS, OBJECTIVES, AND ACTIVITIES

The University of Arkansas at Monticello (UAM) has been accredited for over fifty years by the North Central Association of Colleges and Schools (NCACS). The campus offers the advantages of higher education in the rich environment of a small university. In 2006, UAM added technical education and workforce training through the addition of technical college campuses at Crossett and McGehee, Arkansas. At the same time, UAM has continued to support and strengthen its educational aspirations to state and regional, national and international levels. The forest resources graduate program draws students nationally and internationally, increasing student breadth and diversity. As stated in the University mission,

The University of Arkansas–Monticello shares with all universities the commitment to search for truth and 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. The University provides learning experiences which enable students to synthesize knowledge, communicate effectively, use knowledge and technology with intelligence and responsibility, and act creatively within their own and other cultures.

The University strives for excellence in all its endeavors. Educational opportunities encompass the liberal arts, basic and applied sciences, selected professions, and vocational and 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 which fosters individual achievement and personal development. (UAM 2009-2001 Catalog, page 9)

The School of Forest Resources traces its history to 1945 when H. H. Chamberlin established a two-year forestry technician program at what was then Arkansas A&M College. At that time, the college had a southeastern Arkansas service region. The forestry technician degree represented an equivalent professional restriction, largely to in-the-woods proficiency managing southern pines. Enrollment grew, along with demand for a more comprehensive professional forestry education. In 1949 the Arkansas A&M Board of Trustees authorized a four-year professional program leading to a B.S. degree in forestry. More than 800 students have graduated from the institution during its history and demonstrated an ability to handle positions ranging from the management of a 40-acre woodland to Chief of the USDA-Forest Service.

The School of Forest Resources has played a central role in institutional evolution, attracting attention to the university through its nationally and internationally known faculty and productive research program. As national trends and demands on the forestry profession have evolved, so has the educational program of the School through recurring curriculum revisions and special offerings. For example, the B.S. degree in Spatial Information Systems (SIS) was added in 2000. Students pursuing a degree in SIS can elect to major in Geographic Information Systems (GIS) or Land Surveying. The SIS major was designed to provide students with an enhanced theoretical and applied knowledge of GIS, remote sensing, global positioning systems, photogrammetry, and land surveying. In addition to the B.S. degree, the School offers a two-year Associate of Science (A.S.) degree track in Land Surveying Technology. Students who graduate with the SIS degree are well prepared to enter the workforce in a broad range of professions,

including natural resources, municipal planning, agriculture, and aerospace, or earn graduate degrees.

The School's mission builds upon the general education mission of the University with a strong core curriculum in SIS and a program of free electives. The mission of the School is:

The mission of the School of Forest Resources is to educate professional natural resource managers, to enlarge the body of knowledge in renewable forest resources and spatial information 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 important values.
(UAM 2011-2013 Catalog, page 94)

The stated objectives of the School are presented below. In this standard, each objective is discussed in terms of how it meets the needs of constituents and the desired educational outcomes. (2011-2013 UAM Catalog, p. 94-95)

Educational Objectives

Educational Objective 1

To educate baccalaureate-level professionals in forestry, geographical information systems, land surveying, 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.

Since its inception, the SIS program has provided its students a strong background in GIS and Land Surveying. Employers recognize the School's ability to educate competent and marketable individuals. An excellent placement record attests to the

success of the School's graduates who compete for positions with all types of employers, including industry, consulting firms, non-governmental organizations, and state and federal agencies.

The School's primary objective in the future, as it has been in the past decade, will be to retain its tradition of excellence in professional competence while placing greater emphases on oral and written communications, liberal studies, business administration, and social issues that will enable graduates to deal with complex science and policy issues and advance beyond the entry level. This objective is being achieved. Many of the School's alumni have attained distinguished positions within their organizations, and several recent SIS graduates already occupy surveying or GIS management positions.

Educational Objective 2

To afford students the option of a two-year degree in land surveying technology.

The demand for professional surveyors within the state of Arkansas remains strong. The two-year land surveying technology program offers opportunities for higher education that are in-line with the University's broad academic mission that includes technical training and workforce development. This program is closely linked to the four-year SIS degree and provides student's with broader educational opportunities while providing the state with high-quality professionals capable of providing a variety of surveying and spatial analysis services.

Educational Objective 3

-To provide graduate-level educational opportunities in natural resource management.

Since 1998, the School has offered a Master of Science degree with a major in forestry and wildlife-related fields as well as GIS/remote sensing. In the past decade, more than 54 students have graduated with a Master of Science degree.

Educational Objective 4

To provide students the opportunity to acquire the professional and academic competence in forestry, geographic information systems, wildlife management, and land surveying necessary to be nationally competitive.

The School of Forest Resources faculty encourage undergraduate students to continue their education by seeking a Master of Science degree. As of 2011, fifteen of those students have entered the SFR graduate program.

Educational Objective 5

To foster general education, a professional curriculum and a collegiate environment that attracts and retains academically strong and professionally motivated students.

Faculty of the School of Forest Resources adhere to the philosophy that professional education is attained by vigorous pursuit of liberal education and courses offered in the School. Students are encouraged to regard the general education component of their program to be as important and relevant as courses that have traditionally been considered “professional” education.

The School’s recruitment activities focus on academically prepared students. These efforts are augmented by a strong program of endowed scholarships which tend to attract good students from out-of-state. Scholarships generally require ACT scores higher than

23; some require scores of 27 and 28. Campus-wide programs are also available for academically strong students.

Educational Objective 6

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.

All School of Forest Resources courses are rigorous and intellectually demanding of students. The faculty, since 2006, has incorporated outcome-based learning objectives and core competencies into all School courses (see **Program Assessment** section). Students must demonstrate proficiency in all course learning objectives to receive a passing grade. These policies are intended to improve the scholarship of the student body and, thus, an improved academic environment.

The learning environment is promoted in other ways as well, including employment in faculty research projects. Dedication to the profession is encouraged in the classroom and to some extent, in student organizations such as the student Spatial Information Systems Club, the student chapter of the Society of American Foresters, and the Student Chapter of the Wildlife Society. The subject of ethics is taught and reinforced in several courses.

Other Professional Objectives

Other Professional Objective 1

To support basic and applied research programs that contribute to the body of knowledge in forestry, wildlife management, related natural resources, and spatial

information systems, which address the professional, scientific, and social needs of the forestry and natural resources communities in the state, the region, and the nation.

This objective is achieved through the School's formal link to the System's Agricultural Experiment Station. The School's research programs have contributed profoundly to the educational mission. Faculty engaged in research stay abreast of developments in their disciplines and incorporate new research findings into class materials. Additionally, many students work part-time on research projects, thereby gaining a greater understanding of where new ideas and information originate.

Other Professional Objective 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.

Various educational programs have exposed the School's teaching and research programs and ideals to clients (including students and potential students) throughout Arkansas and have demonstrated the needs and benefits of continuing education in which the faculty are actively involved. For instance, several workshops in GIS and GPS technology have been offered to the GIS community and the public through Extension programs and outreach education by faculty instructors with the use of a mobile computer lab.

General Comments

The SIS faculty realize that the role of a professional is continually evolving, as technology, software, and regulations change. At UAM, these issues represent a challenge in curriculum development. Although not formalized, the School's policy on curriculum

development provides for input from a diversity of sources. Faculty discussion, both within the School and campus-wide, provides the groundwork for the curriculum revisions herein described.

The educational program in the School of Forest Resources is prepared to meet future challenges facing the SIS profession. Furthermore, the forestry curriculum maintains an element of regional identity and uniqueness that permits continued response to the needs and opportunities existing within the mid-South. The faculty of the School hold the collective opinion that the curriculum now in place has strengthened the offerings while concurrently promoting some flexibility. Degree minors offered by the School allow students to broaden their backgrounds in the natural resources arena, if they choose to do so. This curriculum is described in detail in the next section.

Assessment of the program is conducted in a number of ways. Periodic surveys are made of alumni to assess their satisfaction with the curriculum, including courses that have been most and least beneficial. Those surveys ask questions about employment as well. Surveys to employers request input of their level of satisfaction with graduates of the UAM School of Forest Resources. Employers are also asked to comment on courses and curricular issues. The pass rate of surveyors on the Arkansas State Board Exam for Surveyor's Exam is above the state average.

In summary, the UAM School of Forest Resources has made significant progress since its initial accreditation and subsequent reviews. The curriculum is better integrated than previously, and the emphasis on communication and computer skills has been increased. Furthermore, a

process for openly evaluating the curriculum is in place. Research and extension activities effectively complement the teaching program.

2. SPATIAL INFORMATION SYSTEMS CURRICULUM

Degree Requirements

The School of Forest Resources offers 3 undergraduate programs in Spatial Information Systems (SIS): the Associate of Science (A.S.) in Land Surveying Technology, and the Bachelor of Science (B.S) in Spatial Information Systems with either a Surveying option or a Geographic Information Systems (GIS) option. In addition to these degrees, the School offers a B.S. in Forest Resources with wildlife management and forestry options, and a Master of Science degree in Forest Resources with areas of emphasis including Forest Science, Wildlife Ecology and Management, and Spatial Sciences. A total of 66–68 semester credit hours are required for the A.S. degree; a total of 124 hours are required for completion of the B.S. degree in Spatial Information Systems. The credit requirement for each B.S. program is partitioned into 4 categories (Table 2.1).

Table 2.1. Credit requirement for B.S. degrees in Spatial Information Systems with surveying or GIS options.

Requirement	Surveying	GIS
University general education requirements	44	44
Core requirements specific to major	43	40-42
Supportive requirements	20-22	24
Free electives	12-14	11-13

The university general education requirements are mandated by the State of Arkansas. They are designed to: 1) help students think and communicate effectively; 2) instill an appreciation and understanding of social, intellectual, and scientific constructs that have and will continue to impact society; 3) prepare students to be effective and responsible members of

society; and 4) provide students with a suitable background and skills to pursue advanced studies. The general education requirement includes 30 hours in humanities and social science, 11 hours in mathematics and natural science, and 3 hours in a mathematics, science, or technology elective. Where possible, the B.S. in the SIS degree requires students to take general education classes that are directly applicable to their surveying or GIS major. The major and supportive requirements are courses specifically taken to provide information and skills needed in professional fields related to spatial information systems. Free electives allow students to pursue topics of interest or information and skills designed specifically for their chosen educational goals. Below is a more specific description of the degrees and course content.

A.S. in Land Surveying Technology

Students pursuing an associate's degree in Land Surveying Technology are required to take 67–69 credit hours. Thirty-five credit hours are general education requirements to meet the Arkansas Board of Higher Education's core curriculum (Appendix 1). These credit hours include 6 hours classified as English/composition, 11 hours of math/science, and 18 hours of social science/humanities. Restricted electives include Trigonometry (MATH 1033) and Compact Calculus (MATH 1073).

Students take 23 credit hours of core surveying courses including Introduction to Spatial Information Systems (SIS 1001), Geographic Coordinate Systems and Cartography (SIS 2023), Boundary Surveying (SIS 2014), Plane Surveying (SIS 2114), Survey Plats and Deeds (SIS 3153), Route and Construction Surveying (SIS 3264), and Introduction to GIS, GPS, and Remote Sensing (SIS 3814).

B. S. in Spatial Information Systems

General Education

Even though 44 hours are required to meet university general education requirements, a total of 53 credit hours of classes classified as general education (Appendix 1) are required for the surveying option. Thus, 9 hours are considered restricted electives for the degree program. A total of 15, 20, and 18 credit hours are allocated as communications, science-mathematics, and social science-humanities, respectively. For the GIS option, a total of 50 credit hours of classes classified as general education (i.e., 44 required and 6 restricted electives) are required. A total of 15, 20, and 15 credit hours are allocated as communications, science-mathematics, and social science-humanities, respectively.

To meet communication requirements for both options, students take a 3 credit hour speech class. There is a diversity of classes that can be taken for these credits (Appendix 1). All provide basic skills on construction and delivery of oral communication, but differ in the type of oral communication (interpersonal, business/professional, etc.) learned and applied. Basic writing skills are acquired in English composition and Technical Writing classes (Appendix 1). The Technical Writing (ENGL 3253) course focuses on writing documents (e.g., reports, letters, articles) appropriate for professional development in natural resources, management and engineering professions, while the 2 English Composition courses (ENGL 1013 and 1023) are writing courses required by all students pursuing B.S. degrees at UAM. Development of reading skills is also a focus of the English Composition courses as well as the Survey of Literature (ENGL 2283 or ENGL 2293) courses included in the general education requirements.

To meet mathematics requirements, all students pursuing a B.S. in Land Surveying or

GIS must take College Algebra (MATH 1043) to meet the university general education requirement, as well as 6 additional credit hours in mathematics (Appendix 1; also see *Supportive Requirements*). To meet the 8-credit hour general education requirement for basic sciences, and the 3-credit hour requirement for mathematic/science/technology elective, students must complete the following: either Earth and Atmosphere (ESCI 1073) and associated laboratory (ESCI 1081) or Elements of Geology (ESCI 1063) and the associated lab (ESCI 1051) as well as either elements of Physics (PHYS 1003) and laboratory (PHYS 1021) or General Physics I (PHYS 2203) and laboratory (PHYS 2231). These selected courses provide a basic understanding of geological and physical principles and processes, and were chosen to enhance the background needed to understand the principles taught in classes such as Remote Sensing, Geographic Information Systems, Global Positioning Systems, and Cartography. Additionally, students must complete the 3-credit hour course, Microcomputer Applications (CIS 2223) because many of the upper-level core requirements are computer based. To meet mathematics requirements, the B.S. degrees in Surveying and GIS require an additional 6 credit hours (Trigonometry and Compact Calculus) beyond the university general education requirements of 3 credit hours. These additional requirements are required to improve students' abilities to understand fundamental mathematical principles in spatial information systems.

To meet social science and humanities requirements, students complete American National Government (PSCI 2213) to improve their general understanding of societal institutions and laws or governmental structure that will influence job requirements or standards. Survey of Civilizations (HIST 1013 or HIST 1023), Art Appreciation or Music Appreciation (ART 1053 or MUS 1113), and Introduction to Psychology or Sociology (PSY 1013 or SOC 2213) are

important general education courses for improving the student's understanding of human behavior and culture. Additionally, to meet the 3-credit social sciences elective, General Geography I (GEOG 2213) or General Geography II (GEOG 2223) is required for students under the GIS option, whereas both are required for the survey option. Geography courses provide an essential foundation for students pursuing degrees and careers in spatial sciences.

Major Requirements

Completion of a B.S. degree in Spatial Information Systems with a Surveying option requires a total of 43 hours classified as core requirements, 20-22 hours of supportive requirements, and 12-14 hours of free electives. Completion of a B.S. degree in GIS requires 40-42 hours classified as core requirements, 24 hours of supportive requirements, and 11-13 hours of free electives. The required courses are classified into 5 different areas of study according to skills necessary for careers in spatial information systems. These areas include Geographic Information Systems, Global Positioning Systems, Remote Sensing, Surveying, and Data Analysis/Problem Solving. The percentage of each area of study within the Surveying and GIS curriculum are provided in Table 2.2.

Table 2.2. Percentage of areas of study within the Spatial Information Systems undergraduate curriculum (with Surveying and GIS options) in the School of Forest Resources at the University of Arkansas at Monticello.

Option	Area of study					
	GIS	GPS	Remote		Data	
			Sensing	Surveying	Analysis	
Surveying	11.1	6.1	3.6	35.8	43.5	
GIS	18.8-20.5	6.6-7.1	11.25-6.8	15.4	45.3-47.3	

A detailed description of each area of study and their relationship to specific degree

options is provided below and summarized in Appendix 2.

Geographic Information Systems—GIS is a computer system for capturing, storing, querying, analyzing, displaying, and modeling spatial data. Spatial data can include any real-world entities such as cities, forest boundaries, wildlife movements, watersheds, landscapes, utility locations, etc. Surveyors use GIS to develop maps of property boundaries, roads, utilities, or determine the volume of earth displaced from construction activities. Applications of GIS to GIS majors are endless.

Surveying option: A total of 7.7 credit hours are devoted to GIS in the surveying curriculum. The majority of these credits come from Introduction to GIS, GPS, and Remote Sensing (SIS 3814) and Advanced GIS I (SIS 3843), which are usually taken in students' sophomore and junior years. Other courses in which students experience GIS is in Introduction to Spatial Information Systems (SIS 1001), Geographic Coordinate Systems and Cartography (SIS 2023), Remote Sensing (SIS 3923), Law and Professionalism in Geomatics (SIS 4813) and the Senior Seminar (SIS 4691) and Practicum (SIS 4883). These GIS-related classes allow students to gain knowledge and experience collecting spatial data through digital spatial data libraries such as Geostor (www.geostor.arkansas.gov), global positioning systems including recreational grade Garmin receivers, mapping grade Trimble receivers and surveying grade Trimble receivers, or create their own spatial information through digitizing aerial photos on the computer. Students gain a deep understanding of GIS in the introductory course (SIS 3814) and in Advanced GIS I (SIS 3843). Students learn skills and software tools needed

to address spatial questions. For instance, surveyors might be faced with a spatial question such as where is the best path for a new road construction or how much forested area will be lost due to construction of a new power line right of way?

GIS option: A total of 10.5 or 11.55 credit hours (18.8-20.5%) of the GIS curriculum covers GIS topics from remedial GIS to advanced topics and methods. The majority of the credits come from Introduction to GIS, GPS, and Remote Sensing (SIS 3814), Advanced GIS I (SIS 3843), and Advanced GIS II (SIS 4713). However, 10 other courses provide some discussion or applications of GIS. In the introductory course, students become familiar with types of spatial data, GIS software (i.e., ArcGIS, Environmental Systems Research Institute, Redlands, California), map projections, creation of GIS data, and basic spatial data analysis. In the Advanced I course, students learn spatial database structure, cartographic modeling, advanced spatial data analysis, and customized GIS software. In the Advanced II course, students apply knowledge gained from the previous GIS courses and apply it to solving complex spatial problems. Skills enhanced include spatial simulation, analysis of temporal data with a spatial component, animation of spatial and temporal data, building models, analysis and display of data in 3 dimensions, network analysis, and creating a spatial data server for public dissemination of data.

Global Positioning Systems—Global Positioning Systems (GPS) are satellite navigation systems funded and controlled by the U.S. Department of Defense. GPS receivers process specially coded satellite signals that can be used to compute position, velocity, and time. Courses relating to GPS help students understand the science behind development of GPS, use of different grades of receivers (i.e., recreational grade, mapping grade, and survey grade, total stations), accounting for errors in calculating position (i.e., differential correction), technological advancements in GPS, and analysis of positional data.

Surveying option: Content within four courses (3.4 credit hours) directly relates to GPS. Most (73.5%) of the credits come from Advanced GPS (SIS 4193). Other courses that include content related to GPS include Introduction to Spatial Information Systems (SIS 1001), Introduction to GIS, GPS, and Remote Sensing (SIS 3814), and SIS Practicum (SIS 4883). GPS is an essential tool in surveying, as accuracy in determining location of boundary corners and positions of other entities such as roads and utilities is critical.

GIS option: Six courses (3.7 or 4.0 credit hours) are directly related to understanding and using GPS. One course (Advanced GPS; SIS 4193) is devoted entirely to advanced concepts in GPS including learning mapping-grade data collection techniques and acquiring survey quality data. GPS is an essential tool for individuals working with GIS, as many maps and point-location data are created with use of GPS.

Remote Sensing—Remote sensing is collection of data from a distance. Satellite images of the earth's surface, aerial photos, weather data from Doppler radar or images collected with a camera

are all examples of remote sensing data.

Surveying option: Four courses provide knowledge and applications related to remote sensing; Remote Sensing (SIS 3923) covers most (70%) of the content. Remote sensing concepts applicable to surveyors include electronic and analog sensor systems, land cover classification, taking horizontal and vertical measurements from stereoscopic photos, rectifying and registering images, and digital mapping.

GIS option: Much of the data used and processed using GIS is created using remote sensing. Therefore, it is critical that students understand what remote sensing is and how it is used to create digital spatial data. Remote Sensing (SIS 3923), Digital Remote Sensing (SIS 4463), and Digital Photogrammetry (SIS 4633) comprise the majority (86%) of the curriculum related to learning and applying techniques related to land cover classification, analysis of spectral data, creation of digital orthophotos, digital terrain modeling, orthorectification, and others.

Surveying—Land surveying is the science and technique of accurately determining the position of points and the distances and angles between them.

Surveying option: Eleven courses provide surveying content; 7 of these courses devote > 1 credit hour to teaching surveying. These courses include Boundary Surveying (SIS 2014), Geographic Coordinate Systems & Cartography (SIS 2023), Plane Surveying (SIS 2114), Survey Plats and Deeds (SIS 3153), Route and Construction Surveying (SIS 3264), Law and Professionalism in Geomatics (SIS 4813), and Advanced Surveying (SIS

4454). Through these courses, students learn theory and science behind surveying, and participate in experiential learning activities such as using surveying equipment so they develop a good foundation for applying knowledge for jobs or to pass the Arkansas state board exam of licensure for professional surveyors.

GIS option: Students majoring in GIS are required to take surveying classes.

Approximately 4-6 credit hours of the GIS curriculum focus on surveying. It is important for students with a GIS degree to understand how surveying is conducted and the laws and regulations that affect boundary delineation and infrastructure development (i.e., road construction, establishment of pipelines, and developing communication networks).

Through surveying classes, GIS students understand the framework for maintaining critical data and applications across multiple aspects of an infrastructure project.

Data Analysis and Problem Solving—Most of the core and supportive requirements devote a portion of their curriculum to data analysis and problem solving. The professional fields of GIS and surveying are largely application-based and quantitative, although theory is important also. In order for students to develop critical thinking skills, process calculations, and apply theory learned in classes to real-world problems or issues, much of the curriculum content includes problem solving. Approximately 45% of the surveying curriculum, and 45-47% of the GIS curriculum provides opportunities for students to enhance critical thinking and problem solving skills.

Surveying option: In the courses directly related to surveying, students are presented with

questions related to locations of entities such as property boundaries, routes, or other features. Students must be able to accurately find boundary markers, accurately determine positions, calculate areas, and produce maps with precise legal descriptions and scales. In the SIS practicum class (SIS 483), students are assigned a project partner/stakeholder with a surveying issue such as how and where to subdivide property, where to place a building or road based on topography, or how accurate is a specific boundary. These are practical questions that any professional surveyor likely would face on the job. The surveying course content is heavily applied and is designed to adequately prepare students for professional licensing and a surveying career.

GIS option: The majority of the GIS curriculum (25.35-26.5) credit hours present various opportunities for data analysis and problem solving. Much of using GIS is data analysis and problem solving. For instance, a GIS analyst may be required to format a database or conduct calculations in order to produce a map with the desired information displayed. Additionally, the majority of a GIS analyst's job will be solving spatial problems. For example, in SIS 3814, students work on a semester-long project to answer an instructor-approved spatial question of their choice. These projects have provided answers to spatial questions such as where are the hot spots for auto theft in Pine Bluff, what does the bottom of Lake Monticello look like, where should deer blinds be placed on a hunting lease, or how much overlap occurs between habitat for quail and fire ants? In the advanced classes, students refine skills and have provided answers to more complex spatial question such as where will water flow in a landscape after destruction of a dam,

where are the least-cost routes from logging sites to sawmills, or what is the 3-dimensional structure of underground heating and cooling pipelines on campus?

Collectively, all courses in the required curriculum contain significant content in field work, ethics, oral and written communication, spatial applications, and computer literacy (Appendix 2). Examples of field work include using maps and compass (SIS 1001), using the total station for surveying (all surveying courses), use of GPS to collect point location data or map tracks (SIS 3814, SIS 4193), and collection of data to use in class projects (SIS 3914, SIS 4463, SIS 3933, SIS 4883). Ethics are incorporated in many core SIS classes, but Law and Professionalism in Geomatics (SIS 4813) presents the most content on professional law and conduct of spatial information systems personnel. The ethical issues incorporated in class discussion or assignments include the ethical application of intellectual property law (i.e., copyright), citizen rights for access to information, professional conduct for court appearances, obligations and standards for governments and organizations to create frameworks and infrastructure, and protecting personal privacy by preventing unethical use of publicly available spatial information. Oral and written communication is incorporated in 16 core surveying courses and 19 core GIS courses. Because much of spatial information systems is a communication process, it is critical that students gain skills and refinement in oral and written communication. Survey plats and deeds, maps, methodology, and project results are all important components of communication. In the field of GIS, many projects rely on GIS personnel to improve data sharing and public access to data to facilitate acquisition of information and knowledge. Similarly, nearly all courses focus on spatial applications and

enhance computer literacy skills through use of specialized software programs designed to process spatial data (e.g., ArcGIS, AutoCAD, databases and spreadsheets) as well as software to assist with communication (e.g., Microsoft Word, PowerPoint, Adobe).

Supportive Requirements

Completion of a B.S. degree in Spatial Information Systems also requires courses that are not specifically SIS courses, but are essential for providing students with a well-rounded education (Appendices 1 and 2).

Surveying option: Supportive requirements include Programming Logic and Design (CIS 2203), which emphasizes problem solving, programming logic, modeling tools, and exposure to computer programming languages. Dendrology I (FOR 2231) and Dendrology II (FOR 2291) help students gain field practice in the identification, nomenclature, classification, and ecology of Arkansas vegetation. This knowledge is important in surveying because many boundary markers were identified as specific tree species in land surveying notes, and many historical surveying records relied on witness trees for identifying locations of corners or other markers. Students may choose 3 credits from the suite of communications/ethics options including Ethics in Information Technology (CIS 4263), Legal Environment of Business (GB 3533), Logic (PHIL 3523), Public Administration (PSCI), or Communications in Small Groups (COMM 3483). Course selection depends on availability and the student's professional goals. Each of these courses offers knowledge in various aspects of critical thinking, problem solving,

business, and communication. Computer programming course options include Advanced Microcomputer Applications (CIS 3103), Introduction to Java Programming (CIS 3242), or Introduction to C+ Programming (CIS 3433), and provide students with structured approaches to information systems development. Principles of Management and Organizational Behavior (MGMT 3473) prepares students for professional and successful business management; many surveying graduates strive to one day have their own surveying company.

GIS option: Supportive requirements include several computer programming courses including Programming Logic and Design (CIS 2203), Object-Oriented Programming Language (CIS 3443), and a choice of Advanced Microcomputer Applications (CIS 3103), Introduction to Java Programming (CIS 3242), or Introduction to C+ Programming (CIS 3433). These courses provide students with structured approaches to information systems development, which is essential for employment in a GIS position. Database Management Systems (CIS 4623) helps students understand file organization and access methods, and database design. This knowledge is critical for GIS students because characteristics of spatial data not only include location, but also include attributes. Attributes describe features or various aspects of objects and are organized in databases. Biometrics in Natural Resources (FOR 3353) helps students learn statistical methods for data analysis and summarization. Students may choose 3 credits from the suite of communications/ethics options including Ethics in Information Technology (CIS 4263), Legal Environment of Business (GB 3533), Logic (PHIL 3523), Public

Administration (PSCI), or Communications in Small Groups (SPCH 3483). Course selection depends on availability and the student's professional goals. Each of these courses offers knowledge in various aspects of critical thinking, problem solving, business, and communication. Principles of Management and Organizational Behavior (MGMT 3473) prepares students for professional and successful business management; many GIS graduates strive to one day have their own consulting company.

Free electives

Over the past 5 years, SIS students have enrolled in several different types of electives (Table 2.3). The most popular electives among SIS students are physical education electives including health and nutrition, weight training, first aid, and outdoor recreation. Business-related courses, math/sciences, forest resources, and computer information systems are also popular electives among SIS students (Table 2.3). Many students express interest in starting their own surveying or GIS consulting businesses; thus business and finance classes would be beneficial. In spring 2010, a new SIS course was offered (SIS 475V, Geoprocessing with Python). This course was a popular elective among SIS majors; 7 seniors enrolled in it as an elective course because knowledge of Python programming script will make them marketable in the GIS world (see Table 2.5).

Table 2.3. Types of electives SIS students take during their undergraduate education.

Department	Type of course	Number	Percent
Agriculture	Agriculture	1	1.7
	Animal science	1	
Arts & Humanities	Ceramics	1	2.5
	Drawing	1	
	Creative writing	1	
Business	Finance	8	16.7
	Business	6	
	Economics	6	
Computer Information Systems	Programming	6	10.8
	PC Maintenance	2	
	Networks and mgt.	4	
	Practicum	1	
Education	Physical education	35	29.20
Forest Resources	Forestry	11	11.7
	Wildlife	3	
Math & Science	Chemistry	5	12.5
	Horticulture	1	
	Anatomy	2	
	Meteorology	7	
Social Sciences	Psychology	1	5.0
	Government	2	
	Criminal justice	3	
Spatial Information Systems	Python programming	10	10.0
	Undergrad. research	2	
	TOTAL	120	100

Relationship between Program Content and SIS trends

Surveying

Surveyors define land and water boundaries and write descriptions of land for deeds, leases, and other legal documents. The Occupational Outlook Handbook through the Bureau of Labor Statistics (<http://www.bls.gov/oco/ocos040.htm>) states that occupations related to surveying have a faster than average employment growth. They estimate a 19% expected growth from 2008-2018. Thus, surveyors are in demand across the nation. In Arkansas, surveyors are hired through surveying and mapping companies, oil and gas operations, engineering firms, building inspecting companies, mining companies, and private consulting businesses.

Several skills were identified from several sources (i.e., Academic Skills Guide for Land Surveyors, Arkansas Society of Professional Surveyors, and personal communication with licensed surveyors) as essential for providing the academic foundation necessary for completing the state licensure exam and for obtaining the knowledge necessary to be a quality surveyor (Table 2.4). The surveying curriculum incorporates these skills to prepare students for the exam and for successful surveying careers (Table 2.4).

Table 2.4. Skills necessary to be successful as a surveying professional and the associated courses required for a B.S. degrees in Spatial Information Systems with a Surveying option through the School of Forest Resources at the University of Arkansas at Monticello.

Skill	Description	Course(s)
Interpersonal and team skills	Ability to work well in teams to successfully accomplish a given task	SIS 2014, SIS 3153, SIS 3264, SIS 3814, SPCH 3483, SIS 4883
Cartography	Create effective and informative maps	SIS 2023, SIS 3814, SIS 3923, SIS 3843
Math (algebra, calculus, trigonometry, geometry)	Apply mathematical concepts to calculate angles, distance, and position	General requirements, SIS 2014, SIS 2023, SIS 2114, SIS 3264, SIS 3814, SIS 4454
Using and managing survey equipment	Skills needed to use survey equipment and collect spatial data	SIS 1001, SIS 2014, SIS 2023, SIS 2114, SIS 3264, SIS 4454
GIS	Use software to analyze location data and solve spatial problems	SIS 3814, SIS 3843, SIS 3923, SIS 4454
Aerial photo interpretation	Understand features on aerial photos or satellite imagery, and extract information	SIS 3923, SIS 4633
GPS	Be competent with survey-grade GPS receivers and understand how to process GPS data	SIS 3814, SIS 4193
Ethics and law	Understanding legal and ethical requirements of working with spatial data and data quality	SIS 2014, SIS 3843, SIS 3923, SIS 4813, SIS 4454, SIS 4691, SIS 4883, CIS 4263, GB 3533, MGMT 3473
Communication	Good oral and written skills, also customer support skills	All courses help develop communication skills
Organizational skills and project management	Manage several projects, data management, budgeting of time and money	SIS 3814, SIS 3843, SIS 3923, SIS 4454, FOR 3353, MGMT 3473
Microcomputer applications	Be familiar with computer applications, data storage, and processing	All SIS and CIS courses
Database skills	understand structure, usage, and queries	SIS 3814, SIS 3843
Tree identification skills	identify tree species used for boundary markers or witness trees	FOR 2231, FOR 2291

GIS

Students who receive degrees in SIS with a GIS option are highly marketable. The latest trend in GIS is toward geographic design, which is “a systematic methodology for geographic planning and decision making” (J. Dangermond, president of Environmental Systems Research Institute [ESRI], the leader in GIS software producers and freelance development using GIS technology).

As human populations are increasing, the demand on the earth’s resources is also increasing. The human demand for space, wilderness, development, and products may fragment landscapes, pollute air and water, or impact wild species and their habitats. People with expertise in GIS have the ability and skill to help agencies, organizations, companies, and citizens develop models of what could happen under different scenarios involving landscapes, and then determine methodology to create desired conditions. For instance, a GIS graduate may work for school districts who want to design bus routes to minimize fuel costs and usage. Law enforcement agencies may hire GIS professional to help identify crime hot spots so money and personnel resources can be better targeted for crime prevention. Urban planners use GIS expertise to design cities with green space, efficient travel networks, and beautiful skylines. Natural resource agencies or organizations hire GIS professional to analyze wildlife-habitat relationships, design timber harvests, or assess ecological impacts of a specific land use activity.

GIS is a growing field and students generally do not have difficulty finding job opportunities. In fact, approximately 50 jobs per month are listed through the GIS jobs clearinghouse (<http://www.gjc.org>).

According to information collected by ESRI and other GIS professionals, several skills

are required to succeed as a GIS analyst (Table 2.5). The course curriculum designed for students pursuing the GIS option incorporates these skills (Table 2.5).

Table 2.5. Skills necessary to be successful as a GIS professional and the associated required courses teaching those skills to students pursuing B.S. degrees in Spatial Information Systems with a GIS option through the School of Forest Resources at the University of Arkansas at Monticello.

Skill	Description	Course(s)
understanding spatial data structure	understanding anatomy and reasoning behind spatial data structure	SIS 1001, SIS 2023, SIS 3814
understanding algorithms	algorithms used to process spatial data	SIS 3814, SIS 3843, SIS 4463
data entry	enter and edit data into databases without errors	SIS 3814, SIS 3843, SIS 4713, CIS 4623
data conversion	create spatial data or convert from one format to another	SIS 3814, SIS 3843, SIS 3923, SIS 4463, SIS 4633, SIS 4713
use GPS data	work with x, y coordinates collected with GPS	SIS 3814, SIS 4193, SIS 4713, SIS 4883
data maintenance	ensure quality control and create metadata	SIS 3843, SIS 4713, SIS 4883
geoprocessing	solve spatial problems with GIS analysis	SIS 3814, SIS 3843, SIS 4463, SIS 4633, SIS 4713
model building	create models of GIS processes to allow for a workflow to be built	SIS 3843, SIS 4713
cartographic design	create effective and informative maps	SIS 2023, SIS 3814, SIS 3843, SIS 3923, SIS 4463, SIS 4713
programming	understand what it is and be familiar with common languages (e.g., C++, Python, .NET)	CIS 2203, CIS 3443, CIS 3243, CIS 3433
object-oriented programming	learn object-oriented concepts and be able to apply to GIS	CIS 3433
database skills	understand structure, usage, and queries	SIS 3814, SIS 3843, CIS 4623
web services	creating services to provide spatial data to clients	SIS 4713

Table 2.5 (Cont.)

Skill	Description	Course(s)
communication	good oral and written skills, also customer support skills	all courses help develop communication skills
project management skills	data management, budgeting of time and money	SIS 3814, SIS 3843, SIS 3923, SIS 4463, SIS 3933, FOR 3353, MGMT 3473
problem-solving	apply GIS concepts to different domains; multidisciplinary	all courses help develop problem-solving skills
ethics and law	understanding legal and ethical requirements of working with spatial data and data quality	CIS, 4263, GB 3533, SIS 3843, SIS 3923, SIS 4813, SIS 4691, SIS 4883

Recommended Sequence of Courses

Students who begin their studies as freshman during the fall semester are eligible for a baccalaureate degree in eight semesters if they file a Program of Study approved by his/her advisor. The sequence of courses for the A.S. Degree in Land Surveying Technology (Table 2.6), the B.S. degree in SIS with the Surveying option (Table 2.7) and the GIS option (Table 2.8) is provided.

Table 2.6. Recommended sequence of courses for an A.S. degree in Land Surveying Technology.

Fall Semester						Spring Semester					
Course			Name	Credits	Course			Name	Credits		
Freshman (17 hours)	SIS	1001	Introduction to SIS	1	Freshman (15 hours)	SIS	2023	Geographic Coord &Cartog.	3		
	CIS	2223	Microcomputer Applications	3		ENGL	1023	Composition II	3		
	ENGL	1013	Composition I	3		MATH	1033	Trigonometry	3		
	ESCI	1073	Earth and Atmosphere and ESCI 1081 (lab)	4		PSCI	2213	American National Government	3		
		OR				PSY	1013	Introduction to Psycholgy	3		
	ESCI	1063	Elements of Geology and ESCI 1051 (lab)				OR				
	HIST	1013	Survey of Civilization I			SOC	2213	Introduction to Sociology			
		OR		3							
	HIST	1023	Survey of Civilization II								
Sophomore (17-19 hours)	MATH	1043	College Algebra	3	Sophomore (18 hours)	SIS	3153	Survey Plats and Deeds	3		
	SIS	2014	Boundary Surveying	4		SIS	3264	Route & Construction Surveying	4		
	ENGL	2114	Plane Surveying	4		SIS	3814	Intro to GIS, GPS, Rem Sen.	4		
	GEOG	3253	Technical Writing	3		FOR	3353	Biometrics in Natural Resources			
		2213	General Geography I			ENGL	2283	Survey of World Literature I	3		
		OR		3			OR				
	GEOG	2223	General Geography II			ENGL	2293	Survey of World Literature II	5		
	MATH	1073	Compact Calculus			PHYS	1003	Elements of Physics and PHYS 1021 (lab)			
		OR		3-5			OR		4		
	MATH	2255	Calculus I			PHYS	2203	General Physics and PHYS 2231 (lab)			

Table 2.7. Recommended sequence of courses for a B.S. degree in Spatial Information Systems with a surveying option.

Fall Semester				Spring Semester			
	Course	Name	Credits		Course	Name	Credits
Freshman (16 hours)	CIS 2223	Microcomputer Applications	3	Freshman (16 hours)	CIS 2203	Programming Logic & Design	3
	ENGL 1013	Composition I	3		ENGL 1023	Composition II	3
	MATH 1043	College Algebra	3		MATH 1033	Trigonometry	3
	SIS 1001	Introduction to SIS	1		SIS 2023	Geographic Coord &Cartog.	3
	ART 1053	Art Appreciation			PSY 1013	Introduction to Psychology	
		OR	3			OR	3
	MUS 1133	Music Appreciation			SOC 2213	Introduction to Sociology	
	HIST 1013	Survey of Civilization I					
		OR	3				
Sophomore (16 hours)	HIST 1023	Survey of Civilization II		Sophomore (17-19 hours)	ESCI 1073	Earth & Atmosphere	3
	ENGL 3253	Technical Writing	3			OR	
	SIS 2114	Plane Surveying	4		ESCI 1063	Elements of Geology	3
	ENGL 2283	Survey of World Literature I			FOR 3353	Biometrics in Natural Resources	
		OR	3		MATH 1073	Compact Calculus	3
	ENGL 2293	Survey of World Literature II				OR	
	GEOG 2213	General Geography I			MATH 2255	Calculus I	5
		OR	3		SIS 3814	Intro to GIS, GPS, Rem Sen.	4
	GEOG 2223	General Geography II			One of the following:		
	PSCI 2213	American National Govt.	3		PHIL 3523	Logic	
					PHIL 3623	Ethics	
					PSCI 3423	Legislative Process	3
					PSCI 3433	Public Administration	
					COMM 3483	Communication in Small Groups	

Table 2.7 (Cont.)

Fall Semester				Spring Semester			
	Course	Name	Credits		Course	Name	Credits
Junior (15 hours)	PHYS	1003 Elements of Physics AND	3	Junior (14 hours)	FOR	2291 Dendrology Lab II	1
	PHYS	1021 Elements of Physics Lab	1		SIS	3153 Survey Plats & Deeds	3
		OR			SIS	3264 Route & Construction Surv.	4
	PHYS	2203 General Physics	3		SIS	3843 Advanced GIS I	3
	PHYS	2231 General Physics Lab	1		One of the following:		
	FOR	2231 Dendrology Lab I	1		COMM	1023 Public Speaking	
	SIS	2014 Boundary Surveying	4		COMM	2283 Bus. and Profess. Speaking	3
	SIS	3923 Remote Sensing	3		COMM	2203 Interpersonal Communication	
	XXX	XXXX Elective	3				
Senior (16 hours)	MGMT	3473 Principles of Management	3	Senior (11-15 hours)	SIS	4883 SIS Practicum	3
	SIS	4813 Law & Profess. in Geomatics	3		XXX	XXXX Elective	3
	SIS	4193 Advanced GPS	3		XXX	XXXX Elective	3
	SIS	4454 Advanced Surveying	4		One of the following:		
	XXX	XXXX Elective	3		CIS	3103 Advanced Microcomputer App.	
					CIS	3213 Intro to Java Programming	3
					CIS	3433 Intro to C# Programming	
					SIS	4633 Digital Photogrammetry	

Table 2.8. Recommended sequence of courses for a B.S. degree in Spatial Information Systems with a surveying option.

Fall Semester				Spring Semester				
	Course	Name	Credits		Course	Name	Credits	
Freshman (16 hours)	CIS 2223	Microcomputer Applications	3	Freshman (16 hours)	CIS 2203	Programming Logic & Design	3	
	ENGL 1013	Composition I	3		ENGL 1023	Composition II	3	
	MATH 1043	College Algebra	3		MATH 1033	Trigonometry	3	
	SIS 1001	Introduction to SIS	1		SIS 2023	Geographic Coord &Cartog.	3	
	ART 1053	Art Appreciation			PSY 1013	Introduction to Psycholgy		
		OR	3			OR	3	
	MUS 1133	Music Appreciation			SOC 2213	Introduction to Sociology		
	HIST 1013	Survey of Civilization I						
Sophomore (16 hours)		OR	3	Sophomore (17-19 hours)				
	ENGL 3253	Technical Writing	3		ESCI 1073	Earth & Atmosphere	3	
	SIS 2114	Plane Surveying	4			OR		
	ENGL 2283	Survey of World Literature I			ESCI 1063	Elements of Geology	3	
		OR	3		FOR 3353	Biometrics in Natural Resources		
	ENGL 2293	Survey of World Literature II			MATH 1073	Compact Calculus	3	
	GEOG 2213	General Geography I				OR		
		OR	3		MATH 2255	Calculus I	5	
Sophomore (16 hours)	GEOG 2223	General Geography II			SIS 3814	Intro to GIS, GPS, Rem Sen.	4	
	PSCI 2213	American National Govt.	3		One of the following:			
					PHIL 3523	Logic		
					PHIL 3623	Ethics		
					PSCI 3423	Legislative Process	3	
					PSCI 3433	Public Administration		
					COMM 3483	Communication in Small Groups		

Table 2.8 (Cont.)

Fall Semester				Spring Semester			
	Course	Name	Credits		Course	Name	Credits
Junior (15 hours)	PHYS	1003 Elements of Physics AND	3	Junior (14 hours)	FOR	2291 Dendrology Lab II	1
	PHYS	1021 Elements of Physics Lab	1		SIS	3153 Survey Plats & Deeds	3
		OR			SIS	3264 Route & Construction Surv.	4
	PHYS	2203 General Physics	3		SIS	3843 Advanced GIS I	3
	PHYS	2231 General Physics Lab	1		One of the following:		
	FOR	2231 Dendrology Lab I	1		COMM	1023 Public Speaking	
	SIS	2014 Boundary Surveying	4		COMM	2283 Bus. and Profess. Speaking	3
	SIS	3923 Remote Sensing	3		COMM	2203 Interpersonal Communication	
	XXX	XXXX Elective	3				
Senior (16 hours)	MGMT	3473 Principles of Management	3	Senior (11-15 hours)	SIS	4883 SIS Practicum	3
	SIS	4813 Law & Profess. in Geomatics	3		XXX	XXXX Elective	3
	SIS	4193 Advanced GPS	3		XXX	XXXX Elective	3
	SIS	4454 Advanced Surveying	4		One of the following:		
	XXX	XXXX Elective	3		CIS	3103 Advanced Microcomputer App.	
					CIS	3213 Intro to Java Programming	3
					CIS	3433 Intro to C# Programming	
					SIS	4633 Digital Photogrammetry	

Schedule of Course Offerings

Most of the courses required for B.S. degrees in SIS are offered every year. Some courses are offered every other year (i.e., Digital Photogrammetry is offered spring of even years, and Spatial Statistics is offered fall of odd years). Introduction to GIS, GPS, and Remote Sensing is offered fall and spring semesters (Table 2.9).

Table 2.9. Schedule of course offerings required for a B.S. Degree in Spatial Information Systems with Surveying and GIS options.

Course	Required for Surveying	Required for GIS	Last offered Semester	Last offered Year
REQUIRED COURSES				
SIS 1001 Introduction to Spatial Information Systems	x	x	Fall	2010
SIS 2014 Boundary Surveying	x	x	Fall	2010
SIS 2023 Geographic Coord. Systems & Cartography	x	x	Spring	2011
SIS 2114 Plane Surveying	x		Fall	2010
SIS 3153 Survey Plats and Deeds	x		Spring	2011
SIS 3264 Route and Construction Surveying	x		Spring	2011
SIS 3814 Introduction to GIS, GPS, Remote Sensing	x	x	Spring	2011
SIS 3843 Advanced GIS I	x	x	Spring	2011
SIS 3923 Remote Sensing	x	x	Fall	2010
SIS 4463 Digital Remote Sensing or SIS 3933 Spatial Statistics		x	Fall	2010
SIS 4813 Law and Professionalism in Geomatics	x	x	Fall	2010
SIS 4633 Digital Photogrammetry		x	Spring	2011
SIS 4193 Advanced GPS	x		Fall	2010
SIS 4454 Advanced Surveying	x		Fall	2010
SIS 4713 Advanced GIS II		x	Fall	2010
SIS 4691 Seminar	x	x	Spring	2011
SIS 4883 SIS Practicum	x	x	Spring	2011
CIS 2203 Programming Logic and Design	x	x	Fall	2010
CIS 3443 Object-Oriented Programming Language		x	Fall	2010
FOR 2231 Dendrology Laboratory I	x		Fall	2010
FOR 2291 Dendrology Laboratory II	x		Spring	2011
FOR 3353 Biometrics in Natural Resources	x	x	Spring	2011
CIS 4263 Ethics in Information Technology or GB 3533 Legal Environment of Business or PHIL 3523 Logic or PSCI 3433 Public Administration or SPCH 3483 Communication in Small Groups	x	x	Spring	2011
CIS 3103 Advanced Microcomputer Applications or CIS 3243 Introduction to Java Programming or CIS 3433 Introduction to C+ Programming or SIS 4633 Digital Photogrammetry	x	x	Spring	2011
MGMT 3473 Principles of Mgt and Organizational Behavior	x	x	Spring	2011
CIS 4623 Database Management Systems		x	Fall	2010

Process for Introduction of New Courses

If a new course, a change in an existing course, or a new section is deemed necessary, faculty discuss it at an internal faculty meeting through the School of Forest Resources. A Curriculum and Standards Form is prepared and then signed by the unit head. The form is then sent to the Academic Council for a 10-day review. During this 10-day review, each academic unit representative determines how the proposed change will impact his/her respective unit. Once the proposed change is approved by the Academic Council, it is sent to the Curriculum and Standards Committee, which is comprised of 1 representative from each academic unit. The Committed edits the form, and if necessary, sends it back to the unit for revisions. Once it is approved from the Curriculum and Standards Committee, the Assembly approves it at the next regularly scheduled meeting (2/semester). Finally, the Chancellor signs off on the new change and the process is complete.

Course Syllabi

Syllabi for courses required in the SIS program are listed below in the following sequence in Appendix 3:

SIS 1001	Introduction to Spatial Information Systems
SIS 2014	Boundary Surveying
SIS 2023	Geographic Coordinate Systems and Cartography
SIS 2114	Plane Surveying
SIS 3153	Survey Plats and Deeds
SIS 3264	Route and Construction Surveying
SIS 3814	Introduction to GIS, GPS, and Remote Sensing
SIS 3843	Advanced GIS I
SIS 3923	Remote Sensing
SIS 3933	Spatial Statistics
SIS 4183	Law and Professionalism in Geomatics
SIS 4193	Advanced Geographic Positioning Systems
SIS 4454	Advanced Surveying
SIS 4463	Digital Remote Sensing

SIS 4633	Digital Photogrammetry
SIS 4691	Seminar
SIS 4713	Advanced GIS II
SIS 4883	Practicum
FOR 2231	Dendrology Lab I
FOR 2291	Dendrology Lab II
FOR 3353	Biometrics in Natural Resources
CIS 2203	Programming Logic and Design
CIS 3433	Object-Oriented Programming Language
CIS 4263	Ethics in Information Technology (syllabus unavailable)
CIS 3103	Advanced Microcomputer Applications
CIS 3243	Introduction to Java Programming
CIS 3433	Introduction to C# Programming
CIS 4623	Database Management Systems
MGMT 3473	Principles of Mgt and Organizational Behavior
GB 3533	Legal Environment of Business
PHIL 3523	Logic
PSCI 3433	Public Administration (syllabus unavailable)
COMM 3483	Communication in Small Groups

3. PROGRAM FACULTY INFORMATION

Program Faculty Information

The School of Forest Resources (SFR) currently employs 12 full-time faculty members, 1 adjunct faculty, and 2 staff members with teaching assignments who report to the Dean. One additional faculty member (Dr. Jon Barry) is an extension forestry specialist at the Southwest Research and Extension Center near Hope, AR, and teaches a 4-week Forest Inventory course during summer camp. By rank, the full-time SFR teaching faculty consists of 2 Instructors, 1 Assistant Professor, 5 Associate Professors, and 4 Professors. All except the instructors have a Ph.D. degree (Table 3.1). Five individuals provide the main instruction for the SIS program through the SFR (Table 3.1).

Although several faculty teach in more than one of the three SFR programs, others teach only in the FOR, WLF, or SIS program. Five faculty teach only in the Forestry (FOR) program, none teach only in the Wildlife (WLF) program, and the two surveying instructors teach only in the Spatial Information Systems (SIS) program. The other five faculty members teach courses required by multiple programs.

Most of the required courses for the SIS program are taught by SFR faculty; however, many required courses and restricted electives are taught by faculty in other UAM departments, including Mathematics and Natural Sciences, Computer Information Systems, Business, Arts and Humanities, and Social and Behavioral Sciences. Most of these faculty have 9-month appointments (Table 3.2).

All SFR faculty have 12-month appointments. SFR faculty generally have both teaching responsibilities to UAM, and research and extension responsibilities to the UA Division of

Agriculture, although the allocation percentages vary. Currently, five faculty positions are primarily UAM funded, while 7 positions are funded mainly by UA Division of Agriculture. Most faculty members are expected to spend time teaching, conducting research, and participating in extension activities. Some have heavier teaching responsibilities (i.e., 60-100% teaching), while others have heavier research responsibilities (i.e., 60% research).

In the year 2000, there were 12 full-time faculty in the SFR. Today there are also 12, though 18 SFR faculty positions have turned over in the past 10 years. Some of the positions that became vacant were either temporarily frozen due to budget limitations, or converted to a different function or discipline. For example, four new faculty were hired for the expanding SIS program within the past 10 years. Recently, teaching and research workloads of individual faculty members have increased tremendously as some faculty members have left in the past few years and their positions were frozen due to budget limitations. The resulting teaching load and graduate student load then had to be redistributed.

Table 3.1. Profiles of current School of Forest Resources faculty.

Faculty Member	Academic Rank or Title	Major Field	Highest Degree Held/Year/Inst.	Experience (years)		
				Current Institution	Other Institution	Non-academic
	Dean, SFR	Administration				
Philip A. Tappe	Director, AFRC	Administration	Ph.D./1991/Clemson University	20	--	--
	Professor	Wildlife & Forest Management				
Joshua Adams	Assistant Professor	Forest Tree Improvement	Ph.D./2010/Mississippi State University	1	--	--
Jon E. Barry ¹	Assistant Professor	Silviculture/Extension	Ph.D./1994/Clemson University	5	--	11
Alexandra B. Felix-Locher ²	Assistant Professor	Spatial Information Systems/ Wildlife Management	Ph.D./2008/Michigan State University	2	10	2
Robert L. Ficklin	Associate Professor	Forest Soils	Ph.D./2002/University of Missouri	9	2	10
Ronald R. Harris	Instructor	Surveying	B.S./1995/Michigan Technological Univ.	2	--	27
Thomas D. Jacobs	Instructor	Surveying	B.S./1978/Univ. of Arkansas - Monticello	5	--	27
Robert E. Kissell, Jr.	Associate Professor	Spatial Information Systems/ Wildlife Management	Ph.D./1996/Montana State Univ.	9	2	2
Hal O. Liechty	Professor	Forest Hydrology/Ecology	Ph.D./1994/Michigan Technological Univ.	15	10	2

Table 3.1. (Cont.)

Faculty Member	Academic Rank or Title	Major Field	Highest Degree Held/Year/Inst.	Experience (years)		
				Current Institution	Other Institution	Non-academic
Sayeed R. Mehmood	Associate Professor	Forest Economics and Policy	Ph.D./1999/Auburn University	10	7	--
Matthew H. Pelkki	Professor	Forest Resource Economics, Management, and Policy	Ph.D./1992/Univ. of Minnesota	10	15	1
Jamie L. Schuler	Assistant Professor	Silviculture	Ph.D./2005/North Carolina State Univ.	6	7	1
H. Christoph Stuhlinger	Univ. System Forester	Silviculture	M.S./1983/Louisiana State University	8	5	16
Lynne C. Thompson	Adjunct Professor	Forest Protection	Ph.D./1976/Univ. of Minnesota	30	4	--
Christopher L. Watt	Program Technician II/Instructor	Wildlife Management	M.S./2001/Univ. of Arkansas - Monticello	11	--	--
Bobby G. Webb	UAM Forest Manager/Instructor	Forest Management	M.S./1991/Texas A&M University	21	2	--
Robert C. Weih	Professor	Spatial Information Systems/Forest Biometrics	Ph.D./1991/Virginia Tech	17	7	6
Don White, Jr.	Associate Professor	Wildlife Ecology	Ph.D./1996/Montana State University	11	10	--

¹ Extension forestry specialist at the Southwest Research and Extension Center, Hope, AR.

² Left in 2010 to accept a position at Grand Valley State University, Allendale, MI. A search is currently underway to replace this position.

Table 3.2. Profiles of faculty in departments other than the School of Forest resources who instruct courses required for students majoring in SIS.

Faculty Member	Course(s) Taught	Required for Degree	Academic Rank or Title	Major Field	Highest Degree Held Degree/Yr./Inst.
Farrokh Abedi	Calculus I – MATH 2255	Both	Associate Professor Assistant Dean of Mathematics	Mathematics	Ph.D./1983/Oklahoma State University
Michael Alexander	Principles of Mgt and Organiz. Behavior – MGMT 3473	Both	Assistant Professor	Business Management	D.B.A./2004/Nova Southeastern University
Gregory A. Borse	Logic – PHIL 3523	Both	Assistant Professor	English Literature and Philosophy	Ph.D./2003/Louisiana State University
Richard A. Corby	General Geography II – GEOG 2223	GIS	Assistant Professor	History	Ph.D./1976 /Indiana University
William R. Daniels	Legal Environment of Business – G B 3533	Both	Adjunct	Law/History	J.D./1978/University of Arkansas
Charles Dolberry	Trigonometry –MATH 1033 Compact Calculus – MATH 1073	Both Surveying	Associate Professor	Mathematics	Ph.D./2002/Auburn University
Carol Efird	Trigonometry –MATH 1033 Compact Calculus – MATH 1073	Both Surveying	Associate Professor	Mathematics	Ed.D./2002/Univ. of Arkansas – Monticello
Bryan Fendley	Intro to Java Programming – CIS 3243 Object-oriented Programming Language –CIS 3443	Both GIS	Adjunct	Social Science	M.S./1996/Henderson State University
Jean P. Hendrix	Adv. Microcomp. App. – CIS 3103 Introduction to C# – CIS 3433 Object-Oriented Programming – CIS 3443 Database Mgt Systems – CIS 4623	Both Both GIS GIS	Associate Professor	Computer Information Systems	M.B.A./1984/University of Arkansas

Table 3.2. (Cont.)

Faculty Member	Course(s) Taught	Required for Degree	Academic Rank or Title	Major Field	Highest Degree Held Degree/Yr./Inst.
Angela J. Marsh	Advanced Microcomputer Applications - CIS 3103	Both	Associate Professor	Computer Information Systems	M.S./1982/Arkansas State University
Gary T. Marshall	Communication in Small Groups – SPCH 3483	Both	Professor	Speech Communication	Ph.D./1991/Southern Illinois University
Guy Nelson	Trigonometry -MATH 1033 Compact Calculus - MATH 1073	Both Surveying	Instructor	Mathematics	M.S./1989/University of Arkansas
J. Dennis Patterson	Principles of Management and Organizational Behavior – MGMT 3473	Both	Associate Professor	Strategic Management	Ph.D./1993/University of Illinois
Crystal Ratliff	Legal Environment of Business – G B 3533	Both	Adjunct	Political Science and Law	J.D./2007/Bowen School of Law
Victoria Ryburn	Trigonometry -MATH 1033	Both	Instructor	Mathematics	M.S./2008/University of Arkansas
Hassan Sayyar	Trigonometry -MATH 1033 Compact Calculus – MATH 1073 Calculus I – MATH 2255	Both Surveying Both	Associate Professor	Mathematics	Ph.D./1994/Kansas State University
Lori K. Selby	Programming Logic and Design - CIS 2203 Ethics in Information Technology - CIS 4263	Both	Associate Professor	Computer Information Systems	M.B.A./1983/University of Arkansas
Christopher J. Wright	Public Administration – PSCI 3433	Both	Assistant Professor	Political Science	Ph.D./2008/University of Southern California

Academic and Professional Competency

The SFR faculty are professionals with a range of backgrounds and expertise (Appendix 4). Combined teaching and research experience at UAM and at other institutions totals more than 350 years. Areas of interest/specialization include silviculture, landscape ecology, spatial information systems, wildlife ecology and management, soils, surveying, hydrology, forest ecology, forest resource economics and management, natural resources policy, forest products, forest pests, fire, and biometrics. Professional experiences include both U.S and international settings. Faculty members have attended universities in the southern, northern, midwestern, and northwestern regions of the United States. Doctoral degrees represent 10 different universities, while all universities attended (including Master's and Bachelor's degrees) total 24 (Table 3.1).

Most of the SFR faculty have active research programs, and they have become more successful in obtaining research funding. Although limited internal funds are made available to support faculty members' teaching and travel programs, research funding must usually be sought externally. In the past five years, faculty have been awarded more than \$4.5 million in outside funding. More than 100 research articles have been published or accepted for publishing. Current and recent research topics include biomass/bioenergy, wildlife management and ecology (deer, elk, swamp rabbits, bear, woodcock, feral hogs), pine and hardwood management, fire ecology, water quality, economic impacts of forest pests, and geographic information systems. Faculty in multiple disciplines within the SFR (i.e., SIS, forestry, wildlife) collaborate on research and produce quality deliverables. Several faculty members are known regionally and even nationally for expertise in their fields.

Most faculty are active in professional organizations, and regularly attend state, national, and international conferences and other events for professional development. The 2 surveying

instructors are members of the Arkansas Society of Professional Surveyors. One SIS instructor is a certified GIS instructor through the Environmental Systems Research Institute (ESRI). SIS faculty members are affiliated with numerous professional organizations, including the Society of American Foresters, The Wildlife Society, International Association for Landscape Ecologists, GIS-related societies, and professional Surveying societies (see Appendix 4). SIS faculty members also serve as advisors for student organizations, including the student chapter of the Wildlife Club, and SIS Club.

Academic Credentials Required for Adjunct/Part-time Faculty Teaching Program Courses

Currently there are no adjunct/part-time faculty teaching major SIS program courses.

Faculty Evaluation Procedure

Faculty undergo annual performance evaluations by the SFR Dean. The evaluation includes performance regarding 5 categories including teaching/advising, research, extension activities, service, and administration (Appendix 5). Each year, every faculty member is required to submit an evaluation report, which is reviewed by a committee. Each member of the committee scores the individual on a scale of 1—5; (5 = exceptional, 4—4.9 = exceeds expectations, 3—3.9 = meets expectations, 2—2.9 = below expectations, 1—1.9 = unsatisfactory performance). Each of the 5 categories are scored according to specific criteria and multiplied by a weighted value equivalent to the proportion of the appointment that falls into each category. The final score is the summation of all the weighted values. Additionally, students evaluate their teachers at the conclusion of each course using a standard evaluation form (there is no peer-evaluation of teaching). Excellence in teaching is required at SFR. Recently, two teachers with

poor evaluations were released and are no longer on the SFR faculty.

In the past five years, eight SFR faculty members have been promoted. Promotional packages are reviewed by peers, the Dean, The UAM Chancellor and Provost, the Board of Trustees, and a specially selected UAM Promotion Committee. Faculty with UA Division of Agriculture funding are also reviewed by a representative from that Division.

The SFR also has an annual awards program where outstanding faculty members and staff are recognized. These awards are based on overall performance, including teaching skills and research efforts.

Average Number of Courses and Credit Hours Taught

On average, SIS faculty teach approximately 13–14 hours per year (Table 3.3). Credit hours per instructor vary by semester and year, as some courses such as spatial statistics and digital photogrammetry are offered only in odd years. SIS faculty teach 1–3 courses per semester (Table 3.3).

Table 3.3. Number of courses and credit hours taught by full-time program faculty during the fall and spring semesters. Only faculty who teach courses related to SIS degrees are included. Total credits taught and number of credits for the current year are included. Courses in parentheses are not required for SIS degrees.

Faculty	Fall courses	Credits	Spring courses	Credits	Total credits	Current year
Alexandra B. Felix-Locher ¹	Intro to SIS	1				
	Intro to GIS, GPS, Remote Sensing	4	Intro to GIS, GPS, Remote Sensing	4	15	17 ²
	Advanced GIS II	3	SIS Practicum ²	3		
Ronald R. Harris	Boundary Surveying	4	Geographic Coord. Systems & Cartography	3	14	15 ²
	Plane Surveying	4	Survey Plats and Deeds	3		
Thomas D. Jacobs	Law and Professionalism in Geomatics	3	Route and Construction Surveying	4	17	17
	Advanced GPS	3	SIS Practicum ³	3		
	Advanced Surveying	4				
Robert E. Kissell, Jr.	Remote Sensing	3	Digital Photogrammetry ⁴	3		
	Spatial Statistics ⁴	3	Biometrics in Natural Resources	3	12	12
Lynne C. Thompson	(Forest fire and herbicides)	3	Seminar	1	7	7
	(Forest pest management)	3				
Robert C. Weih, Jr.	Digital Remote Sensing	3	Advanced GIS I	3		
			Geoprocessing with Python	3	12	12
			(Forest Measurements)	3		

¹ Left in 2010 to accept a position at Grand Valley State University, Allendale, MI. A search is currently underway to replace this position.

² Credits taught for current year do not match total credits because course loads have been shifted for fall semester 2010 due to a faculty member taking sabbatical.

³ Course is co-taught.

⁴ Spatial statistics is offered fall of odd years and digital photogrammetry is offered spring of odd years.

4. PROGRAM RESOURCES

Institutional Support Available for Faculty Development

The School of Forest Resources is fortunate to have excellent support in teaching, research, and service. Because teaching, research, and service are all interrelated, separate avenues of support do not exist; rather, institutional support is collectively available for all areas.

Administrative Support

The School of Forest Resources has four clerical staff that provide excellent administrative support to the Dean and faculty: three secretaries and an administrative associate. In addition, the School employs a fiscal support analyst/business manager. These individuals perform a myriad of duties related to the smooth implementation of the teaching program, including preparation of letters to prospective students, maintaining financial records, preparing reports and purchase requisitions, maintaining student files and alumni address lists, typing, and photocopying. While duties of the clerical staff are clearly delineated for maximum efficiency, cross-training is underway so that each can fill-in for the others in the event of a scheduled or unscheduled absence.

The support staff has a dedicated file server, 5 networked laser printers and multiple scanners and labelers. Administrative personnel have applications installed that give them secure access to student academic records and other bookkeeping records that are available by restricted-access accounts on two university-wide systems. The UAM campus recently upgraded the administrative software (WeevilNet using the PeopleSoft platform) to update the much older Poise system.

Financial Support for Teaching, Research, Service, and Extension

The strong support for research from the UA Agricultural Experiment Station also makes a major contribution to the teaching program. Faculty often travel on research funds, when in reality both teaching and research benefit from such travel. Likewise, equipment purchased with research funds is often available for teaching use. The inseparable relationship between teaching and research is evident in the School's budget as well as its programs.

State and federal research funds have grown since the School assumed research responsibilities in the mid-1970s. The School's state and federally-appropriated research funding is over \$1.8 million, which is about 50% of the annual SFR budget. Additionally, faculty have greatly increased the amount of external funding to support research. Since initiating the School's research program in 1975, extramural funding has grown substantially. Extramural grants totaled \$1,299,139 in 2009-2010 with more than \$2.3 million acquired by faculty since 2007.

Program funding for the School of Forest Resources is divided into three major areas that represent the three topic areas for a land grant university mission (Table 4.1). Annual funding (excluding external grants) has relatively been stable. In 2011, expenditures were allocated as 32% teaching, 50% research and 18% extension, and have remained essentially constant since 2007 (Table 4.2).

Table 4.1. School of Forest Resources budget1 from 2007-2012.

Fiscal Year 2011-2012				
Budget Category	Teaching	Research	Extension	Total
Salaries	778,381	1,001,310	466,104	2,245,795
Fringe	249,453	289,379	141,696	680,528
Supplies and Expenses	131,985	193,250	38,000	363,235
Travel incl. in S&E		36,000	20,000	38,000
Work Study				
Students	8,908	-	-	8,908
Student Wages	-	19,000	-	19,000
AR For. Res. Center	-	297,400	-	297,400
Totals	1,168,727	1,836,339	647,800	3,652,866

Fiscal Year 2010-2011				
Budget Category	Teaching	Research	Extension	Total
Salaries	782,282	931,598	383,025	2,096,905
Fringe	243,956	230,105	94,607	568,668
Supplies and Expenses	162,075	192,057	38,000	392,192
Travel incl. in S&E		37,913	20,000	57,913
Work Study				
Students	10,246	-	-	10,246
Student Wages	-	14,136	-	14,136
AR For. Res. Center	-	296,883	-	296,883
Totals	1,198,559	1,702,692	535,632	3,436,943

Fiscal Year 2009-2010				
Budget Category	Teaching	Research	Extension	Total
Salaries	752,067	953,954	383,025	2,089,046
Fringe	165,265	217,621	94,607	477,494
Supplies and Expenses	141,216	131,047	30,000	302,263
Travel incl. in S&E		39,000	28,000	67,000
Work Study				
Students	2,096	-	-	2,096
Student Wages	314	29,528	-	29,842
AR For. Res. Center	-	297,400	-	297,400
Totals	1,060,958	1,668,550	535,632	3,265,141

Table 4.1. (Cont.)

Budget Category	Fiscal Year 2008-2009			
	Teaching	Research	Extension	Total
Salaries	774,285	930,254	417,189	2,074,046
Fringe	186,221	229,797	105,549	490,149
Supplies and Expenses	187,695	171,483	104,897	319,113
Travel	incl. in S&E	34,285	27,000	54,627
Work Study				
Students	6,871	-	-	8,908
Student Wages	5,381	32,896	-	27,500
AR For. Res. Center	-	316,388	-	296,883
Totals	1,062,944	1,672,650	535,632	3,271,226

Table 4.1. (Cont.)

Budget Category	Fiscal Year 2007-2008			
	Teaching	Research	Extension	Total
Salaries	752,397	982,127	417,189	2,151,713
Fringe	198,977	283,098	119,984	602,058
Supplies and Expenses	162,796	168,651	37,139	368,587
Travel	incl. in S&E	41,192	27,000	68,192
Work Study				
Students	8,269	-	-	8,269
Student Wages	5,440	32,456	-	37,896
AR For. Res. Center	-	277,363	-	277,363
Totals	1,127,879	1,784,887	601,312	3,514,078

¹ Includes funds associated with maintenance and operations of the university forest and SIS program.

Table 4.2. The percentage of the total School of Forest Resources budget¹ by category from 2007-2012.

Budget Category	Fiscal Year				
	11-12	10-11	09-10	08-09	07-08
Salaries	61	61	64	60	61
Fringe	19	17	15	15	17
Supplies and Expenses	10	11	9	13	10
Travel	1	2	2	2	2
Work Study Students	<1	<1	<1	<1	<1
Student Wages	<1	<1	1	1	1
AR For. Res. Center	9	9	9	9	8
Teaching	32	34	32	33	32
Research	50	50	51	49	51
Extension	18	16	16	19	17

¹ Includes funds associated with maintenance and operations of the university forest and SIS program.

Professional Development of Full-time SIS Program Faculty

Although SIS students take required courses from other faculty members within the School of Forest Resources and in other departments, the core SIS Program Faculty consist of Mr. Ron Harris, Mr. Tom Jacobs, Dr. Robert Kissell, JR, and Dr. Robert Weih. Dr. Alexandra Felix-Locher left the faculty in 2010, and a search is currently underway to replace her position. The SIS faculty have engaged in several professional development activities (Table 4.3) that have been funded by grants or institutional support (refer to the “*Financial support for teaching, research, service, and extension*” section above.

Table 4.3. Professional development activities of SIS faculty from 2008-2011.

Faculty	Activity	Date
Dr. Alexandra Felix-Locher ¹	The Wildlife Society Annual Conference, Miami, FL	November, 2008
	ESRI online course on GIS Analysis in 3D using ArcScene and ArcGlobe. (21 course hours)	April, 2009
	ESRI course on ArcServer setup and administration (16 course hours)	June 22-23, 2009
	ESRI Users conference in San Diego, CA	July 11-17, 2009
	Independent learning and mastering of Network Analyst and Tracking Analyst in ArcGIS	Summer, 2009
	Private Lands Management Conference, Little Rock, AR	February 9, 2010
	Arkansas Academy of Science, Little Rock, AR	April, 2010
Mr. Ron Harris, PS	Michigan Society of Professional Surveyors Annual Meeting and training seminars	February, 2008, 2009
	Kelar, AutoCAD Civil 3D 2010 (16 hours)	June, 2010
	ESRI/ACSM Survey Summit, Users conference	July, 2010
	Arkansas Society of Professional Surveyors Spring Conference	Spring, 2009, 2010
Mr. Tom Jacobs	DC CAD, AutoCAD 1009 Essentials	July, 2009
	Avatech, Civil 3D 2009 Fundamentals	August, 2008
	Comm. Tech, Civil 3D 2010 for Surveyors	July, 2009
	Navigation Electronics-Integrating GPS with Robotic Total Stations	December, 2009
	American Society of Professional Surveyors Fall Short Courses	Fall 2008, 2009, 2010
	American Society of Professional Surveyors Spring Conferences	Spring 2008, 2009, 2010, 2011

Table 4.3. (Cont.)

Faculty	Activity	Date
Dr. Robert Kissell, Jr.	Independent learning and mastering of Network Analyst and Tracking Analyst in ArcGIS	Fall, 2011
	Tennessee Chapter of The Wildlife Society	Spring 2011
	Arkansas Chapter of The Wildlife Society	Fall 2011
	American Society of Mammalogists Conference	Summer 2009
	Colloquium on Conservation of Mammal in the SE	Fall 2009
	Arkansas Academy of Science	2008
	Arkansas GIS Users Forum	2009
Dr. Robert Weih		2008
	ArcGIS Desktop I	
	ArcGIS Desktop II	2008
	ArcGIS Desktop III	2008
	Universal Trail Assessment Program (UTAP) Workshop	2008
	Writing Advanced Geoprocessing Scripts Using Python	2009
	Introduction to Geoprocessing Using Python	2009

¹ Left in 2010 to accept a position at Grand Valley State University, Allendale, MI. A search is currently underway to replace this position.

Available Library Resources

Refer to the “*Resources Available through UAM Campus*” section below.

Availability, Adequacy, and Accessibility of Campus Resources

Resources Available through the School of Forest Resources

The School of Forest Resources is fortunate to have many resources available to assist with teaching and research in the SIS program as well as Forestry and Wildlife majors. The School has over 240 computers, consisting of 11 servers, including Active Directory Domain controllers, web servers, file servers, and storage servers. Two separate storage arrays can house over 30 terabytes of data. Faculty, staff, and student accounts are created and maintained within the organization. File servers are also used to store graduate research, provide students access to class files, and share data and files within the organization through public folders. A Tape library holding 22 tapes at once is used to backup data stored on the servers and the tapes are stored in a Media safe vault. Other RD 1000 cartridges are used for redundancy of critical data and stored in the vault also.

The School also has a dedicated Web Server. The school website (<http://www.afrc.uamont.edu/sfr/>) gives information about personnel, prospective students, academics, research, outreach & extension, news & events, alumni & friends, employment opportunities, and how to contact us. Faculty supplement teaching and research with local web sites, giving students web access to syllabi, class notes and additional files for class. The School has secured wireless access coverage in 90% of the building. There is also a Point-to-Point wireless connection to the new Work Center, providing network connections as well as Voice over IP telephone service.

Most classrooms and computer labs have XGA LCD projectors ceiling mounted and

audio systems to assist in teaching and viewing videos in class. A projector mounted on a mobile cart is maintained as a backup for classrooms and labs. The School has 4 computer lab facilities for students, two for classes (generally undergraduate) and two for graduate students. The two undergraduate computer labs have 21 computers in each and 14 in the graduate computer areas for a total of 56 computers available for student use. While these computers are primarily used for teaching, they are available during non-class time and also nights and weekends. There are 11 shared networked laser jet printers in these labs, and 3 color scanners. The undergraduate teaching computers are owned by UAM and are part of a campus-wide replacement rotation plan. The School of Forest Resources utilizes several major software academic site licenses for applications like Microsoft Office 2007, ESRI ArcGIS 9.3.1, Leica ERDAS Imagine 9.3, SAS 9.2 and AutoCad 2010. Many other programs are installed in the computer labs.

The School uses seven 10-100Mbps Cisco network switches, with 1000Mbps (Gigabit) uplinks to each other and UAM's IT department's main network backbone. One Gigabyte network switch connects all rack mount servers to each other and the rest of the buildings network. Several of these switches are POE (Power over Ethernet) capable for the Wireless Access points as well as VOIP (Voice over IP) phone upgrades later.

The School also has a quantitative spatial analysis Laboratory that facilitates research and development in the areas of GIS, Global Positioning Systems (GPS), Remote Sensing, and Expert Systems. The lab utilizes these technologies to focus on developing applications and research to improve natural resource management. This is accomplished by integrating high-tech computer facilities with expertise of the faculty and staff to evaluate complex problems and provide solutions for more effective natural resource management strategies. Numerous high-quality output devices (color laser printers, Inkjet plotters for posters and large maps, Dye-

sublimation printer, digital scanners, etc.) permit the visualization of spatial and tabular information. The lab also incorporates other technologies, such as twenty field GPS units, six dual frequency surveying grade GPS systems, Topcon total stations, digital levels, two GPS Base Stations (Mapping and CORS), GER 1500 and GER 2600 Spectroradiometers, Mitsubishi Thermal Imager Systems, and a Kodak DCS420, Kodak DCS760, and Nikon D200 Digital Multi-Camera System in its research and development efforts. Several spatial datasets including digital orthophotos for the entire state of Arkansas are stored on a server and made available to students, staff, and faculty through a network drive. A mobile GIS Laboratory of 16 laptops is also available.

In addition to computer resources and labs, the School of Forest Resources has modern wet-dry laboratories that are used for both teaching and research. Although these labs are not typically used by SIS students, occasionally an SIS student will work with a professor or graduate student in these labs. A soil laboratory is used mainly for teaching the undergraduate soils course, but it is also used for initial processing and determination of soil physical characteristics. The water laboratory is used for most analytical services. A wildlife lab is used mainly for teaching, and has a large amount of preserved specimens and also functions as the location for specimen preparation and investigation. A pest lab has a large collection of forest pests that are used for instruction. This laboratory also serves as a handicap accessible classroom and has Smartboard capabilities.

Resources Available through UAM Campus

Library

The Fred J. Taylor Library and Technology Center's collections comprise over 500,000 items including books, bound periodicals, microforms, government documents, and serial subscriptions. The number of printed journals and periodicals received by the library has decreased in recent years, largely due to their increasing cost. However, many if not all, are now available through on-line full text database resources (e.g., ScienceDirect, Ingenta). The library also contains the Compressed Interactive Video (CIV) Lab, which allows for interactive distance learning. The library holds < 50 books related to GIS or surveying; however, most of the resources that students need are available through the School of Forest Resources via classroom instruction or software.

Computer Laboratories

Eight PC laboratories available to students at large are located on the UAM campus. These facilities provide computers, a wide variety of software, and laser and color inkjet printers for student use. Two laboratories with a total of 57 computers are located in the Babin Business Building. Other computer labs are located in Sorrels Hall, the Memorial Classroom Building, the Science Center, Wells Hall, Willard Hall, and the Library.

Other Academic Support Services

The UAM Counseling Center provides tutoring and counseling services to the UAM student body. Every semester, tutors are available for virtually all the general education freshman and sophomore courses. Tutoring can also be provided for any student at UAM in any subject, provided that the Counseling Center staff can find tutors in the requisite subjects. Also,

the Dean of the SFR has allowed hiring SFR-specific course tutors, when needed (e.g., for Dendrology). Counseling services are also provided at the Counseling Center for career decisions or personal difficulties.

The UAM Writing Center provides tutorial assistance for those with writing difficulties, and to provide a peer- and instructor-mediated forum for creative and technical writing both within and beyond the curriculum. Certain SFR instructors mandate students use the peer-review services provided by the Writing Center. For example, all writing assignments in the “Introduction to Forestry” course require proofreading by staff at the Writing Center. The Writing Center also publishes annually UAM’s literary and creative-writing outlet, The Foliate Oak, which promulgates the work of UAM students, faculty, and staff.

The Turner Neal Museum of Natural History had its origins in 1974 with private donations of funds, land, and mounted animal specimens. The Museum currently houses the UAM Collection of Vertebrates and the UAM Herbarium. Currently on display in the Museum are collections of North American and African big game animals, two 360-gallon aquariums of native and tropical fishes, archaeological materials, minerals, and various plant and animal displays. The UAM Herbarium houses over 16,000 vascular plant specimens; the majority are from southern Arkansas and northern Louisiana, including specimens of national, historical, and ecological importance. The UAM Collection of Vertebrates consists primarily of Arkansas taxa and includes over 15,000 specimens of fishes, reptiles, amphibians, birds, and mammals. The Museum also houses the Pomeroy Planetarium. One of only four planetariums in the state, it was constructed in 1974 with a National Science Foundation grant. The Planetarium is used extensively by students in UAM astronomy classes and also serves local schools and the general public with an annual series of programs on celestial events.

SIS Program Equipment Purchases for Past 3 Years

Due to its technical nature, the SIS program is expensive to maintain. Since August 2006, a total of \$173,400 has been spent on computer hardware, software, survey equipment, and miscellaneous equipment such as compasses, stereoscopes, or tree scribes. Approximately half the expenditures were classified as computer hardware. In August, 2008, 21 new Dell computers were purchased for the SIS lab. Although these computers are heavily used for SIS course instruction and assignments, the computers are also available for use by all students enrolled in courses within the School of Forest Resources. Other courses within the School also use the computers as part of their course instruction. In June 2011, an additional 21 new Dell computers were purchased to upgrade the School's undergraduate computer lab.

Software comprises a major expense within the SIS program. Software licenses for GIS, Remote Sensing, and Surveying programs cost over \$10,000 annually. These licenses are necessary for administering the curriculum and teaching students how to process data. Additionally, the software used in the SIS program is the software used by the majority of the professional companies and agencies who hire SIS graduates. Other expenses include equipment expenditures, with most being surveying equipment.

Table 4.4. Equipment expenditures for the SIS program since August 2006.

Description	Date	Amount
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Acquired		
Scanmaker 1000XL	4/23/2007	\$2,634.90
Precision 690 Computer	5/24/2007	\$4,119.53
21 Precision T3400 Computers	7/30/2008	\$56,066.18
Autodesk (Autocad) Software Warranty Extension on Faculty Laptop	Nov-09	\$5,800.00
Stereoscope, Thermometers	Nov-09	\$392.64
ESRI Statewide License Cradle Assmby&Release clamp pole for Ranger	Sep-09	\$5,000.00
SynchroNeyes Software	Sep-09	\$675.00
ERDAS HEAK Core Licenses	Aug-09	\$3,425.00
IMAGINE Software	Sep-09	\$245.00
Feature Analyst Software	Oct-10	\$2,000.00
Repair to Pacific Crest Equipment	March-07	\$329.00
Computer and Printer for Jacobs	10-Jul	\$270.55
Repair two Total Stations	Aug-06	\$141.34
ERDAS HEAK Core Licenses	10-Oct	\$2,925.00
Autodesk (Autocad) Software	10-Oct	\$5,800.00
LizardTech Software Gold	Sep-06	\$849.00
GeoExpress with MrSID Software	July-10	\$825.00
Autodesk (Autocad) Software	July-10	\$7,705.00
Maint. On Total Stations & Levels	Aug-07	\$815.69
ERDAS HEAK Core Licenses	Aug-07	\$2,925.00
Radios and Accessories	Sep-07	\$2,118.96

Table 4.4. (Cont.)

Description	Date Acquired	Amount
SynchronEyes Software	March-08	\$415.00
Levels, Logger Tapes, Compass, Tree Scribe	May-08	\$1,633.21
Feature Analyst Software	July-08	\$2,000.00
ESRI Statewide License	July-08	\$5,000.00
Computer for Jacobs	July-08	\$1,084.20
ERDAS HEAK Core Licenses	September-08	\$3,425.00
Repair to Plotter in SAL	June-09	\$1,075.00
Survey Controllers	June-09	\$4,470.53
Repair to Topcon GTC and Total Stations	May-10	\$970.93
Battery Packs for Total Stations	May-10	\$879.20
ESRI Statewide License	July-10	\$5,000.00
SynchronEyes Software	July-10	\$329.00
Feature Analyst Software	July-10	\$2,000.00
ERDAS Software Upgrade	October-10	\$6,350.00
Autodesk (Autocad) Software	October-10	\$5,800.00
Computer for new SIS person	April-11	\$2,622.75
Poweredge Switches & Racks	June-11	\$4,078.40
ESRI Statewide License	July-11	\$5,000.00
Feature Analyst Software	July-11	\$2,000.00
Educational Civil Suite	August-11	\$650.00
Undergrad Lab	June-11	\$35,620.64
TOTAL		\$209,021.00

5. MAJORS/DECLARED STUDENTS

Number of Students in SIS Program during the Past 3 Years

Enrollment in the SIS program has declined in the past 3 years. In fall of 2009, 26 students were pursuing B.S. degrees in the SIS program. In fall of 2010, 19 students were enrolled, and in fall of 2011, only 17 students were enrolled in the SIS program. The 2009, 2010, and 2011 fall enrollment of students pursuing an A.S. in Land Surveying Technology, was 4, 2, and 1, respectively. The SIS enrollment likely has declined due to other universities in Arkansas beginning to develop and offer GIS programs.

Strategies to Recruit, Retain, and Graduate Students

A number of strategies are employed by the School of Forest Resources to recruit, retain, and graduate students. To attract freshmen, the School hosts a fall recruitment day for junior and senior high school students. During Recruitment Day, students learn about degree programs offered. Participating students are greeted in the conference center by faculty, staff, and graduate students and are presented with an introduction and overview of the program. Then, groups of students are led by a graduate student to different stations where they can see and handle different types of equipment used in each degree program, and ask questions to students and faculty. Participants are offered a bag of posters, pamphlets, stickers, and other educational materials, and meet for a picnic lunch before returning to their schools.

In addition to Recruitment Day, the School's website has been updated and refined to attract the attention of students searching for colleges on the internet (<http://www.afrc.uamont.edu/sfr>). The School also has a Facebook page to keep up with technological trends students employ to acquire information.

Strategies to recruit and retain students already enrolled at UAM occur within introductory courses such as Introduction to Spatial Information Systems. This course is a 1-credit class that meets 2 hours a week for 8 weeks during fall semester. In this class, the instructor provides hands-on learning experiences for students to gain an understanding of various aspects of the SIS program (e.g., map and compass, GPS treasure hunts, surveying, GIS, and remote sensing). During this course, students gain an understanding of how to successfully navigate the SIS curriculum and survive the first year of college. They also have the opportunity to interact with invited professors who guest-lecture during some of the class periods.

For retention, faculty and staff strive to make sure students feel comfortable and challenged while offering professional development opportunities. For instance, due to the computer-intensive nature of many courses offered, computer orientation classes are held in the fall semester for beginning and transfer students. Students appreciate this and do not feel completely lost when entering one of the computer labs for the first time.

Students gain collegiality and professional development opportunities through the student organizations offered through the School. Students participate in clubs including the SIS Club, Wildlife Club, and Forestry Club regardless of their major. Support is provided for student organizations to attend professional meetings and academic competitions. For instance, students have opportunities to attend the Arkansas Society of Professional Surveyors meeting or apply for scholarships to attend the GIS Users Conference in San Diego, California. Students enjoy these opportunities and often secure employment or graduate positions.

Professors often hire students during a semester or during the summer to assist with research projects. These opportunities not only provide students with a source of income, but allow them to interact with faculty, staff, and other students outside of the classroom while experiencing activities relevant to their chosen field of study.

Number of SIS Graduates over the Past 3 Years

The number of SIS graduates with a B.S. degree has ranged from 5 to 13 over the past 3 years. In 2008-09, the School of Forest Resources graduated 1 student who completed the GIS option and 4 surveying students. In 2009-10, 8 students received a B.S. in SIS with a surveying option and 5 with a GIS option. In 2010-11, 2 students received a B.S. in SIS under the GIS option, while 8 surveying students received their degree.

Eighteen students receive an A.S. degree over the past 3 years: 5 in 2008-09, 9 in 2009-10, and 4 in 2010-11. Of these 18, 13 also received B.S. degrees in SIS-Surveying, 2 had a BS in Forestry, one with a MS in Forestry. Only 2 of the 18 received an A.S. in Land Surveying Technology as their only degree.

6. PROGRAM ASSESSMENT

Program Assessment Process

Program assessment of all disciplines (i.e., SIS, forestry, wildlife) within the School of Forest Resources has two essential elements: course-level assessment and program-level assessment. The course-level assessment involves measures individual student performance. Within each course, instructors have identified a set of “core competency” requirements, which are specified in the course syllabus. These core competencies are designed to produce measurements on students’ achievement of specific learning objectives, and must be mastered in order to excel in subsequent courses in the degree program. Instructors routinely measure student performance against the core competencies for their courses through homework assignments, laboratory exercise, or exams. At the end of the semester, data on course assessment are reported to the School Assessment Coordinator through a short report. This report essentially contains information on student performance in achieving the core competencies. The Assessment Coordinator collects and compiles these data. As a part of this analysis, the coordinator prepares an annual summary for every course. This information is used in several ways. First, instructors can identify areas in which individual students struggle and modify curriculum or delivery of material to facilitate student learning. Second, students are made aware of areas in which they need to focus studying to master the material. Third, faculty use the course assessments for an annual program-level assessment.

The program-level assessment starts with grouping the School’s professional courses in each discipline into three different tiers (Figure 6.1). Tier I consists of the foundational or introductory courses usually taken by sophomores. These courses have no internal/departmental prerequisites. Tier II courses have at least one internal/departmental prerequisite. Tier III

courses require a Tier II course as a prerequisite or senior standing. Tier II and III courses are mid-level courses taken by juniors and seniors. Tier IV is the capstone course for each curriculum that integrates and applies knowledge from lower tiers. Once these groupings are made, linkages in core competencies are formed from capstone courses to Tier II or III courses and then to Tier I courses. If a student performs poorly in one of the core competencies in the upper tiers, his/her performance in linked core competencies for courses in lower tiers is then examined and hopefully the student's deficiency could be explained. Establishment of the core competencies facilitates development of a cohesive curriculum with student-centered outcomes.

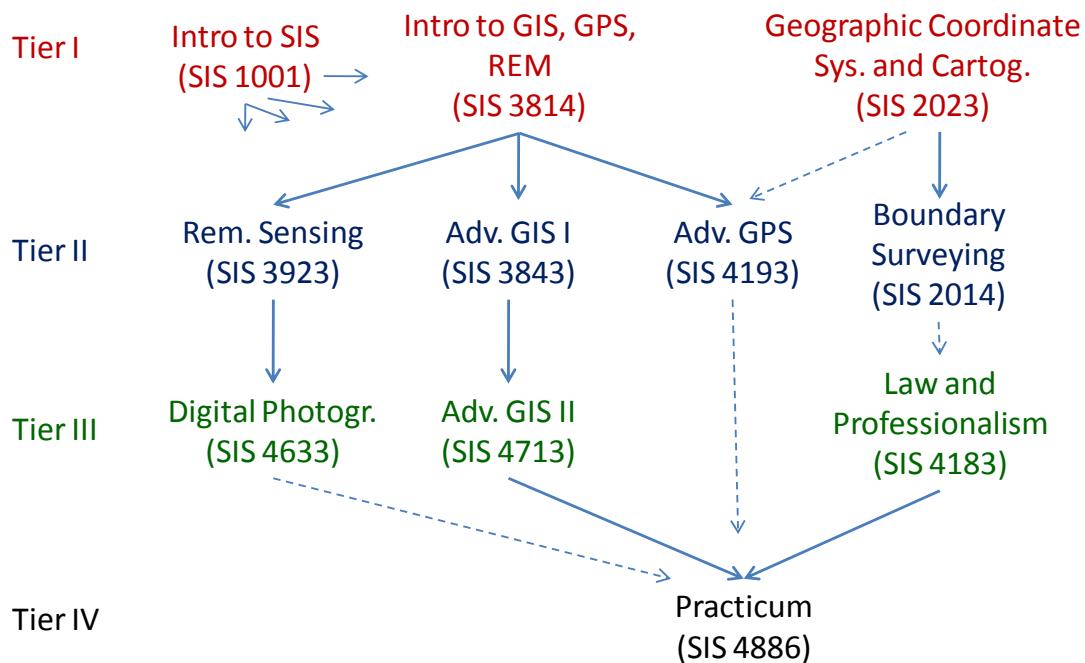


Figure 6.1. Curriculum map explaining the linkages between core competencies for courses required for students pursuing a B.S. in Spatial Information Systems with a GIS option. Courses in different tiers are represented in different colors. Solid bold lines indicate the flow from a prerequisite course. Dashed lines indicate that a course is not necessarily required for a course in the next tier, but mastery of specific core competencies may be beneficial to the student. Basic knowledge gained from Intro to SIS (SIS 1001) will be beneficial for many courses.

SIS Capstone Requirements

The GIS and surveying curricula include a required senior practicum apply knowledge learned from previous courses in the completion of a project that is presented to the School's faculty and students as well as any project partners that have helped develop project ideas or have otherwise been involved. 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 and professionalism.

Examples of practicum projects completed by students include: boundary and topographic surveys of property parcels, development of an educational manual for GPS users, simulating effects of dam removal on the landscape, mapping water lines and meters in Monticello, or creating 3-dimensional maps of UAM campus buildings and facilities. These projects require a tremendous amount of independent and team work, communication with instructors and project partners, creative problem-solving, and professionalism. The quality and rigor of the projects demonstrates each student's ability to integrate previous coursework into a final product that meets specific project objectives and directly benefits the project partner.

The students are required to present their plans at the end of the semester in seminars that are open to the public. 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 project's effectiveness and integration of relevant course material. Other attendees have included other students, project partners such as landowners, UAM facilities directors, and Monticello city workers.

The most significant challenges for students in the practicum course is problem solving. When working with technology such as computer software programs, GPS receivers, and surveying total stations, equipment failure and other problems (e.g., program software bugs,

computer crashes, incompatibility of data and software versions) are inevitable. Additionally, weather-related issues such as severe flooding or cloud cover impair collection of field data—especially for surveyors or students using GPS receivers. However, due to the time constraint for completion of the project, students must learn to be opportunistic and budget time effectively to collect the necessary information and simultaneously fulfill their other professional and personal responsibilities. Instructors monitor the progress of the students weekly and offer technical as well as organizational suggestions when needed. Each student must demonstrate mastery of all core competencies to pass this course (i.e., meet scheduled goals on time, demonstrate organization in oral and written form, exhibit professionalism, provide professional presentations, and provide professional written reports). Instructors evaluate students based on student progress reports, mid-term drafts and practice presentations, professional demeanor, and quality of final oral presentation and written reports. The SIS Practicum course provides a unique, practical experience to the students, which helps prepare them for the real-life work environment for natural resource professionals.

In addition to the practicum, all senior students are required to complete the 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.

Evaluations of Teaching

Teaching effectiveness is primarily evaluated through the use of student evaluations; however, there is no formal process for first-hand peer evaluation of teaching skills. Students evaluate the instructors of all courses at the end of each semester using a standard evaluation form. Student evaluations are read by the Dean prior to returning to the faculty member. If warranted, a discussion of the evaluations may occur between the Dean and the faculty member. Excellence in teaching is required in the School of Forest Resources, and is weighted heavily in tenure decisions as well as terminations.

In addition to student evaluations, teaching effectiveness and other aspects of the program are assessed through senior exit interviews. 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 results of the interviews were summarized into a single report and shared with faculty members.

Transfer Students

The School considers several courses from other institutions as eligible for transfer credit toward a degree in SIS with surveying or GIS option. These courses include the 35-credit block of core general education courses established by the Arkansas Board of Higher Education for public colleges and institutions. Transferrable courses also include degree-specific courses with similar content as those offered though the School of Forest Resources. Appendix 7 provides equivalent courses for transfer from other institutions within Arkansas.

Student/Alumni/Employer Satisfaction Surveys

The School conducts periodic alumni and employer surveys; however, the most recent data collected through these surveys were in late 2005 and early 2006, and they were directed toward forestry and wildlife management employers. These data were examined carefully and programmatic changes were identified as a result. These surveys are typically done once in about five years. During this year's faculty development week, the assessment coordinator proposed that a survey of employers and alumni be conducted within the next year.

SIS Program Alignment with Job Market

The SIS program is designed to align with the job market. Currently, individuals with training in surveying and GIS are highly marketable and eligible for employment in a variety of professions. For instance, for the Occupational Outlook Handbook through the Bureau of Labor Statistics (<http://www.bls.gov/oco/ocos040.htm>) states that occupations related to surveying have a faster than average employment growth (approximately 19% in the next 10 years). Surveyors, therefore, are in demand across the country. The surveying option in the SIS program produces students who are prepared to take the licensing exam and who are sought out by many companies for employment. In many instances, the SIS senior practicum connects students with potential employers. Surveying graduates are hired through surveying and mapping companies, oil and gas operations, engineering firms, building inspecting companies, mining companies, and private consulting businesses.

Students who receive degrees in GIS are also highly marketable. The latest trend in GIS is toward geographic design, which essentially is a methodology for planning and decision making on various aspects of the landscape. For example, the human demand for space, wilderness, development, and products may fragment landscapes, pollute air and water, or

impact wild species and their habitats. People with expertise in GIS have the ability and skill to help agencies, organizations, companies, and citizens to develop models of what could happen under different scenarios involving landscapes, and then determining methodology to create desired conditions.

GIS is a growing field and students generally do not have difficulty finding job opportunities. In fact, approximately 50 jobs per month are listed through the GIS jobs clearinghouse (<http://www.gic.org>). For instance, a GIS graduate may work for school districts who want to design bus routes to minimize fuel costs and usage. Law enforcement agencies may hire GIS professional to help identify crime hot spots so money and personnel resources can be better targeted for crime prevention. Urban planners use GIS expertise to design cities with green space, efficient travel networks, and beautiful skylines. Natural resource agencies or organizations hire GIS professional to analyze wildlife-habitat relationships, design timber harvests, or assess ecological impacts of a land management activity.

Continuing Education and/or Job Placement for SIS Graduates

Data on job placement can also be useful in program assessment. Information on job/graduate school placement is currently not being formally collected by the School. If a graduating student was able to secure a job by his/her senior exit interview, then it would be indicated in the survey. However, anecdotal evidence gathered through personal communication indicates that forestry, wildlife management, GIS, 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.

7. PROGRAM EFFECTIVENESS

Program Strengths

The School identifies institutional strengths to include: 1) membership in a strong university system committed to the land grant philosophy of service, 2) a small student body and campus permitting individualized instruction, and 3) being located in a center of forest resources activities.

Program strengths include the diverse faculty and instructor expertise (see Section 3. Faculty). Because of the broad range of backgrounds and experience, faculty are able to provide students with practical knowledge and applications of curriculum to real-world situations. Faculty are dedicated and work hard to ensure quality education for students enrolled in the SIS program.

The School of Forest Resources ranks third in the number of faculty, behind Math & Science and Arts & Humanities, both of which teach the bulk of the general education courses required by all majors on campus. Apart from the elective courses offered in forestry, wildlife and SIS, elective courses in the broad category of “natural sciences” are limited. And since the School is the only academic unit at UAM to offer a Master of Science degree, graduate level courses outside the School are essentially limited to those taught in Math & Science, usually by request (e.g., Mammalogy and Ornithology).

The program resources available to students enrolled in SIS programs and other degrees offered through the School of Forest Resources also strengthen the SIS program. Resources include black-and-white- and color laser printers, plotters for printing large posters, up-to-date computer software including GIS packages and AutoCAD for developing survey plats.

Technical support staff is always available for troubleshooting computer problems or issues with other technology such as projectors, which is important for the success of the program. Student workers for the IT staff also provide extra hours available outside regular business hours for students to access computer labs for homework and project assignments. Other resources include equipment such as GPS receivers and surveying total stations.

Because the UAM campus is 50–90 miles from urban centers, travel is required to access amenities associated with larger cities. However, UAM's location does offer certain advantages for the forest resources program, including SIS. Southeastern Arkansas is a region alive with forest resource activity, and geospatial knowledge is needed. Personnel at federal, state, industrial, and private levels are readily available and routinely assist with teaching, research and extension activities. The success of this interaction is partly reflected in the School's excellent record of graduate placement. Truly, the full array of resource professionals in southeastern Arkansas is centered at Monticello and provides support for the forest resources teaching program.

Areas where Improvement is Needed

Some of the equipment is getting old and out-dated, and should be replaced. For instance, the survey-grade GPS receivers are 10+ years old. They are not operating efficiently and often, the receivers lock-up and do not allow students to download data electronically. The School could use 8 new receivers. Additionally, the School also needs approximately 12 GeoXH type mapping grade GPS receivers for classroom instruction and research. The improved capabilities with new receivers would allow students and faculty to keep up with advancements in technology, simplify data collection, and help make spatial data processing more efficient. The School could also use a 3D laser scanner and new total stations for surveying and research.

To remain competitive and attractive among students pursuing SIS degrees, the School could use additional faculty members. Two instructors teach all the surveying courses, and 3 instructors teach GIS courses. Demands on faculty (i.e., teaching, advising, research, and scholarship) are extremely high if one faculty member in each program takes a leave of absence. Additionally, since technology is constantly changing, some type of training program for faculty should be in place to keep faculty up to date on changes.

Program Improvements Accomplished over the Past 2 Years

Within the past few years, several program improvements have been made. The School replaced 21 computers in the SIS lab with new Dell Precision T3400 hard drives and 19-inch flat-screen monitors. The School's undergraduate computer lab was also upgraded with new Dell computers in June 2011. Current spatial data processing software licensing has been purchased and installed on 42 computers available for classroom instruction and student use (i.e., 21 computers in the SIS lab and 21 computers in the undergraduate computer lab). Current spatial software includes the ArcGIS package version 10, and AutoCAD 2010.

Planned SIS Program Improvements

The School of Forest Resources is currently expanding and renovating its facilities. The project will result in additional classroom and laboratory space, and is scheduled to be fully complete in September 2012.

8. INSTITUTIONAL REVIEW TEAM

Team members

The following faculty contributed to portions of this document:

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Dr. Philip Tappe

APPENDIX 1. Summary of general education course and restricted electives for students pursuing degrees in Spatial Information Systems through the School of Forest Resources at the University of Arkansas at Monticello.

Institution Name: University of Arkansas at Monticello Academic Year: 2010

Official Degree Program Title: Associate of Science in Land Surveying Technology

Required Courses: # & Title	Total Credit Hours		
	Communications	Science and Mathematics	Social Science & Humanities
ENGL 1013 Composition I	3		
ENGL 1023 Composition II	3		
ENGL 3253 Technical Writing	3		
PSCI 2213 American National Government			3
MATH 1043 College Algebra		3	
GEOG 2213 General Geography I			3
GEOG 2223 General Geography II			3
PHYS 1003		3	
MATH 1073 Compact Calculus		3	
CIS 2223 Microcomputer Applications		3	
ART 1053 Art Appreciation or MUS 1113 Music Appreciation			3
COMM 1023 Public Speaking or COMM 1043 Honors Speech Communication or COMM 2203 Interpersonal Communication or COMM 2283 Business and Professional Speech	3		
HIST 1013 Survey of Civilization I and ENGL 2283 Survey of World Literature I or HIST 1023 Survey of Civilization II and ENGL 2293 Survey of World Literature II	3		3

Associate of Land Surveying Technology Required Courses (Cont.)

Required Courses: # & Title		Total Credit Hours	
	Communications	Science and Mathematics	Social Science & Humanities
PSY 1013 Introduction to Psychology or SOC 2213 Introduction to Sociology			3
ESCI 1073 Earth and Atmosphere and ESCI 1081 Earth and Atmosphere Laboratory or ESCI 1063 Elements of Geology and ESCI 1051 Elements of Geology Laboratory PHYS 1003 Elements of Physics and PHYS 1021 Elements of Physics Laboratory or PHYS 2203 General Physics I and PHY 2231 General and University Physics Lab I		4	
Total Credit Hours	15	20	18

Institution Name: University of Arkansas at Monticello Academic Year: 2010

Official Degree Program Title: Bachelor of Science in Spatial Information Systems

Official Option Title: Surveying

Required Courses: # & Title	Total Credit Hours		
	Communications	Science and Mathematics	Social Science & Humanities
ENGL 1013 Composition I	3		
ENGL 1023 Composition II	3		
ENGL 3253 Technical Writing	3		
PSCI 2213 American National Government			3
MATH 1043 College Algebra		3	
GEOG 2213 General Geography I			3
GEOG 2223 General Geography II			3
MATH 1033 Trigonometry		3	
MATH 1073 Compact Calculus		3	
CIS 2223 Microcomputer Applications		3	
Total Credit Hours	9	12	9

Institution Name: University of Arkansas at Monticello Academic Year: 2010

Official Degree Program Title: Bachelor of Science in Spatial Information Systems

Official Option Title: Surveying

Restricted¹ Electives Courses: # & Title	Total Credit Hours		
	Communications	Science and Mathematics	Social Science & Humanities
ART 1053 Art Appreciation or MUS 1113 Music Appreciation			3
COMM 1023 Public Speaking or COMM 1043 Honors Speech Communication or COMM 2203 Interpersonal Communication or COMM 2283 Business and Professional Speech	3		
HIST 1013 Survey of Civilization I and ENGL 2283 Survey of World Literature I or HIST 1023 Survey of Civilization II and ENGL 2293 Survey of World Literature II	3		3
PSY 1013 Introduction to Psychology or SOC 2213 Introduction to Sociology			3
ESCI 1073 Earth and Atmosphere and ESCI 1081 Earth and Atmosphere Laboratory or ESCI 1063 Elements of Geology and ESCI 1051 Elements of Geology Laboratory		4	
PHYS 1003 Elements of Physics and PHYS 1021 Elements of Physics Laboratory or PHYS 2203 General Physics I and PHY 2231 General and University Physics Lab I		4	
Total Available Restricted Elective Credit Hours	6	8	9
Minimum Credit Hours Required	15	20	18

¹ List general education restricted electives, if any, and include required elective credit hour totals for curriculum.

Institution Name: University of Arkansas at Monticello Academic Year: 2010

Official Degree Program Title: Bachelor of Science in Spatial Information Systems

Official Option Title: GIS

Required Courses: # & Title	Total Credit Hours		
	Communications	Science and Mathematics	Social Science & Humanities
ENGL 1013 Composition I	3		
ENGL 1023 Composition II	3		
ENGL 3253 Technical Writing	3		
PSCI 2213 American National Government			3
MATH 1043 College Algebra		3	
MATH 1033 Trigonometry		3	
MATH 1073 Compact Calculus		3	
CIS 2223 Microcomputer Applications		3	
Total Credit Hours	9	12	3

Institution Name: University of Arkansas at Monticello Academic Year: 2010

Official Degree Program Title: Bachelor of Science in Spatial Information Systems

Official Option Title: GIS

Restricted ¹ Electives Courses: # & Title	Total Credit Hours		
	Communications	Science and Mathematics	Social Science & Humanities
ART 1053 Art Appreciation or MUS 1113 Music Appreciation			3
SPCH 1023 Public Speaking or SPCH 1043 Honors Speech Communication or SPCH 2203 Interpersonal Communication or SPCH 2283 Business and Professional Speech	3		
HIST 1013 Survey of Civilization I and ENGL 2283 Survey of World Literature I or HIST 1023 Survey of Civilization II and ENGL 2293 Survey of World Literature II	3		3
PSY 1013 Introduction to Psychology or SOC 2213 Introduction to Sociology			3
GEOG 2213 General Geography I or GEOG 2223 General Geography II			3
ESCI 1073 Earth and Atmosphere and ESCI 1081 Earth and Atmosphere Laboratory or ESCI 1063 Elements of Geology and ESCI 1051 Elements of Geology Laboratory PHYS 1003 Elements of Physics and PHYS 1021 Elements of Physics Laboratory or PHYS 2203 General Physics I and PHY 2231 General and University Physics Lab I		4	
Total Available Restricted Elective Credit Hours	6	8	12
Minimum Credit Hours Required	15	20	15

¹ List general education restricted electives, if any, and include required elective credit hour totals for curriculum.

APPENDIX 2. Description of areas of study within the Spatial Information Systems Program and their relationship to specific degree options.

Institution Name: University of Arkansas at Monticello Academic Year: 2010

Official Degree Program Title: Bachelor of Science in Spatial Information Systems

Official Option Title: Surveying

Required ¹ Courses # & Title	Credit Hours in Areas of Study ²					Course Contains Significant Content in (check all that apply):					Total Credit Hours
	Geographic Information Systems	Global Positioning Systems	Remote Sensing	Surveying	Data Analysis and Problem Solving	Field Work	Ethics	Oral and Written Communications	Spatial Applications	Computer Literacy	
MAJOR REQUIREMENTS											
SIS 1001 Introduction to Spatial Information Systems	0.2	0.2	0.2	0.2	0.2	✓			✓	✓	1.00
SIS 2014 Boundary Surveying				3.00	1.00	✓	✓			✓	4.00
SIS 2023 Geographic Coord. Systems & Cartography	0.50			1.50	1.00			✓	✓	✓	3.00
SIS 2114 Plane Surveying				2.80	0.20	✓		✓	✓		3.00
SIS 3153 Survey Plats and Deeds				2.80	0.20	✓		✓	✓		3.00
SIS 3264 Route and Construction Surveying				2.80	0.20	✓		✓	✓		3.00
SIS 3814 Introduction to GIS, GPS, Remote Sensing	2.00	0.50	0.20		1.30	✓		✓	✓	✓	4.00
SIS 3843 Advanced GIS I	2.00				1.00		✓	✓	✓	✓	3.00
SIS 3923 Remote Sensing	0.30		1.40		1.30		✓	✓	✓	✓	3.00
SIS 4813 Law and Professionalism in Geomatics	0.50			2.50		✓	✓	✓			3.00
SIS 4193 Advanced GPS		2.50		0.25	0.25	✓		✓	✓	✓	3.00
SIS 4454 Advanced Surveying				3.50	0.50	✓	✓	✓	✓	✓	4.00

Surveying degree program areas of study (Cont.)

Required Courses # & Title	GIS	GPS	RS	Surv	Data	Field Work	Ethic	Com	App	Com	Total
SIS 4691 Seminar	0.50			0.50			✓	✓	✓	✓	1.00
SIS 4883 SIS Practicum	0.20	0.20	0.20	0.20	0.20	✓	✓	✓	✓	✓	1.00
SUPPORTIVE REQUIREMENTS											
CIS 2203 Programming Logic and Design					3.00			✓		✓	3.00
FOR 2231 Dendrology Laboratory I					1.00	✓					1.00
FOR 2291 Dendrology Laboratory II					1.00	✓					1.00
FOR 3353 Biometrics in Natural Resources					3.00	✓		✓	✓	✓	3.00
CIS 4263 Ethics in Information Technology or GB 3533 Legal Environment of Business or PHIL 3523 Logic or PSCI Public Administration or COMM 3483 Communication in Small Groups					3.00		✓	✓			3.00
CIS 3103 Advanced Microcomputer Applications or CIS 3243 Introduction to Java Programming or CIS 3433 Introduction to C+ Programming or SIS 4633 Digital Photogrammetry					3.00			✓		✓	3.00
MGMT 3473 Principles of Mgt and Organizational Behavior					3.00		✓	✓			3.00
Total Required Credit Hours	6.20	3.40	2.00	20.0 5	24.3 5						56.0 0

¹Include only required courses in Surveying. Do not include electives, restricted electives, or basic, general education courses such as math, basic sciences, or English.

²Based on core areas within the Spatial Information Systems Program

Institution Name: University of Arkansas at Monticello Academic Year: 2010
 Official Degree Program Title: Bachelor of Science in Spatial Information Systems

Official Option Title:	GIS	Credit Hours in Areas of Study ²					Course Contains Significant Content in (check all that apply):				Total Credit Hours
		Geographic Information Systems	Global Positioning Systems	Remote Sensing	Surveying	Data Analysis and Problem Solving	Field Work	Ethics	Oral and Written Communications	Spatial Applications	
Required¹ Courses # & Title											
MAJOR REQUIREMENTS											
SIS 1001 Introduction to Spatial Information Systems	0.2	0.2	0.2	0.2	0.2	✓			✓	✓	1.00
SIS 2014 Boundary Surveying				3.00	1.00	✓			✓	✓	4.00
SIS 2023 Geographic Coord. Systems & Cartography	0.50			2.00	0.50				✓	✓	3.00
SIS 3814 Introduction to GIS, GPS, Remote Sensing	2.00	0.50	0.50		1.00		✓	✓	✓	✓	4.00
SIS 3843 Advanced GIS I	2.00				1.00		✓	✓	✓	✓	3.00
SIS 3923 Remote Sensing	0.30		1.40		1.30		✓	✓	✓	✓	3.00
SIS 4813 Law and Professionalism in Geomatics	0.50			2.50			✓				3.00
SIS 4193 Advanced GPS		2.50	0.25	0.25		✓			✓	✓	3.00
SIS 4463 Digital Remote Sensing or SIS 3933 Spatial Statistics	0.25 1.30	0.30	2.50		0.25 1.40	✓ ✓			✓	✓	3.00
SIS 4633 Digital Photogrammetry	0.30	0.30	1.50		0.90		✓		✓	✓	3.00
SIS 4691 Seminar	0.50			0.50		✓	✓		✓	✓	1.00

GIS degree program areas of student (Cont.)

Required Courses # & Title	GIS	GPS	Remote Sensing	Surveying	Data	Field Work	Ethics	Communic	Applications	Computers	Total
SIS 4713 Advanced GIS II	2.00				1.00			✓	✓	✓	3.00
SIS 4883 SIS Practicum	0.20	0.20	0.20	0.20	0.20	✓	✓	✓	✓	✓	1.00
SUPPORTIVE REQUIREMENTS											
CIS 2203 Programming Logic and Design					3.00			✓		✓	3.00
CIS 3443 Object-Oriented Programming Language	0.25				2.75			✓		✓	3.00
CIS 3103 Advanced Microcomputer Applications or CIS 3243 Introduction to Java Programming or CIS 3433 Introduction to C+ Programming					3.00			✓		✓	3.00
CIS 4623 Database Management Systems					3.00			✓		✓	3.00
FOR 3353 Biometrics in Natural Resources					3.00	✓		✓	✓	✓	3.00
MGMT 3473 Principles of Mgt and Organizational Behavior					3.00		✓	✓			3.00
CIS 4263 Ethics in Information Technology or GB 3533 Legal Environment of Business or PHIL 3523 Logic or PSCI Public Administration or SPCH 3483 Communication in Small Groups					3.00		✓	✓			3.00
Total Required Credit Hours	10.5 or 11.5 5	3.7 or 4.0	6.3 or 3.8	8.65	25.35 or 26.5						56.00

¹Include only required courses in Surveying. Do not include electives, restricted electives, or basic, general education courses such as math, basic sciences, or English.

²Based on core areas within the Spatial Information Systems Program

**APPENDIX 3. Syllabi for courses required for students pursuing degrees in
Spatial Information Systems through the School of Forest Resources at the
University of Arkansas at Monticello.**

INTRODUCTION TO SPATIAL INFORMATION SYSTEMS (SIS 1001)

Fall 2008 (1 credit, one 1-hour lecture)

"Without geography, you're nowhere." (Jimmy Buffett)

Instructor:

Dr. Alexandra Felix-Locher
217 Forest Resources Building
460-1748
felix@uamont.edu

Office Hours:

by appointment

Class Hours:

Friday 12:10-2:00 P.M. Room 208 Forest Resources Building

This course meets for ½ semester.*

Prerequisites:

None

Required Text:

None

Course Description:

This course introduces the student to computer systems, geographic information systems (GIS), global positioning systems (GPS), remote sensing, surveying, and the Spatial Information Systems (SIS) program. Students will also be introduced to the terminology used in the field of spatial technology. Students will become familiar with the faculty and facilities in the Spatial Information Systems program.

Course Objectives:

The course objectives are to familiarize the student with fundamentals of Computer Systems, GIS, GPS, Remote Sensing, and Land Surveying, develop an appreciation of SIS in various disciplines, acquaint students with the history of GIS, GPS, and Land Surveying, acquaint the student with the use of maps, introduce the student to the facilities and faculty of the SIS program in the School of Forest Resources, and introduce the students to using critical thinking skills.

As a student of Introduction to SIS, you should have a basic understanding of the following by the end of this course:

- GIS, GPS, Remote Sensing, and Land Surveying
- Computer Systems and file management
- History of SIS
- Map Interpretation
- Problem solving

You should be able to provide an understanding of the aforementioned in oral and written formats, each in a clear and concise manner.

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.

Course Evaluation:

Number of Points

% of Grade

Exam	150	60
Quizzes (5 @ 20 points ea)	100	40
TOTAL POINTS	250	

Grading Scale:

Final Course grades will be assigned as follows:

90-100% (225-250 pts.)	A
80-89% (200-224 pts.)	B
70-79% (175-199 pts.)	C
60-69% (150-174 pts.)	D
0-59% (0-149 pts.)	F

Issuance of Grades:

UAM will no longer mail 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.

Tips for getting the most out of class:

1. Come to class willing to learn, take part in discussions, and just plain have fun!
2. Missing class HABITUALLY always results in lower grades! If you miss two or more classes (unexcused), it will result in the loss of one letter grade.
3. Keep up with reading and homework assignments.
4. 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.

Core Competencies:

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 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) Perform basic computer operations and functions (e.g., transfer files)
- 2) Understand how to interpret maps
- 3) Be able to successfully navigate using only a compass and a map
- 4) Distinguish among the different types of GPS units
- 5) Be able to navigate using only a map and GPS unit
- 6) Define GIS, GPS, remote sensing, and land surveying
- 7) Conduct a basic GIS analysis to understand the ArcGIS interface
- 8) Understand applications of surveying
- 9) Think spatially and solve common real-world problems

Instructor's Expectations:

1. Discussion of assigned work between students is encouraged; however the work is to be done independently.
2. 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 concerned.
3. 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.
4. **No Food, Drinks, or Tobacco of any kind are permitted in the Lecture or Computer Lab. No 'active' cell phones or 'active' pagers will be permitted during the class period.**

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.

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 Wildlife Society 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 or disruptive behavior will not be tolerated in the School of Forest Resources. Such conduct may result in dismissal from classes.

CHEATING AND PLAGIARISM:

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 and Tests
- 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 hooved mammals there is so far no visible evidence of any density limit except the carrying capacity of food.

Correct direct quotation reads: "In hooved 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 hooved 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.

Exciting Course Schedule:

<u>Week</u>	<u>Date</u>	<u>Quiz:</u>	<u>Topic:</u>	<u>Guest:</u>
1	08/28		Intro/computer account setup/reading maps	Mr. Paul Freeman
2	09/04		Maps and compass	
3	09/11	X	Geographic Information Systems	
4	09/18	X	Global Positioning Systems	
5	09/25	X	Remote Sensing	
6	10/02	X	Land Surveying	
7	10/01	X	Spatial problem solving	
8	10/08		FINAL EXAM	

Boundary Surveying (SIS 2014) Fall 2009

(4 Credits, two – 1 ½ hour lectures, one 3-hour laboratory)

Instructor: Tom Jacobs

Phone: 460-1694

Office: 101C, Forest Resources Bldg.

Email: jacobst@uamont.edu

Class Hours:

Lecture – T Th 11:10-12:30 Room 207 Forest Resources Building

Lab M 1:10-4:00 Room 207 Forest Resources Building

Office Hours:

My office hours are 10 -11 AM, Mon – Fri., and 1:30 – 3:30 PM, Tues. Students are encouraged to visit me during posted office hours any time they have a question or problem.

Prerequisites/Co-Requisites:

Prerequisite: SIS 2023 Geographic Coordinate Systems and Cartography

Co-requisite: Math 1033 Trigonometry

Required Text:

“Brown’s Boundary Control and Legal Principles”, 6th edition, 2009. Robillard, Wilson, and Brown. Wiley Publications. (ISBN: 978-0-470-18354-0)

Suggested Readings:

“Evidence and Procedures for Boundary Location”, 5th edition, 2006. Robillard, Wilson, and Brown. Wiley Publications. (ISBN: 0-471-69447-9)

“Legal Principles of Boundary Location for Arkansas”. 1984. Richard Elgin and David Knowles. Landmark Enterprises.

“Handbook for Arkansas Land Surveyors”, 3rd edition, 1993, William K. Finefield et al. Arkansas Geological Commission, Land Survey Division.

“Surveying: Theory and Practice”, 7th edition. By James M Anderson & Edward M Mikhail. McGraw-Hill

Course Description:

This course focuses on the fundamentals of Boundary Surveying. Topics discussed will include the History of the “Public Land Survey System” (PLSS), evolution of the rectangular system of land subdivision, description and computation of land areas, past and current monumentation procedures, the use of modern surveying instruments in the field, and the evidence and procedures for boundary determination.

Geographic Coordinate Systems & Cartography (SIS 2023) Spring 2010

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

INSTRUCTOR: Ron Harris, PS
Room 101E Chamberlin Forest Resources Complex
Phone: 460-1594
Email: harrisr@uamont.edu

CLASS HOURS:
Lecture – M W 8:10-9:00 A.M. Rm 210 Forest Resources Building
Lab – M 1:10 – 4:00 P.M. Rm 210 Forest Resources Building

OFFICE HOURS: W & H 1:00 – 4:00 or by appointment.

COURSE DESCRIPTION:

This course is an introduction to cartographic design, survey plats, map interpretation, and geographic coordinate systems. Basic elements of interpreting maps and survey plats will be covered. This course also covers map and plat creation using AutoCAD software.

REQUIRED TEXT:

Basic GIS Coordinates. Jan Van Sickle. 2004. CRC Press. (ISBN: 0-415-30216-1)
Beginning AutoCAD 2010 Basics. Shrock (ISBN: 978-0-8311-3404-4)
Mastering AutoCAD Civil 3D 2010, Wedding/McEachorn ((ISBN: 978-0-470-47353-5)

SUPPLIES:

Mechanical pencil, calculator with trigonometric functions, Engineer's scale, large three-ring binder for notes and handouts

PREREQUISITES / CO-REQUISITES:

Prerequisite: CIS 2223 Microcomputer Applications
MATH 1043 College Algebra
Co-requisite: MATH 1033 Trigonometry

GOALS AND OBJECTIVES:

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

- 1) Read and properly interpret map features,
- 2) Understand how different projections, coordinate systems and Datum's affect map making, feature representation, and feature measurement,
- 3) Properly create and symbolize a map,
- 4) Correctly represent real-world features on a map using AutoCAD software.

GRADING POLICY:

To receive a grade for this course, the student must demonstrate an understanding of the aforesaid goals and objectives. The student will have multiple opportunities to demonstrate these proficiencies throughout the semester. The opportunities will present themselves as a specified problem noted on homework assignments, laboratory exercises, exams, and quizzes. All students are required to demonstrate proficiency in all abovementioned goals and objectives at least once during the semester. If these proficiencies are not met by the student, then one of the two following options will be administered at the discretion of the instructor:

- 1) A course grade of "D" regardless of the student's overall average for the course.
- 2) A course grade of "I" which can be converted to the respective letter grade earned by the student for all work once the student demonstrates the proper goal and objective through additional assignments. The deadline for option 2 is 2 weeks following the final exam for the course.

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.

Plane Surveying (SIS 2114) Fall 2009

(4 Credits, three – 1 hour lectures, one 3-hour laboratory)

Instructor: Tom Jacobs
Phone: 460-1694

Office: 101C, Forest Resources Bldg.
Email: jacobst@uamont.edu

Class Hours:

Lecture	MWF 11:10 – 12:00	Room 207 Forest Resources Building
Lab	Thurs 1:40-4:30	Room 207 Forest Resources Building

Office Hours:

My office hours are 10 – 11 AM, Monday thru Friday, and 1:30 – 3:30 PM, Tuesdays. Students are encouraged to visit me any time they have a question or problem.

Prerequisites/Co-Requisites:

Prerequisite: SIS 2023 Geographic Coordinate Systems and Cartography
Math 1033 Trigonometry
Co-requisite: CIS 2223 Microcomputer Applications

Required Text:

“Surveying: Theory and Practice”, 7th edition. By James M Anderson & Edward M Mikhail. McGraw-Hill (ISBN: 0-07-015914-9)

Suggested Readings:

“Elementary Surveying” 11th edition, 2006. Paul R Wolfe and Charles D Ghilani, Prentice Hall Publications. (ISBN 0-13-148189-4)

“Surveying Principles and applications”, 7th edition, Barry F Kavanagh, Prentice Hall Publications. (ISBN 0-13-118862-3)

Supplies Needed:

Field Book (available at bookstore), mechanical pencil, engineer's scale, calculator with trig functions, large 3-ring binder for notes and handouts

Course Description:

This course focuses on the fundamentals of Plane Surveying. Topics discussed will include basic traversing skills and computations, differential leveling, trig leveling, simple horizontal and vertical curves, astronomic observations, Control and Topographic Surveys, basic GPS theory, and the use and care of modern surveying equipment.

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:

- Understand terminology associated with plane surveying
- Understand the different types of survey measurements (angular, distance, elevation, area)
- Properly conduct a traverse using modern surveying equipment
- Use modern survey equipment and take legible field notes
- Correctly adjust a traverse
- Properly conduct a precise three-wire level circuit
- Interpret a USGS Topographic map
- Determine correct bearing of a line based on past and current magnetic declinations
- Correctly perform a topographic survey

Grades:

During the semester there will be 2 exams worth 100 points each. There will also be a number of homework assignments and quizzes worth a combined total of 100 points and a final exam worth 100 points for a 400 point total possible for the semester.

2 exams@100 points each.....	200 points
Homework/quizzes (Total).....	100 points
Final Exam.....	100 points
Total.....	400 points

Grading Scale:

Final course grades will be assigned as follows:

90-100% (360-400 pts)	A
80-89% (320-359 pts)	B
70-79% (280-319 pts)	C
60-69% (240-279 pts)	D
0-59% (0-239 pts)	F

Grade Reports:

UAM will no longer mail 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.

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

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.

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.

Tentative Course Outline/Schedule

Week;		Reading Assignment
1.	Course Introduction Licensure Requirements	Handouts, Ch. 1
Lab 1	Intro to surveying equipment Taking field notes	
2.	Measurements & adjustments	Ch. 2
Lab 2	U.S.G.S Topo Maps	
Sept 7	<u>Labor Day Holiday-No Classes</u>	
Sept 10-11	<u>ASPS Conference, Hot Springs</u>	
3.	Field & Office Work General, Planning & Design	Ch. 3
Lab 3	Care & Adjustments of Instruments	
4.	Basic Survey Measurements Tape corrections, Pacing	Ch. 4
Lab 4	Chaining, Pacing	
5.	Intro to Leveling	Ch. 5
Lab 5	Levels	
6.	Leveling, Trig leveling	Ch. 5
Lab 6	3-Wire Level Circuit	
7.	Angle & Direction Measurements Bearings, Azimuths, Declinations	Ch. 6
8.	Traversing Computations	Ch. 8
Lab 7	<u>TEST #1</u>	
9.	Traverse Computations	Ch. 9
Lab 8	Closed Traverse	
10.	Astronomy Celestial Observations	Ch. 10
Lab 9	Solar Observation	
11.	Simple Circular Curves	Ch. 16

Lab 10	Horizontal curve Layout	
12.	Control & Topo Surveys	Ch. 14, 15
Lab 11	Topo Survey	
13.	Volumes, Cross Sections	Ch. 16
Lab 12	<u>TEST #2</u>	
14.	Volumes, Vertical Curves	Ch. 16, 17
Lab 13	Data Collectors	
15.	Data Collectors	Handouts
Nov 25-27	Thanksgiving Holidays	
16.	Intro to GPS Surveying	Ch. 12
Lab 14	GPS Surveying	
17. Dec 14	<u>FINAL EXAM MONDAY, 1:30-3:30</u>	

Cheating and Plagiarism Requirement

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

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

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

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

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

Examples of common knowledge compared to specific information are:

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

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

Examples using quotations and paraphrasing:

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

Correct direct quotation reads: "In hooved 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 hooved 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.

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

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

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

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

Survey Plats and Deeds (SIS 3153) Spring 2010
(3 credits, three 1-hour lectures)

Instructor: Tom Jacobs
Phone: 460-1694

Office: 101C, Forest Resources Building
Email: jacobst@uamont.edu

Class Hours:

MWF 11:10 A.M. 12:00 P.M. Room 207 in the Forest Resources Building

Office Hours:

My office hours are 9-10:30 AM on MWF, 2-4 PM Monday, and 1-4 PM Wednesday and Thursday.
Students are encouraged to visit anytime they have a question or problem.

Prerequisites:

Boundary Surveying (SIS 2014), Plane Surveying (SIS 2114)

Required Text:

Writing Legal Descriptions, Gurdon H. Wattles, Wattles Publications 1979
(ISBN: 0960696288)

Optional Text:

Boundary Control and Legal Principles, 5th Edition, Brown, Robillard and Wilson,
John Wiley and Sons, Inc. (ISBN 0471215988)

Evidence and Procedures for Boundary Location, 5th Edition, Brown, Robillard and Wilson, John Wiley
and Sons Inc. (ISBN 0471694479)

Interpreting Land Records, Donald A. Wilson, John Wiley and Sons Inc.,
(ISBN 0471715433)

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.

Grades:

During the semester there will be three 100 point written exams and a 100 point "Take Home" final exam, and a 100 point written comprehensive final exam. There will also be approximately 100 points for homework assignments. Total points possible: 600 ±

Grading Scale:

90-100% (540 -600 pts).....	A
80-89% (480 – 539 pts).....	B
70-79% (420 – 479 pts).....	C
60-69% (360 – 419 pts).....	D
0-59% (0 – 359 pts).....	F

Grade Reports:

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Learning Objectives (Core Competencies):

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 assignments, and class projects. 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 and tests. 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:

- A. A course grade of "D" regardless of the overall average, or
- B. 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. Terminology used in deeds, survey plats and legal descriptions
2. The different types of deeds and conveyances and their uses
3. How to write and interpret descriptions from the Public Land Survey System
4. How to write and interpret descriptions using Metes and Bounds
5. How to write and interpret descriptions from subdivision plats and maps
6. How to write and interpret descriptions for easements and rights of ways
7. What to do with ambiguities in a deed or description
8. Arkansas codes for preparing and filing plats, including Arkansas Minimum Standards for Boundary Surveys
9. When and how to use curve data in a description
10. Determining chain of title in conjunction with Sr. rights

Instructor's Tips:

1. Come to class willing to learn and take part in discussions.
2. Missing class HABITUALLY always results in lower grades! If you miss three or more classes (unexcused), it will result in the loss of one letter grade.
3. Keep up with reading and homework assignments.
4. Make sure all assignments and projects are turned in on time.
5. Study the material covered in class on a daily basis; don't wait until the night before an exam to try to learn it all in one night.

Instructor's Rules:

1. Discussion of assigned work between students is encouraged; however the work is to be done independently.
2. 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 concerned.
3. If you plan to miss an exam, you must let me know ahead of time and explain why you cannot take the test at the scheduled time. Unexcused absences will result in an exam grade of zero.
4. **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.**

5. The equipment used in surveying is **very expensive** and in some cases fragile. Handle all equipment with care.
6. The instructor reserves the right to change any course content due to time, weather, or any other unforeseen limitations. Changes will be announced and should likewise be noted by the student on the attached course outline.
7. **No food or tobacco of any form is allowed in class. No “active” cell phones or pagers will be permitted during any class period.** Bottled water and soft drinks in resealable bottles will be permitted in class but not in the computer labs.

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 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.

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 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 limited to;

1. The UA-M Code of Student Conduct published in the Student Catalog.
2. Attitudes appropriate for resource professional 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. (<http://www.safnet.org/who/ethics>)

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

<u>Week</u>	<u>Dates</u>	<u>Description</u>	<u>Reading Assignment</u>
1	Jan 13, 15	Introduction, History, Background	Ch. 1
2	Jan 20, 22	Records Research, the Public Record Deeds, Boundaries, Surveys, Title, GLO	Ch. 2
3	Jan 25 – 29	Field trip to County Courthouse, Mon, Jan 25 Types of Descriptions Description Fundamentals	Ch. 3
4	Feb 1 – 5	Writing Descriptions Parts, Forms, Subdividing into multiple parcels	Ch. 11

5	Feb 8 – 12	The PLSS, Water Boundaries Aliquot Parts, Riparian Rights, Accretion, Reliction, Avulsion, Test Review	Ch. 6, 13
6	Feb 15 – 19	<u>Test #1, Monday, February 15</u> Review Test, Boundaries Monuments, Courses, Retracement	Ch. 5
7	Feb 22 - 26	Description Controls Areas, Basis of Bearing, Declination	Ch. 3, 4
8	March 1 - 5	Horizontal Curves In Descriptions, Area Calculations	Ch. 4
9	March 8 - 12	Analysis and Interpretation Sufficiency, Ambiguities, Conflicting Elements	Ch. 7
10	Mar 15 - 19	Excesses and Shortages Sr. vs. Jr. Rights, Occupation vs. Title Acquiescence, Adverse Possession	Ch. 7

SPRING BREAK, MARCH 22-26

ASPS SPRING CONFERENCE, MARCH 25, 26

11	March 29-April 2	Pre-determined Areas Test Review <u>Test #2, Friday, April 2</u>	Ch. 11
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<u>Week</u>	<u>Dates</u>	<u>Description</u>	<u>Reading Assignment</u>
12	April 5 - 9	Streets & Highways Easements, Rights of Ways	Ch. 9, 12
13	April 12 - 16	Special Shapes, Description Do's & Don'ts Condominiums, Restrictive Covenants	Ch. 14 Appendix A.1
14	April 19 – 23	Arkansas Minimum Standards Plat Certificates, Test Review <u>Test #3, Friday, April 23</u>	Handouts
15	April 26 – 30	ALTA Surveys, FEMA Flood Maps Flood Certificates, LOMR'S, Firmettes	Handouts

TAKE HOME SEMESTER TEST, MONDAY, APRIL 26

16	May 4	Review
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TAKE HOME TEST DUE, MONDAY, MAY, 3

WEDNESDAY, MAY 5TH, 3:15 – 5:15, SEMESTER TEST

(Comprehensive)

Supplies required:

Engineer's Scale
Protractor
Calculator with trig functions

Arkansas Minimum Standards found at www.state.ar.us/pels/
Click on Minimum Standards, Download PDF or Word.

ALTA/ACSM standards found at www.alta.org/standards/standards.cfm
ALTA/ACSM Land Survey Standards, download PDF or Word

Cheating and Plagiarism Requirement

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

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

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

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

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

Examples of common knowledge compared to specific information are:

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

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

Examples using quotations and paraphrasing:

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

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

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- 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.

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

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

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

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

Signature:

Date:

* See the previous page for definitions and examples.

ROUTE & CONSTRUCTION SURVEYING (SIS 3264) SPRING 2010

(4 credits, two 90 Minute lectures, one 3-hour laboratory)

Instructor: Tom Jacobs, PS

Room 101C, Forest Resources Building

Phone: 460-1694, E-Mail: jacobst@uamont.edu

Class Hours: Lecture- TH 9:40 – 11:00 A.M. Room 207, Forest Resources Building
Lab – T-1:40 – 4:30 P.M. Room 207, Forest Resources Building

Office Hours: MWF 9-11 AM, M 2-4 PM, WH 1-4 PM or by appointment

Course Description:

This course focuses on the fundamentals associated with route and construction surveying. Students, upon successful completion of this course, will have a better understanding and appreciation for the horizontal circular curves, vertical curves, spiral curves, volume determination, road layout & construction, building layout, and the design and layout of a subdivision.

Required Text: Surveying Theory and Practice, 7th Edition, 1998. Authors James M Anderson and Edward M Mikhail. McGraw-Hill Publications.
(ISBN 0-07-015914-9)

Suggested Readings: Land Development Handbook, 2nd Edition, 2002. The Dewberry Companies – McGraw-Hill Publications

Construction Surveying and Layout, 3rd Edition. Wesley G Crawford, Creative Construction Publications
(ISBN 0-9647421-1-X)

Supplies Needed: Field Book (available from UAM Bookstore), mechanical pencil, calculator with trigonometric functions, Engineer's Scale, large three-ring binder for notes & handouts

Prerequisites: Math 1073 Compact Calculus or Math 2255 Calculus I
SIS 2023 Geographic Coordinate Systems/ Cartography
SIS 2114 Plane Surveying

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, quizzes, and class discussions. Demonstration of learning objectives does not guarantee a certain grade, but will likely result in a better grade. Problems used to assess core competencies will be indicated on assignments. Given a course grade of "C" or better has been earned, failure to demonstrate all learning objectives will result in one of two actions which will be determined by the instructor:

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

Learning Objectives

- 1) Understand terminology associated with route and construction surveying
- 2) Demonstrate the ability to calculate horizontal circular curves
- 3) Interpret route construction plans, diagrams, and drawings
- 4) Properly calculate vertical curves
- 5) Calculate volumes of material (soil, concrete, rock, etc)
- 6) Correctly layout a horizontal circular curve
- 7) Properly layout a street
- 8) Understand terminology and guidelines associated with subdivisions
- 9) Interpret building construction plans
- 10) Correctly layout a building

Grades:

During the semester there will be 3 written exams worth 100 points each, a number of quizzes, lab assignments, and homework assignments worth approximately 200 points, and a final exam worth 100 points for a total of 600 points for the semester.

Grading Scale:

Final course grades will be assigned as follows:

90-100% (540-600 pts).....	A
80-89% (480-539 pts).....	B
70-79% (420-479 pts).....	C
60-69% (360-419 pts).....	D
0-59% (0-359 pts).....	F

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Instructor's Tips:

- ✓ Come to class willing to learn and take part in discussions.
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- ✓ Keep up with reading and homework assignments.
- ✓ Study the material covered in class on a daily basis; don't wait until the night before an exam to try to learn it all in one night.

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1. Discussion of assigned work between students is encouraged; however the work is to be done independently
2. 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 all parties involved
3. 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
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6. Food and all forms of tobacco are prohibited in class. Bottled water and soft drinks in resealable bottles are acceptable. **No 'active' cell phones or 'active' pagers will be permitted during any class period.**

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.

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[\(http://www.state.ar.us/pels/conduct.html\)](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.

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Disorderly Conduct:

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COURSE OUTLINE

Week	Topic	Reading assignment
1 & 2 Lab #1	Circular Curves Horizontal Curve Layout (Deflection Angle Method)	Chapter 16

3 Lab #2	A.H.T.D. Right-of-Way Plans Horizontal Curve Layout (Tangent Offset Method)	Handouts
4 Lab #3	Vertical Curves Layout a Vertical Curve (Crest Curve)	Chapter 16
5 Lab #4	AHTD Highway Construction Plans Layout a Vertical Curve (Sag Curve)	Handouts
6 LAB #5	Superelevated Curves TEST #1	Chapter 16
7 Lab #6	Compound and Concentric Curves Curve Problems	Chapter 16
8 Lab #7	Roadway Volumes Slope Staking	Chapter 16
9 Lab# 8	Roadway Staking Setting Blue Tops	Chapter 16
10 LAB #9	Subdivisions TEST #2	Chapter 18
11 Lab #10	Building Construction	Chapter 17
12 Lab #11	Street Construction Building Layout	Chapter 17
13 Lab #12	Bridge/Overpass Construction Street Layout	Chapter 17
14 LAB #13	Spiral Curves TEST #3	Chapter 16
15 & 16 Lab #14 Lab #15	State Plane Coordinates Topos Topos	Chapter 16

FINAL EXAM – THURSDAY, MAY 6, 1:30-3:30 P.M.

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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)

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- Any person
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- Any electronic source (internet source, word document file, or any digital data)

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- As of 2002, 2,854,838 people over the age of 65 lived in Florida (U.S. Census Bureau 2003) is specific knowledge.

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

Examples using quotations and paraphrasing:

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

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

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

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compliance with the following in regard to all coursework:

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10. The work you submit is yours and yours alone unless part of a group assignment or group laboratory report;
11. You will not cheat* or plagiarize* at any time while completing your assignments, laboratory reports, or exams; and
12. For exams, you will not discuss their content with any other student in the class until all students have completed the exam and the answers are made available.

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

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

Signature:

Date:

Printed Name:

* See the previous page for definitions and examples.

INTRODUCTION TO GIS, GPS, AND REMOTE SENSING (SIS 3814)

Spring 2010 (4 credits)

"GIS is an amazing thing, it gives you such a great feeling to be able to fly across the globe. It is out of this world!" (Anonymous)

"No one ever went down in history for doing something that was easy." (Ali Felix Locher)

Instructor:

Dr. Alexandra Felix Locher
217 Forest Resources Building
460-1748
felix@uamont.edu

Office Hours:

by appointment

Class Hours:

T Th 11:10-12:30 P.M. Room 210 Forest Resources Building
Lab Th 1:40 – 4:30 Room 210 Forest Resources Building

Prerequisites:

CIS 2223 Microcomputer Applications, MATH 1043 College Algebra or MATH 1175 Pre-calculus

Optional Texts:

Ormsby, T., E. Napoleon, R. Burke, C. Groessl, L. Feaster. 2004. Getting to Know ArcGIS Desktop, 2nd Ed. ESRI Press, Redlands, California, USA. (*RECOMMENDED*)

Price, Maribeth. 2010. Mastering ArcGIS, Fourth Edition. McGraw-Hill, Boston, Massachusetts, USA.

Course Description:

This course will be problem-based and solution-goal oriented. This course will provide an introduction to geographic information systems (GIS), global positioning systems (GPS), remote sensing (RS), and their integration. Students will learn exciting topics such as data entry, data acquisition, database construction and manipulation, data analysis, and mapping of spatial data. Applications will be varied, but will focus on natural resources management, research and analysis.

Core Competencies:

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 exams and assignments. 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:

3. A course grade of "D" regardless of the overall average, or
4. 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 2 weeks. Please note that if a grade of "I" is not replaced during the time period allotted, the grade of "F" will be assigned.

Learning Objectives

- ✓ Understand projections, GCS, and convert data appropriately
- ✓ Integrate data into a GIS from various sources (digitizing, public, GPS, manually)
- ✓ Establish a geodatabase and understand file structure
- ✓ Understand, use and provide metadata
- ✓ Conduct spatial analyses based on geoprocessing tools
- ✓ Conduct operations and analyses using attributes
- ✓ Explain the basis of vector and raster data
- ✓ Solve problems using GIS
- ✓ Produce professional maps
- ✓ Explain the components of a GIS, their purpose and use

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.

<u>Course Evaluation:</u>	<u>Number of Points</u>	<u>% of Grade</u>
Class participation	50	9
Homework assignments	130	24
Exam I	100	18
Exam II	120	22
Project	150	27
<i>TOTAL POINTS</i>	<i>550</i>	

Grading Scale:

Final Course grades will be assigned as follows:

90-100% of total points	A
80-89% of total points	B
70-79% of total points	C
60-69% of total points	D
0-59% of total points	F

Issuance of Grades:

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Tips for getting the most out of class:

5. Come to class willing to learn, take part in discussions, and just plain have fun!
6. Missing class HABITUALLY always results in lower grades! If you want the full credit for class participation, please come to class. **Absences during class presentations count double.**
7. Keep up with reading and homework assignments.
8. 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 Expectations:

5. This course is VERY time consuming and computer intensive. Students should expect to spend many hours in the GIS lab outside of the formal class and lab each week.
6. I will work hard to help you understand and master the material. That is my job. I expect that you will also work hard to understand the material and complete assignments.
7. Discussion of assigned work between students is encouraged; however each student will be held accountable for learning the material.

8. 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 concerned.
 9. 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.
 10. Assignments are due on the date listed. No late papers will be accepted without a valid excuse. "Validity" is determined at the instructor's discretion.
 11. **No Food, Drinks, or Tobacco of any kind are permitted in the Lecture or Computer Lab. No 'active' cell phones or 'active' pagers will be permitted during the class period.**
 12. *Cell phone use will not be tolerated. This includes text messaging. The first time your phone rings in class (including vibrates), or I see you text-messaging or otherwise using your phone in any way, you will receive a verbal warning.*
- ME IN THAT POSITION.**

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 - a. Respect for others and their ideas;
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- 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 hooved mammals there is so far no visible evidence of any density limit except the carrying capacity of food.

Correct direct quotation reads: “In hooved 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 hooved 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.

Schedule:

Week	Date	Cool Topic	Reading Assignment	Cool lab topic
1	January 14	Course introduction and expectations		Understanding the ArcGIS Interface
2	January 19 January 21	Overview of GIS, project assignment Maps and data models (vector)	ESRI Chapter 1	Understanding ArcCatalog
3	January 26 January 28	Data models (vector/raster) Data models (vector/raster)	Chapter 4 (p.159-166) Chapter 2	Attribute and location queries
4	February 2 February 4	Queries and selection Queries and selection	Chapter 2	More attribute and location queries
5	February 9 February 11	Coordinate systems Map projections	Chapter 3 Chapters 4 - 5, 7	Digitizing and geodatabases
6	February 16 February 18	Project planning and data types EXAM I	Chapter 5	Fun with GPS
7	February 23 February 25	Global positioning systems (GPS) GPS (continued)	Chapter 4 p. 146-158	Georeferencing
	March 2 March 4	Present project proposals (peer review) Present project proposals (peer review)		Acquire data for projects
8	March 9 March 11	Basic spatial analysis Importance of flow charts	Chapter 8 Chapter 9	Spatial data analysis
9	March 16 March 18	More spatial analysis Even MORE spatial analysis!	Chapter 6	Spatial data analysis
10	March 23	SPRING BREAK!	Chapter 10	



	March 25	SPRING BREAK!	
11	March 30 April 1	Review of spatial analysis GIS and remote sensing	Raster analysis Project work
12	April 6 April 8	Understanding grids Review and study for Exam II	EXAM II
13	April 13 April 15	Project progress and planning Project progress and planning	Project work
14	April 20 April 22	3D Mapping Future directions	Project work
15	April 27 April 29	Presentations Presentations	Presentations
16	May 4	Work on reports (attendance REQUIRED)	

The final papers will be due no later than 10:30 on Tuesday, May 11.

Advanced Geographic Information Systems (SIS 3843) Spring 2010

(3 credits, two 1-hour lectures, one 3-hour laboratory, 638401)

INSTRUCTOR: Dr. Robert (Bob) Weih

130 Forest Resources Building

PHONE: 460-1248

Email:

Web:

CLASS HOURS: MW 9:10 - 10:00 A.M.; Room 211 Forest Resources' Building (James C. Scott Classroom)

LAB HOURS: M 1:10 - 4:00 P.M.; Room 211 Forest Resources' Building (James C. Scott Classroom)

OFFICE HOURS: My office hours are from 10:10 - 11:00 A.M. Monday, Tuesday, and Wednesday. I welcome questions and

enjoy working with students. Generally, I will be available for help anytime I am not in class for quick questions, but large time-consuming questions require meeting during office hours or an appointment.

OBJECTIVES: 1) To familiarize students with advance fundamentals of GIS analyses and geodatabases.

2) To develop an appreciation of spatial technologies and its application to natural resource management.

3) To acquaint students with the principles of GIS for mapping and modeling data in two and three dimensions.

4) To develop technical skills in the use of vector and raster GIS in modeling (ArcGIS).

5) Introduction to Python scripts and model builder to perform GIS analysis.

6) To gain experience in the use of computers and data processing techniques as applied to representing the earth and applying analyzes to extract information and understand relations.

GRADES: During the semester there will be three projects (50-Point, 125-Point, and 50-Point), a 100-POINT exam and a

100-POINT written final. There will also be approximately 125 points for unannounced quizzes and lab assignments. Test and quiz material will include material discussed in class, reading and lab material. TOTAL

POINTS: 550 points

Final Grade percentages will be rounded to the nearest tenth and course grades will be assigned as follows:

89.5% or higher A

79.5% to 89.4% B

69.5% to 79.4% C

59.5% to 69.4% D

59.4% or lower F

Subject Area Student Assessment

Certain core course-related competencies must be demonstrated on exams in order for one to receive a grade for this course. While the grade received is earned as outlined above, the core competencies are used to assess an individual's competency of key course components and must be proven and/or demonstrated in order to receive the course grade earned. Demonstration of core competencies does not guarantee any particular grade, although mastery of core competencies during the semester will most likely result in a better grade. During the semester, students will have at least two opportunities to demonstrate each core competency on exams and/or projects. The core competency questions will be clearly labeled on the exam and/or project. See the example shown below.

15.) (5 points, Core Competency # 4) Write a Map Algebra expression (1 line request) for the [Restaurants] grid theme that finds the type of restaurant (1=Chinese, 2= Italian, etc.) that occurs most frequently within 2 kilometers of every cell. [Restaurants] is in UTM projection and the units are meters. The [Restaurants] cell size is 5 meters and you will be ignoring NoData cells.

If by the completion of the semester, and all exams therein, each core competency has not been successfully demonstrated at least once, a grade of I (Incomplete) will be issued. The affected student will then have one additional semester (fall/spring) from the time the grade of I was received to demonstrate, in a manner chosen by the instructor, the needed competency. Post-course demonstration of incomplete competencies is allowed only during academic semesters or summer sessions. Once all incomplete competencies are demonstrated within the one semester timeframe, the grade of I will be changed to the course grade earned as outlined above.

If the core competencies are not demonstrated within the one semester timeframe, the grade of I will default to a grade of F as per university guidelines. It is to the affected student's advantage to demonstrate needed competencies within one semester or summer session of the initial course attempt.

The core competencies to demonstrate for this course are:

Core Competency Number Description

- 1 Be able to think spatially and solve spatial problems.
- 2 Build a Geodatabase with subtypes and attribute domains
- 3 Be able to use both spatial and attribute queries to answer questions.
- 4 Understand Map Algebra and be able to write Map Algebra
Expressions to answer questions
- 5 Be able to define a watershed and viewshed using a DEM
- 6 Define GIS terminology
- 7 Be able to organize GIS data for a project and produce a directory/disk independent ArcGIS map document on a CD/DVD
- 8 Be able to communicate GIS concepts using a poster and/or maps.

Issuance of Grades

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 McGehee.

Note: After the successful completion of this course, students can pick up an ESRI Working with ArcGIS Spatial Analyst Certificate from the instructor since they would have completed all the requirements and the instructor is an ESRI authorized Working with ArcGIS Spatial Analyst Instructor. This is Optional.

INSTRUCTORS TIPS:

- 1) Come to class willing to learn and have fun.
- 2) Missing class HABITUALLY always results in lower grades! If you miss three or more classes (unexcused), it will result in a loss of one or more letter grades.
- 3) Keep up with reading and homework assignments and bring a calculator every day.

INSTRUCTORS RULES:

- 1) Discussion of assignments between students is encouraged; however the work must be done independently.
- 2) Cheating and/or plagiarism will result in a zero on that assignment to all parties involved. *Cheating and plagiarism are both violations of the UAM Student Academic Conduct Code as defined in the Student Handbook.*
- 3) If you plan to miss an exam, you have to let me know ahead of time and explain why you will not be able to take the exam at the scheduled time. Unexcused absences from exams result in a zero for that exam.
- 4) Late projects will be penalized 25% for each day past the due date.

Advanced Geographic Information Systems I Spring 2010 Page 3 of 7

PROFESSIONALISM STATEMENT, School of Forest Resources University of Arkansas - Monticello:

Students in the School of Forest Resources (SFR) 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.

Since the School is dedicated to professional education rather than technical training, the faculty and staff have certain expectations of themselves and of SFR students with regard to professionalism and personal conduct in their preparation for careers in the natural resource professions. Thus, 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.
(<http://www.safnet.org/who/ethics>)

Instructors reserve the right to reduce student grades (two 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". This action is prohibited under the Student Conduct Code. Disorderly conduct or disruptive behavior **will not be tolerated** in the School of Forest Resources. Such conduct may result in dismissal from classes.

STUDENTS WITH DISABILITIES

It is the policy of the University of Arkansas-Monticello to accommodate individuals with disabilities pursuant to federal law and the University's commitment to equal educational opportunities. It is the responsibility of the student to inform the instructor of any necessary accommodations at the beginning of the course.

Any student requiring accommodations should contact the Office of Special Student Services located in Harris Hall Room 120; phone 870 460-1026; TDD 870 460-1626; Fax 870 460-1926.

PREREQUISITES: (An approved undergraduate Statistics class or FOR 3353 Biometrics in Natural Resources) and SIS 3814 Introduction to GIS, GPS, and Remote Sensing or permission from the instructor

REQUIRED TEXT: *ArcGIS 9: Using ArcGIS Spatial Analyst J. McCoy, K. Johnston, S. Knopp, B. Borup, and J. Willison.*

ESRI Press. 2004. (ISBN: 1-58948-105-4)

Working with ArcGIS Spatial Analyst (Lecture Notes and Exercises, 2 books) ESRI Educational Services. Version 3.1. Note: These books can be picked up after the semester has started from Billy Hogue in the bookstore. The instructor will inform you when the books are in the bookstore.

OPTIONAL TEXT: *ArcGIS 9: Building a Geodatabase A. Perencsik, S. Woo, B. Booth, S. Crosier, J. Clark, and A.*

MacDonald. ESRI Press. 2004. (ISBN: 1-58948-102-X)

Advanced Geographic Information Systems I Spring 2010 Page 4 of 7

ArcGIS 9: Geodatabase Workbook B. Booth, J. Shaner, A. MacDonald, P. Sanchez, and R. Pfaff. ESRI Press. 2004. (ISBN: 1-58948-093-7)

SUPPLEMENTARY TEXT AND READINGS: Principles of Geographic Information Systems Peter A. Burrough and Rachael A.

McDonnell. 1998. (ISBN 0-19-823365-5)

Geographic Information Systems: A Management Perspective Stan Aronoff 1989.
(ISBN 0-921804-91-1)

Human Factors in Geographic Information Systems David Medyckyj-Scott and Hilary Hearnshaw 1993. (ISBN 1-85293-262-7)

Geographic Information Systems, Vol. 1 & 2, D. Maguire, M. Goodchild, and D. Rhind. 1991. (ISBN 0-471-32182-6)

Principles of GIS for Land Resources Assessment, Burrough, Clarendon Press, 1988.

An Introduction to Applied Geostatistics, E. Issaks and R. Srivastava, 1989.

Spatial Reasoning for Effective GIS, J. Berry, 1985. (ISBN 1-882610-14-8)

Accuracy of Spatial Databases, M. Goodchild and S. Gopal, 1994.

Learning Python, 2nd Edition, M. Lutz and D. Ascher, 2004. (ISBN 0-596-00281-5)

Designing better Maps, C. Brewer, 2005. (ISBN 1-58948-089-9)

WEB Sites:

<http://campus.esri.com/campus/catalog/>

(First Assignment and will be helpful in classes, Search for Making Better Map Layouts with ArcGIS, What's New in ArcGIS 9.3, What's New in ArcGIS 9 Labeling and Annotation, Working with Map Projections and Coordinate Systems in ArcGIS , Do the training, It is Free)

<http://arcscripts.esri.com/> ESRI Scripts and Extensions

<http://www.onwordpress.com/resources/olcs/razavi/scripts.html> Developer's Guide Scripts

<http://software.geocomm.com/scripts/arcview/> Avenue Scripts

http://www.geosnap.com/Frame_Scripts.htm Scripts and Extensions

<http://rockyweb.cr.usgs.gov/public/outreach/gistools.html> USGS GIS Tools

<http://mappingcenter.esri.com/> ESRI Mapping Center

SUPPLIES: Writeable CDs and/or DVDs (**Required**)

Advanced Geographic Information Systems I Spring 2010 Page 5 of 7

COURSE OUTLINE:

Topic Tentative

Week(s)

Reading Assignments

(Color and font coded)

Understanding GIS and Thinking Spatially

Distinguishing data from information

Link between model logic and GIS code

Build a GIS and they will come

Ask not what you can do for your GIS but what your GIS can do for you

1 - 2

Notes

Understand Spatial Databases (Vector GIS)

Exploring ArcGIS Concepts

Displaying spatial locations from tabular data (Geocoding)

Modifying the ArcGIS interface (Customize dialog)

Designing a GIS database

Populating the Geodatabase

Setting Geodatabase validation rules

Editing Spatial and Attribute data

Spatial analysis functions and geoprocessing

PROJECT #1 (Building a Vector GIS Geodatabase)

and presentation (50 points)

2 - 6

Chapter 2 & Chapter 4

Chapters 1 – 5 Optional

FIRST EXAM (100 Points) 7

Cartographic Modeling (Raster GIS)

Cartographic Model What? Huh?

Raster Concepts

Building a raster database

Spatial Analysis

Spatial Analyst Map Algebra 101

Raster Processing

Spatial Interpolation

Surface Creation

Topographic Analysis

Hydrologic Modeling

Distance Tools

Building Models

Advanced Display Techniques

Spatial dependency

PROJECT #2 (Building a Spatial Model) and presentation (125 points)

Building Python Scripts in ArcGIS 9.x

PROJECT #3 (Group GIS Poster) and presentation (50 points)

8 – 13

12 – 14

14

15-16

Read the whole Book

Read both the Books,

will be using the books

in Lab and class for this

section, Very Good

Reference, Bring

everyday

FINAL (Written Comprehensive, 100 points, May 11, 8:00 – 10:00) 16

Advanced Geographic Information Systems I Spring 2010 Page 6 of 7

Cheating and Plagiarism Requirement

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

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

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

Plagiarism: The use of writings, concepts, or thoughts of **another**, which are specific information and not common

knowledge, without acknowledging the source(s). As used above, **another** is any of the following, but not limited to:

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

Examples of common knowledge compared to specific information are:

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

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

Examples using quotations and paraphrasing:

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

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

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

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

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

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

- Failing to provide a reference (attribution).
- Copying graphics and pictures from the internet without a reference (attribution).

- Paraphrasing without a reference (attribution).

Advanced Geographic Information Systems I Spring 2010 Page 7 of 7

- Submitting someone else's work.

When in doubt about plagiarism consult your instructor.

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

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

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

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

*See the body for definitions and examples.

Signature: Date:

Printed Name:

Remote Sensing

SIS 3923 Fall 2009

Instructor: Dr. Robert E. Kissell, Jr.

Office: SFR 125

Office Hours: TBA

Phone: 870-460-1192

Email: kissell@uamont.edu

Time: Lecture, MW 8:10-9:00; Lab, T 1:40-4:30

Required Text(s): Paine, D. P, and J. D. Kiser. 2003. Aerial photography and image interpretation. 2nd Edition. John Wiley & Sons, Inc., Hoboken, NJ.

Supplementary Texts and Readings:

Lillesand, T. M. and R. W. Kiefer. 2000. Remote Sensing and Image Interpretation. John Wiley & Sons, Inc. New York.

Paine, D. 1981. Aerial Photography. John Wiley & Sons, Inc. New York.

Prerequisites: FOR 3353 (Biometrics in Natural Resources) and SIS 3814 (Introduction to GIS, GPS, and RS).

Course Description: This course will provide photogrammetric and remote sensing concepts and theories that introduce both electronic and analog sensor systems, geometry and photo measurements, mapping from vertical aerial photographs and images, photo interpretation, and natural resources inventory.

Course Objectives: Gain a basic understanding of the theory of remote sensing, develop a working knowledge of the types of remotely sensed data, acquaint students with the principles of measuring and analyzing forest resources using aerial photos, develop technical skills for the measurement and interpretation of aerial photographs, introduce the role of computers and data processing techniques in remote sensing, and develop an understanding and appreciation for the use of remote sensing in natural resources management and research.

As a student of remote sensing, by the end of this course you should understand the following:

- Electromagnetic spectrum
- Relationships between sensors and the electromagnetic spectrum
- Principles of stereoscopic vision
- Photogrammetric formulas
- Statistical formulas related to photogrammetry

You should be able to provide and understand the concepts and theories of the aforementioned in oral and written formats, each in a clear and concise manner.

As a practical user, you should be able to provide each of the following:

- Calculate scale of aerial photos
- Calculate distances, bearings, and areas from aerial photos
- Calculate vertical measurements from aerial photos
- Distinguish landforms, drainage patterns, land uses, and environmental changes from aerial photos
- Calculate mapping accuracy

You should be able to provide written and oral explanations of problems related to and the process to determine each of the aforementioned in a clear and

concise manner.

Course Grade:

Your grade for this course will be based on the following:

Homework: 5 @ 20 points each 100 points

Exams: 4 @ 100 points each 400 points

Laboratory: 5 @ 20 points each 100 points

Lecture Presentation: 1 @ 100 points 100 points

Research Paper: 1 @ 100 points 100 points

Quizzes: 10 @ 15 points each 150 points

Participation: 1 @ 50 points 50 points

Total: 1000 points

Assigned home work will be collected at the beginning of the class on the date due; credit for illegible work will not be provided. Exams will be given during the first two (2) hours of the indicated laboratory (see schedule). Lecture presentation will cover an assigned topic; details will be provided in a separate document. Likewise, details regarding a research paper will be provided in a separate document. Quizzes will be administered as indicated in the tentative schedule below. Note that more than one quiz per week will occur.

Grading Scale: SIS 3923 SIS 5063

A = \geq 900 points (90-100%) A= \geq 930 points (93-100%)

B = 800-899 points (80-89%) B = 850-929 points (85-92%)

C = 700-799 points (70-79%) C = 770-849 points (77-84%)

D = 600-699 points (60-69%) D = 700-769 points (70-76%)

F = \leq 699 points (< 60%) F = \leq 699 points (< 70%)

Core Competencies/Learning Objectives:

The following objectives have been identified as important for this course. All students are required to complete each of the objectives listed below during the semester. At least two (2) opportunities to demonstrate that objectives have been met will be provided during exams and quizzes. To successfully demonstrate that you met each objective, you must answer at least 60% of the question(s) relating to that objective correctly.

Demonstration of objectives does not guarantee a certain grade, but will likely result in a better grade. Given a course grade of "C" or better has been earned, failure to demonstrate all 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 objectives have been demonstrated; the time limit is at the discretion of the instructor, but will not exceed 2 weeks. It should be noted that if a grade of "I" is not replaced during the time period allotted the grade of "F" will be assigned.

Objectives

- 1) Calculate scale from an aerial photo
- 2) Calculate distance from an aerial photo
- 3) Calculate area from an aerial photo
- 4) Calculate bearings from an aerial photo

- 5) Calculate vertical measurements from an aerial photo
- 6) Interpret aerial photos and imagery
- 7) Provide a flight plan
- 8) Explain the EMS
- 9) Provide differences between imagery and photos
- 10) Provide differences in the types of acquisition of imagery

Missed Exams: If you miss an exam, an opportunity to make up the exam will be considered only if a valid, excused absence is granted. Make-up exams will be in an essay format. No other work will be considered to supplement points. 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 McGehee.

Academic Conduct: Cheating and plagiarism are both considered violations of the UAM Student Academic Conduct Code as defined in the Student Handbook. 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.

Class Attendance Policy: Attendance in this class is mandatory. More than 5 unexcused lecture and/or lab absences will result in the loss of one letter grade. Students participating in University-sponsored events will be given a reasonable opportunity to make up assignments and exams.

Students with Disabilities:

It is the policy of the University of AR 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.

Inclement Weather Policy: In case of inclement weather, this class will meet for lectures and scheduled exams unless UAM officially cancels all classes.

No tobacco of any kind and no 'active' cell phones are permitted in lecture or lab.

Tentative Lecture Schedule:

Lecture Subject

Week

Reading

(Pages)

Introduction 1

Geometry of Vertical Aerial Photography (Chapters 1 & 2) 2 1-43

Stereoscopic Vision & Scale (Chapter 3 & 4) (H) 3 44-85

Horizontal Measurements (Chapter 5) (H) 4 86-104

Exam 1 5
Vertical Measurements (Chapter 6) (H) 6 105-130
Photo acquisition (Chapter 7) (H) 7 131-157
Mapping Accuracy & Photo Mensuration (Chapters 23 & 24) 8 465-525

Exam 2 9
Electromagnetic Spectrum (Chapter 26) (H) 10 529-539
Active & Passive Remote Sensors (Chapters 27 & 28) 11 540-585
Across- and Along-track scanning 12 Notes

Exam 3 13
Remote Sensing – Wavelengths/ Satellite imagery 14 Notes
Remote Sensing – Wavelengths/ Satellite imagery 15 Notes

Review 16
Exam 4/Core Competency Completion 17 See Lab

Tentative Laboratory Schedule
Laboratory Subject Week Date

No Lab 1

Conversion Exercises 2 1 September 2009
PP, IC, nadir, heights and displacement (Q) 3* 8 September 2009
Blind spots, depth perception, floating dots (QQ) 4 15 September 2009

Exam 1 5 22 September 2009

Template use, horizontal measures (Q) 6* 29 September 2009
Vertical measures, displacement and area (QQ) 7 6 October 2009

Flight Planning (Field Trip) (Q) 8* 13 October 2009

Exam 2 9 20 October 2009

Interpretation; Resource Mgmt 10 27 October 2009
Statistics and sampling/ Mapping accuracy (Q) 11* 3 November 2009

EMS 12 10 November 2009

Exam 3 13 17 November 2009

Satellite imagery (Q) 14 24 November 2009

Satellite imagery (Q) 15* 1 December 2009

Satellite imagery (Q) 16 8 December 2009

Exam 4

Core Competency Completion

17 16 December 2009

1:30 pm

***LAB IS DUE AT THE END OF THE PERIOD AND IS WORTH POINTS.**

Labs are approximately 3 hours in duration. You will be expected to provide typed answers for each lab (as noted) during that 3 hour period. No work will be accepted that is late or not typed.

You are required to have the following for lab:

- 1) A calculator;
- 2) An engineer's ruler;
- 3) A No. 2 pencil; and,
- 4) The required text.

Do NOT come to lab without these items! I do not have extras and your fellow students will not appreciate you being unprepared.

**SCHOOL OF FOREST RESOURCES
UNIVERSITY OF ARKANSAS – MONTICELLO PROFESSIONALISM
STATEMENT**

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.

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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 Wildlife Society Code of Ethics, American Society for Photogrammetry & Remote Sensing.

Instructors reserve the right to reduce student grades for unprofessional behavior.

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

(1.) all aspects of the UA-M Conduct Code have been followed with respect to all assignments, laboratory reports, or exams to be completed during this semester;

(2.) the work you submit is yours and yours alone unless part of a group assignment or group laboratory report;

(3.) you will not cheat or plagiarize at any time while completing your assignments, laboratory reports, or exams; and

(4.) for exams, you will not discuss their content with any other student in the class until all students have completed the exam and the answers are made available.

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

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

*See attached for definitions and examples.

Signature: Date:

Cheating and Plagiarism Requirement

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

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

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

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

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

Examples of common knowledge compared to specific information are:

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

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

Examples using quotations and paraphrasing:

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

Correct direct quotation reads: "In hooved 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 hooved 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.

Spatial Statistics

SIS 5073 Fall 2009

Instructor: Dr. Robert E. Kissell, Jr.

Meeting Time: TBA

Office: SFR 125

Office Hours: TBA

Phone: 870-460-1192

Email: kissell@uamont.edu

Required Text(s): None.

Recommended Reading: Chiles, J. and P. Delfiner. 1999. Geostatistics: modeling spatial uncertainty. John Wiley & Sons, Inc. N.Y., NY.

ESRI. 2001. Using ArcGIS Geostatistical Analyst. Environmental Systems Research Institute, Inc. Redlands, CA.

Isaaks, E. H. and R. M. Srivastava. 1989. Applied geostatistics. Oxford University Press, Inc. N.Y., NY.

Ripley, B. D. 1981. Spatial statistics. John Wiley & Sons, Inc. N.Y., NY.

Schabenberger, O., and C. A. Gotway. 2005. Statistical Methods for Spatial Data Analysis. Chapman and Hall/CRC. N.Y., N.Y.

Prerequisites: Statistics for Research I and II.

Course Description: This is typically a discussion, problem-based course that will provide an exploration of spatial statistics. Students will be presented statistical theory and methods used to determine patterns of spatial variability. In the event the class size is small, this course will be treated as a problem-based course, similar to an independent study.

Course Objectives: Provide an understanding of the theory of spatial statistics, 2) learn how to successfully apply the theory to problems found in natural resources management and research, and 3) become cognizant of the type of questions for which these approaches are best suited.

Course Grade

Your grade for this course will be based on the following:

Project 1 @ 100 points 100 points

Exams: 2 @ 100 points each 200 points

Total: 300 points

The project will cover a problem defined by the student and approved by the instructor. More detail of expectations of the project will be presented in class. Exams will cover the synthesis and application of papers read and problems presented.

Grading Scale:

A = \geq 270 points (90-100%)

B = 240-269 points (80-89.999%)

C = 210-239 points (70-79.999%)

D = 180-209 points (60-69.999%)

F = \leq 179 points (< 60%)

Missed Exams: If you miss an exam, an opportunity to make up the exam will be considered only if a valid, excused absence is granted. No other work will be considered to supplement points.

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 McGehee.

Academic Conduct: Cheating and plagiarism are both considered violations of the UAM Student Academic Conduct Code as defined in the Student Handbook. 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.”

Class Attendance Policy: Attendance in this class is mandatory. More than 4 unexcused lecture and/or lab absences will result in you being dropped from the course. Students participating in University-sponsored events will be given a reasonable opportunity to make up assignments and exams.

Students with Disabilities:

It is the policy of the University of AR 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.

Inclement Weather Policy: In case of inclement weather, this class will meet for lectures and scheduled exams unless UAM officially cancels all classes.

Tentative Schedule:

Topic Date/Week

No Class 26 Aug./1

Introduction/Traditional vs. Spatial Statistics 1 Sept./2

Modifiable Areal Unit Problem (MAUP) 8 Sept./3

Scale 15 Sept./4

Aggregations/ Boundary Problems 22 Sept./5

Spatial Autocorrelation 29 Sept./6

Ordered Processes 6 Oct./7

Exam 13 Oct./8

Exploratory Data Analysis/Guidelines for quantifying spatial data 20 Oct./9

Spatial Regression 27 Oct./10

Geostatistics – Deterministic Interpolation 3 Nov./11

Geostatistics – Stochastic Interpolation 10 Nov./12

Geostatistics – Stochastic Interpolation – Model Selection 17 Nov./13

Project 24 Nov./14

Project 1 Dec./15

Project 8 Dec./16

Exam TBA

LAW AND PROFESSIONALISM IN GEOMATICS - SIS 4183

Department of Business Administration

University of Arkansas at Monticello

Fall Term

August 27, 2008 - December 15, 2009

INSTRUCTOR:

Bill Daniels

William R. Daniels, P. A. , Attorney at Law

104 North Main Street

Monticello, Arkansas 71655

870-367-8181

TEXT REQUIRED:

"Surveying the Courtroom (A Land Expert's Guide to Evidence and Civil Procedure)" 2nd Edition, by John Briscoe. John Wiley and Son Inc. (ISBN 0-471-31840-X)

Optional Readings:

"Legal Principles of Boundary Location for Arkansas" 1984. Richard Elgin & David Knowles. Landmark Enterprises.

"Brown's Boundary Control and Legal Principles", 5th Edition, 2003. Robillard, Wilson, and Brown. Wiley Publications.

"Handbook for Arkansas Land Surveyors", 3rd Edition, 1993, William K. Finefield et al. Arkansas Geological Commission, Land Survey Division.

COURSE FORMAT:

Classes are scheduled to meet at 9:40 A.M. - 11:00 A.M. on each Tuesday & Thursday during the fall school term, beginning on Thursday, August 27.

Classes will be conducted with a combination of lectures and question and answer/discussion. Students are encouraged to ask questions and will be expected to participate in discussions.

ATTENDANCE POLICY:

Students will be expected to attend all classes on a regular and punctual basis. Lecture discussions may be essential to your performance on examinations. No children or cell phones are allowed in the classroom.

GRADING POLICY:

There will be one (1) regular exams & may be some quizzes which will cover material dealt with in the course text book, lectures, and class discussions. In addition, there will be a comprehensive final exam. The final exam will be 50% of your total grade. Each exam will be for 100 points, and grades will be assigned as follows:

90 - 100 = A

80 - 89 = B

70 - 79 = C

60 - 69 = D

Below 60 = F

The Exams will primarily be objective, but some factual situations may be presented for your discussion and analysis, particularly on the final examination. I cannot guarantee make-up exams in this course. Should you be unable to take

an exam due to sickness, emergency, or some other reason, you should notify me or the School of Forest Resources Secretary (460-1049) **BEFORE** the scheduled exam period; failure to notify me in a satisfactory manner can result in a grade of "0" being assigned for the missed examination.

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 your responsibility to inform me of any necessary accommodations at the beginning of the course. You should also contact the Office of Special Student Services located in the southeast corner of the Student Services Center, phone 870-460-1154, TDD 870-460-1251 and fax 870-460-1810.

THE FOLLOWING ACTION IS PROHIBITED UNDER THE STUDENT CONDUCT CODE:

DISORDERLY CONDUCT: 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.

COURSE READING ASSIGNMENTS

This syllabus may be changed at the discretion of the INSTRUCTOR due to time elements, class participation, etc. The classes will be more interesting if there is class participation in the form of discussion questions/answers. Each student is responsible for reading all chapters as assigned. Discussions will be much more educational if you have read the material prior to entering the class room; therefore, this syllabus sets a plan for each chapter(s) to be read prior to the class discussion of that chapter.

Week Dates Description Reading Assignment

1. Aug 27 Introduction- Handouts

Arkansas & U.S. Court Systems.

2. Sept. 1-3 Rules of Evidence Ch. 1,2,3

Relevance, Documentary Evidence,

Hearsay

Sept 7 Labor Day Holiday

3. Sept 8-10 Rules of Evidence Ch. 4,5,6

Burden of Proof, Presumptions

4. Sept 15-17 Rules of Evidence Ch. 7,8,9

Privileges, Judicial Notice, Opinion Rule

5. Sept 22-24 Procedures of a Civil Case Ch. 10,11

Pleadings, Motions, Discovery

6. Sept 29,Oct. 1 Procedures of a Civil Case Ch. 12,13

Trial, Post Trial, Appellate Court

Tentative-One or two day field trip to Drew County Courthouse

To see a criminal or civil trial – September 23, 24

7. Oct 6-8 Depositions Ch 9, Appendix 1

Deposing the Expert Witness

8. Oct 13-15 **TEST #1 – October 15** Handouts

Review Test, Professional Ethics,

What constitutes Professionalism?

9 Oct 20-22 Professional Ethics Handouts

Arkansas State Board Rules of Professional Conduct, Professional Society Codes of Ethics

10 Oct 27-29 Professional Ethics Handouts

GIS Model Law, What constitutes a Professional Survey

11. Nov 3-5 Arkansas Survey Laws Handouts

County Surveyor, State Surveyor,

Arkansas Minimum Standards

12 Nov 10-12 Arkansas Survey Laws Handouts

Riparian Laws, Other Laws Affecting

Surveyors and GIS Professionals

13 Nov 17-19 Arkansas Licensure Requirements Handouts

Requirements to become a Professional

Surveyor in Arkansas and Surrounding States

14 Nov 17-21 Client Relations Handouts

The neighbor's rights, Contracts,

Operating a business

15 Nov 24 Client Relations Handouts

Professional Liability

Nov 26-27 Thanksgiving Holidays

16 Dec 1-3 Client Relations None

Costs, Billing, Surveyor's Liens

17 Dec 8-10 REVIEW

18 Dec 15 FINAL EXAM- Tuesday 1:30 PM – 3:30 PM

Advanced Global Positioning Systems (SIS 4193) Fall 2009

(3 credits, two 1-hour lectures, one 3-hour laboratory, 631901)

INSTRUCTORS: Dr. Robert (Bob) Weih Mr. Tom Jacobs
130 Forest Resources Building 101 C Forest Resources Building
PHONE: 460-1248 PHONE: 460-1694

Email: weih@uamont.edu Email: jacobsT@uamont.edu

Web:

OFFICE HOURS: Dr. Weih (MW 8:00-10:00 AM) Mr. Jacobs (MW 10:00-11:00 AM, T 1:30-3:30 PM)

CLASS HOURS: T TH 8:10 - 9:00 P.M.; Room 211 Forest Resources Building (**James C. Scott Classroom**)

LAB HOURS: T 4:30 – 7:30 P.M.; Room 211 Forest Resources Building (**James C. Scott Classroom**)

OBJECTIVES: 1) To familiarize students with advance uses of GPS.

2) To develop an appreciation of spatial technologies and its application to GIS and surveying.

3) To acquaint students with error sources in GPS measurements.

4) To develop technical skills in the use of GPS for land measurement.

5) To gain experience in the use of computers and data processing techniques as applied to earth measurements.

GRADES: During the semester there will be one project (100-points), a 100-POINT 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 and lab material. **TOTAL POINTS:** 550 points

Final Grade percentages will be rounded to the nearest tenth and course grades will be assigned as follows:

89.5% or higher A

79.5% to 89.4% B

69.5% to 79.4% C

59.5% to 69.4% D

59.4% or lower F

Subject Area Student Assessment

Certain core course-related competencies must be demonstrated on exams in order for one to receive a grade for this course. While the grade received is earned as outlined above, the core competencies are used to assess an individual's competency of key course components and must be proven and/or demonstrated in order to receive the course grade earned. Demonstration of core competencies does not guarantee any particular grade, although mastery of core competencies during the semester will most likely result in a better grade. During the semester, students will have at least two opportunities to demonstrate each core competency on exams and/or projects. The core competency questions will be clearly labeled on the exam and/or project. See the example shown below.

15.) (5 points, Core Competency # 3) What are the differences between recreational and mapping grade GPS receivers?

If by the completion of the semester, and all exams therein, each core competency has not been successfully demonstrated at least once, a grade of I (Incomplete) will be issued. The affected student will then have one additional semester (fall/spring) from the time the grade of I was received to demonstrate, in a manner chosen by the instructor, the needed competency. Post-course demonstration of incomplete competencies is allowed only during academic semesters or summer sessions. Once all incomplete competencies are demonstrated within the one semester timeframe, the grade of I will be changed to the course grade earned as outlined above.

Advanced Global Positioning Systems Fall 2009 Page 2 of 7

If the core competencies are not demonstrated within the one semester timeframe, the grade of I will default to a grade of F as per university guidelines. It is to the affected student's advantage to demonstrate needed competencies within one semester or summer session of the initial course attempt.

The core competencies to demonstrate for this course are:

Core Competency Number Description

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 GPS receivers.

4 Understand what the NGS CORS Network and the NGS OPUS Utility is and how they are used in a Survey.

5 Demonstrate proficiency in the use of a Recreational, Mapping, and

Survey 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 commutate GPS concepts.

Issuance of Grades

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 McGehee.

INSTRUCTORS TIPS:

1) Come to class willing to learn and have fun.

2) Missing class HABITUALLY always results in lower grades! If you miss three or more classes (unexcused, see instructor), it will result in a loss of one letter grades.

3) Keep up with reading and homework assignments.

INSTRUCTORS RULES:

1) Discussion of assignments between students is encouraged; however the work must be done independently.

2) Cheating and/or plagiarism will result in a zero on that assignment to all parties involved. *Cheating and plagiarism are both violations of the UAM Student Academic Conduct Code as defined in the Student Handbook.*

3) If you plan to miss an exam, you have to let me know ahead of time and explain why you will not be able to take the exam at the scheduled time. Unexcused absences from exams result in a zero for that exam.

4) Unexcused late projects will be penalized 25% for each day past the due date.

PROFESSIONALISM STATEMENT, School of Forest Resources University of Arkansas - Monticello:

Students in the School of Forest Resources (SFR) 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.

Since the School is dedicated to professional education rather than technical training, the faculty and staff have certain

expectations of themselves and of SFR students with regard to professionalism and personal conduct in their preparation for

Advanced Global Positioning Systems Fall 2009 Page 3 of 7

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.

(<http://www.safnet.org/who/ethics>)

Instructors reserve the right to reduce student grades (two 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”. This action is prohibited under the Student Conduct Code. Disorderly conduct or disruptive behavior **will not be tolerated** in the

School of

Forest Resources. Such conduct may result in dismissal from classes.

STUDENTS WITH DISABILITIES

It is the policy of the University of Arkansas-Monticello to accommodate individuals with disabilities pursuant to federal law

and the University's commitment to equal educational opportunities. It is the responsibility of the student to inform the

instructor of any necessary accommodations at the beginning of the course.

Any student requiring accommodations should contact the Office of Special Student Services located in Harris Hall Room

120; phone 870 460-1026; TDD 870 460-1626; Fax 870 460-1926.

PREREQUISITES: SIS 3814 Introduction to GIS, GPS, and Remote Sensing and MATH 1033 Trigonometry, or permission from the instructor

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

OPTIONAL TEXT:

SUPPLEMENTARY TEXT AND READINGS: **GPS: Satellite Surveying A. Leick. Wiley. 2004. (ISBN: 0-471-05930-7)**

Linear Algebra, Geodesy, and GPS G. Srang and Kai Borre. Wellesley-Cambridge Press. 1197. (ISBN 0-914088-6-3)

Global Positioning Systems, Inertial Navigation, and Integration. 2nd Edition. M. Grewal, L. Weill, and A. Andrews. Wiley. 2007. (ISBN 978-0-470-04190-1)

Understanding the GPS. G. French. 1996. GeoResearch, Inc. 1996. (ISBN 0-9655723-0-7)

WEB Sites:

Advanced Global Positioning Systems Fall 2009 Page 4 of 7

⇒ [All About GPS](http://www.trimble.com/gps/index.shtml) - Trimble Navigation Inc. tutorials (<http://www.trimble.com/gps/index.shtml>)

⇒ [Geographer's Craft GPS Notes](http://www.colorado.edu/geography/gcraft/notes/gps/gps_f.html) - University of Colorado at Boulder - Peter Dana's overview of the Global Positioning System

(http://www.colorado.edu/geography/gcraft/notes/gps/gps_f.html)

⇒ [How Stuff Works](http://www.howstuffworks.com/gps.htm) - How a GPS Receiver Works (<http://www.howstuffworks.com/gps.htm>)

⇒ [Introduction to GPS](http://www.redsword.com/gps/) - Originally the John T. Beadles site (<http://www.redsword.com/gps/>)

⇒ [Kowoma's introduction to GPS](http://www.kowoma.de/en/gps/) - Introductory material on how GPS works (<http://www.kowoma.de/en/gps/>)

⇒ [Opensource GL-GPS](http://gps.psas.pdx.edu/OpenGnssProjects) - Great site to find out all about Open Source GPS receivers (<http://gps.psas.pdx.edu/OpenGnssProjects>)

⇒ [Satellite Constellations information site](http://www.ee.surrey.ac.uk/Personal/L.Wood/constellations/) (<http://www.ee.surrey.ac.uk/Personal/L.Wood/constellations/>)

⇒ [System GPS](http://www.systemgps.com/) - Free informational resource with dedicated to GPS systems (<http://www.systemgps.com/>)

⇒ [The GPS Resource Library](http://www.gpsy.com/gpsinfo/) (<http://www.gpsy.com/gpsinfo/>)

⇒ [University of New Brunswick, Canada, GPS links page](http://gauss.gge.unb.ca/GPS.INTERNET.SERVICES.HTML)

(<http://gauss.gge.unb.ca/GPS.INTERNET.SERVICES.HTML>)

⇒ [GPS Gadgets](http://gps.engadget.com/) - Website with lots of GPS gadgets, articles & blogs (<http://gps.engadget.com/>)

⇒ [GPS User](http://www.gpsuser.com/) - Electronic online newsletter (<http://www.gpsuser.com/>)

⇒ [GPS Review](http://www.gpsreview.net/) - Website with GPS product reviews, etc. (<http://www.gpsreview.net/>)

⇒ [GPS Technology Review](http://gpstekreviews.com/) - Articles & reviews of GPS-based consumer products (<http://gpstekreviews.com/>)

⇒ [GPS World](http://gpstekreviews.com/) - GPS applications magazine (<http://gpstekreviews.com/>)

⇒ [GPS Utility](http://www.gpsu.co.uk/) - Freeware & shareware software for linking to NMEA receivers (<http://www.gpsu.co.uk/>)

⇒ [GPS Visualizer](http://www.gpsvisualizer.com/) - Freeware software for linking to NMEA receivers & plotting on Google Earth, etc.

⇒ [Fieldworker](http://www.fieldworker.com/Home.jsp?lang=EN&page=Home) - GPS field data collection software

(<http://www.fieldworker.com/Home.jsp?lang=EN&page=Home>)

⇒ [US National Geodetic Survey](http://www.ngs.noaa.gov/PC_PROD/pc_prod.shtml) - Software (http://www.ngs.noaa.gov/PC_PROD/pc_prod.shtml)

Base Station Sites:

Mapping Grade Base Station (Monticello) \sfrsal2\gpsdata\SSF

Surveying Grade Base Station (Monticello) \safsal2\survey_gpsdata\SFF

SUPPLIES: Field Book and CDs (**Required**)

COURSE OUTLINE:**Topic Tentative****Week(s)****Reading Assignments**

(Color Coded)

*Advanced Global Positioning Systems Fall 2009 Page 5 of 7***GPS Theory**

The GPS signal

Types of GPS codes

1

Chapter 1 & Handouts**Recreational Grade Global Positioning Systems**

Positional accuracies

2 - 3

Chapters 2 & 3**Mapping Grade Global Positioning Systems**

Introduction to the Trimble GeoXH

Geodetic Coordinate Systems

The Geoid

Heights

Datums

EXAM Tentative October 6, 2009 (Written, 100 points)**CORS Stations / OPUS & OPUS-RS Utilities**

Components

GPS Data Processing

Static GPS Surveying

Uses of

Data Collection Methods

Baselines & Integrating Survey Systems

Fundamentals

RTK GPS Surveying

Uses of

Data Collection Methods

PROJECT (100 points)

4 - 5

6

7

7 - 8

9 - 11

12 - 14

15 - 16

15 - 16

Chapter 4**Chapter 5****Chapter 6 & Handouts****Chapter 6****Chapter 6 & Handouts****Chapter 7, 8, &****Handouts****FINAL (Written Comprehensive, 100 points) 16****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:

Advanced Global Positioning Systems Fall 2009 Page 6 of 7

- 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 hooved mammals there is so far no visible evidence of any density

limit except the carrying capacity of food.

Correct direct quotation reads: “In hooved 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 hooved 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.

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

Advanced Global Positioning Systems Fall 2009 Page 7 of 7

all required coursework:

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

Violation of any or all of these conditions, whether they are discovered or witnessed before, during, or after any assignments,

laboratory reports, or exams have been taken and/or completed and submitted for grade, will constitute a violation of the UA-M conduct code and will be reported to and punishable by the UA-M Judicial System. The process is initiated through the Dean's office.

Signing or printing your name on assignments, lab reports, and exams during this semester means that you understand what you signed

today in class and will be liable for your actions.

*See the body for definitions and examples.

Signature: Date:

Printed Name:

ADVANCED SURVEYING (SIS 4454) Fall 2009

(4 Credits, 3 one hour lectures, one 3 hour laboratory)

Instructor: Tom Jacobs

Phone: 460-1694

Office: Rm 101C – Forest Resources Building

Office Hours: 10-11 AM - Mon –Fri, 1:30 -3:30 PM - Tues

E-mail: jacobst@uamont.edu

Class Hours:

Lecture: MWF 9 -10 AM, Lab: W 1-4 PM

Room 207, Forest Resources Building

Prerequisites:

For 3353 Biometrics in Natural Resources

SIS 3264 Route and Construction Surveying

Required Text:

“Surveying: Theory and Practice”, 7th edition, by James M Anderson and Edward M Mikhail, McGraw-Hill Publications (ISBN: 0-07-015914-9)

Suggested Readings:

“Adjustment Computations: Spatial Data Analysis”, 4th edition, 2006, Charles D. Ghilani and Paul R. Wolf, Wiley Press (ISBN: 0-471-69728-1)

“Surveying: Principles and Applications” 7th edition, 2006, Barry F. Kavanagh, Prentice Hall Publications (ISBN: 0-13-118862-3)

Supplies Needed:

Field Book, mechanical pencil, calculator with trigonometric functions, Engineer’s scale, large three-ring binder for notes and handouts

Prerequisites/Co-requisites:

For 3353 – Biometrics in Natural Resources

SIS 3264 – Route and Construction Surveying

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.

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. Understand Vector and Matrix Algebra
2. Demonstrate the ability to calculate State Plane Coordinates
3. Understand least squares adjustment of data
4. Properly conduct a Solar Observation of a line
5. Demonstrate the ability to properly conduct a point resection
6. Properly perform coordinate transformations
7. Understand intersection calculations
8. Understand the basics of surveying astronomy and spherical trigonometry

Grades:

During the semester there will be 2 written examinations, various lab and homework assignments, and a final examination. 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

Grade Reports:

UAM will no longer mail 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.

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

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.

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:

7. The UAM Code of Student Conduct published in the Student Catalog.
8. 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

COURSE OUTLINE/SCHEDULE		
Tentative Weeks 1-3 Handouts 4 Appendices D, E	Topics State Plane Coordinates, Mapping Projections Error Propagation	Reading Assignments Ch. 11, Ch. 2,
5 Handouts	Standards of Accuracy & Adjustments Arkansas Minimum Standards	Ch. 2,
6-7 Handouts	Matrix and Vector Algebra	Appendix B,
<u>TEST #1 (Tentative October 14 during lab)</u>		
8-9	Least Squares Adjustment of Data	Ch. 2
10-11	Surveying Astronomy Spherical Trigonometry Solar Observations	Ch. 10

12-13	Horizontal Positioning Intersections, Resections, Trilaterations, Triangulations	Ch. 9
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TEST #2 (Tentative November 18 during lab)

14-15	Coordinate Transformations	Appendix C
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SEMESTER TEST – Friday, December 18, 8 – 10 AM

Other Dates of Interest:

ASPS Fall Short Course; September 10, 11, Hot Springs, Ark

Labor Day (No Classes); September 7

Thanksgiving Holidays; November 25-27

Cheating and Plagiarism Requirement

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

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

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

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

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

Examples of common knowledge compared to specific information are:

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

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

Examples using quotations and paraphrasing:

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

Correct direct quotation reads: “In hooved 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 hooved 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.

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

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

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

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

Signature:

Date:

Digital Remote Sensing (SIS 5313) Fall 2009

(Three credits, two one-hour lectures, one three-hour laboratory)

INSTRUCTOR: Dr. Robert (Bob) Weih

130 Forest Resources Building

PHONE: 870-460-1248

Email: weih@uamont.edu

Web: <http://sal.uamont.edu>

CLASS HOURS: MW 10:10 - 11:00 A.M.; Room 211 Forest Resources' Building (**James C. Scott Classroom**)

LAB HOURS: W 1:10 - 4:00 P.M.; Room 211 Forest Resources' Building (**James C. Scott Classroom**)

OFFICE HOURS: My office hours are from 10:00 - 11:00 A.M. Monday and Wednesday. I welcome questions and enjoy

working with students. Generally, I will be available for help anytime I am not in class for quick questions, but large time-consuming questions require meeting during office hours or an appointment.

OBJECTIVES: 1) To familiarize students with advance fundamental of digital remote sensing concepts.
2) To acquaint students with the principles of remote sensing for mapping and analyzing spatial and spectral data.
3) To develop an appreciation of remote sensing and its application to natural resource management and learn methods that can be used approach and answer geospatial questions using remote sensing.
4) To develop technical skills in the use of ERDAS Imagine and Image Analyst for doing supervised and unsupervised land cover classifications.
5) To gain experience in the computers and data processing techniques as applied too spatial and spectral analyzes and mapping using digital remote sensing data.

GRADES: During the semester there will be one 100 POINT written exams and a 100-POINT Research Project (Final). Tests

and unannounced quizzes will include material discussed in class, readings and lab material. Projects (Rectification, Supervised Classification, Unsupervised Classification, Accuracy Assessment, etc.) will be worth approximately 350 POINTS total. This is a problem-solving course in which the projects are designed to assess the student comprehension of the lecture materials, but also the thought process of answering questions using information derived from remote sensing data. **TOTAL POINTS:** 550 points

Final Grade percentages will be rounded to the nearest tenth and course grades will be assigned as follows:

89.5% or higher A

79.5% to 89.4% B

69.5% to 79.4% C

59.5% to 69.4% D

59.4% or lower F

Subject Area Student Assessment

Certain core course-related competencies must be demonstrated on exams in order for one to receive a grade for this course. While the grade received is earned as outlined above, the core competencies are used to assess an individual's competency of key course components and must be proven and/or demonstrated in order to receive the course grade earned. Demonstration of core competencies does not guarantee any particular grade, although mastery of core competencies during the semester will most likely result in a better grade. During the semester, students will have at least two opportunities to demonstrate each core competency on exams and/or projects. The core competency questions will be clearly labeled on the exam and/or project. See the example shown below.

15.) (5 points, Core Competency # 1) What is spectral resolution in reference to an image sensor and give an example (sensor systems) of fine and coarse spectral resolutions? Why is this resolution important in Land Cover/Use classifications?

Digital Remote Sensing (SIS 5313) Fall 2009 Page 2 of 8

If by the completion of the semester, and all exams therein, each core competency has not been successfully demonstrated at least once, a grade of I (Incomplete) will be issued. The affected student will then have one additional semester (fall/spring) from the time the grade of I was received to demonstrate, in a manner chosen by the instructor, the needed competency. Post-course demonstration of incomplete competencies is allowed only during academic semesters or summer sessions. Once all incomplete competencies are demonstrated within the one semester timeframe, the grade of I will be changed to the course grade earned as outlined above.

If the core competencies are not demonstrated within the one semester timeframe, the grade of I will default to a grade of F as per university guidelines. It is to the affected student's advantage to demonstrate needed

competencies within one semester or summer session of the initial course attempt.

The core competencies to demonstrate for this course are:

Core Competency Number Description

- 1 Be able to describe the four resolutions of Digital Imagery.
- 2 Be able to describe and do a supervise Land Cover classification using digital imagery.
- 3 Be able to describe and do a unsupervise Land Cover classification using digital imagery.
- 4 Be able to describe and do a Land Cover classification accuracy assessment.
- 5 Be able to describe different Remote Sensing imaging systems.
- 6 Define Remote Sensing terminology
- 7 Be able to organize Remote Sensing data for a project and produce a CD/DVD
- 8 Be able to commutate Remote Sensing concepts using a poster, presentation and/or maps.

Issuance of Grades

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INSTRUCTORS TIPS:

- 1) Come to class willing to **learn and have fun**.
- 2) Missing class HABITUALLY always results in lower grades! If you miss three or more classes (unexcused, see instructor), it will result in the loss of one letter grades.
- 3) Keep up with reading and homework assignments.

INSTRUCTORS RULES:

- 1) Discussion of assignments between students is encouraged; however the work must be done independently.
- 2) Cheating and/or plagiarism will result in a zero on that assignment to all parties involved. *Cheating and plagiarism are both violations of the UA-M Student Academic Conduct Code as defined in the Student Handbook.*
- 3) If you plan to miss an exam, you have to let me know ahead of time and explain why you will not be able to take the exam at the scheduled time. Unexcused absences from exams result in a zero on that exam.
- 4) Unexcused late projects will be penalized 25% for each day past the due date.
- 5) Cheating is not tolerated and may result in an F in the course.

Digital Remote Sensing (SIS 5313) Fall 2009 Page 3 of 8

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appropriate to professionals.

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2. Attitudes appropriate for resource professionals of the 21st Century:
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 - c. Sensitivity to environmental quality;

d. Adherence to professional ethics, e.g., the Society of American Foresters Code of Ethics.

(<http://www.safnet.org/who/ethics>)

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

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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.

PREREQUISITES: FRS 5113 Statistics I, FOR 3813 Introduction to GIS & GPS or instructor's permission
(Familiar with aerial photograph Interpretation)

REQUIRED TEXT: Introduction to Remote Sensing James B. Campbell 2007, The Guilford Press. ISBN-13 978-1-59385-319-8

Fundamentals of ERDAS IMAGINE I Manual & Data

Fundamentals of ERDAS IMAGINE II Manual & Data

Multispectral Classification Manual & Data

Feature Analyst Reference Manual 4.2 (Provided by Instructor)

Digital Remote Sensing (SIS 5313) Fall 2009 Page 4 of 8

SUPPLEMENTARY TEXT AND READINGS:

Introductory Remote Sensing, Principles and Concepts Paul J. Gibson 2000,
Taylor and Francis. ISBN 0-415-19646-9

Introductory Remote Sensing, Digital Image Processing and Applications. Paul J. Gibson and Clare H. Power. 2000, Taylor and Francis. ISBN 0-415-18962-4

Remote Sensing and Image Interpretation Thomas Lillessand and Ralph Kiefer 1994, John Wiley & Sons, Inc. ISBN 0-471-57783-9

Introduction to Remote Sensing; Cracknell, A. P., and Hayes, L. W. B., 1991,
Taylor & Francis: ISBN 0-85066-335-0.

Satellite Remote Sensing of Natural Resources; Verbyla, David L., 1995, CRC, Lewis Publishers: ISBN 1-56670-107-4.

Remote Sensing Imagery for Natural Resources Monitoring A Guide for First-Time Users; Wilkie, David S. and Finn, John T., 1996, Columbia University Press: ISBN 0-231-07929-X.

Remote Sensing for the Earth Sciences Manual of Remote Sensing Third Edition, Volume 3; Rencz, Andrew N., 1999, John Wiley & Sons: ISBN 0-471-29405-5.

Introduction to Remote Sensing; Campbell, James B., 1987, The Guilford Press: ISBN 0-89862-776-1.

Remote Sensing Digital Image Analysis An Introduction; Richards, John A., 1986, Springer-Verlag Berlin Heidelberg New York: ISBN 3-540-16007-8.

Natural Resources Management Using Remote Sensing and GIS; Greer, Jerry Dean, 1998, American Society for Photogrammetry and Remote Sensing: ISBN 1-57083-057-6.

Remote Sensing for Landscape Ecology New Metric Indicators for Monitoring,

Modeling, and Assessment of Ecosystems; Frohn, Robert C., 1998, CRC Press LLC: ISBN 1-56670-275-5.

Remote Sensing Models and Methods for Image Processing Second Edition; Schowengerdt, Robert A., 1997, Academic Press: ISBN 0-12-628981-6.

Remote Sensing The Quantitative Approach; Swain, Philip H. and Davis, Shirley M., 1978, McGraw-Hill, Inc.: ISBN 0-07-062576-X.

Remote Sensing Change Detection Environmental Monitoring Methods and Applications; Lunetta, Ross S. and Elvidge, Christopher D., 1998, Sleeping Bear Press, Inc.: ISBN 1-57504-037-9.

An Introduction to Remote Sensing Digital Image Analysis, John Richards, 1986.

Remote Sensing, The Quantitative Approach, Philip Swain, 1978.

Digital Remote Sensing (SIS 5313) Fall 2009 Page 5 of 8

WEB SITES: American Society of Photogrammetry and Remote Sensing

<http://www.asprs.org/>

International Society of Photogrammetry and Remote Sensing

<http://www.isprs.org/>

Photogrammetry and Remote Sensing Papers

<http://www.geo.tudelft.nl/frs/papers.html>

CCRS Remote Sensing Tutorial

<http://asio.jde.aca.mmu.ac.uk/giscons/rstut/tutorial/tutore.html>

Spectroscopy of Rocks and Minerals, and Principles of Spectroscopy

<http://speclab.cr.usgs.gov/PAPERS.refl-mrs/refl4.html>

Earth from Space

<http://earth.jsc.nasa.gov/>

Landsat Thematic Mapper Data Sets

<http://observe.arc.nasa.gov/nasa/education/tools/stepby/archive.html>

Landsat 7

<http://landsat7.usgs.gov/>

RadarSat

<http://www.space.gc.ca/asc/eng/default.asp>

Earth Science Image Gallery

<http://www.earth.nasa.gov/gallery/index.html>

Geography Network

<http://www.geographynetwork.com/>

SUPPLIES: Recordable DVDs to save assignments and projects (**Required**)

Digital Remote Sensing (SIS 5313) Fall 2009 Page 6 of 8

COURSE OUTLINE:

Topic Tentative Week(s) Reading Assignments

Concepts and Foundations of Remote Sensing

Historical Development of Remote Sensing (Digital Imagery Systems)

Electromagnetic radiation principles and spectrum

Energy sources, atmospheric effects

Leaf structure and Spectral response

Spectral Characteristics of Vegetation, Soil, and

Water

Spectral response signatures (curves) and the factors effecting them

Ideal remote sensing system

1 - 4 Chapter 1, 2 & Chapter 4

Remote Sensing of Wildland

Resources: A State-of-the-Art

Review

<http://www.fs.fed.us/rm.analytics/publications/outofprint/remotesensing.htm>

Suggest you read Chapter 3 of
Remote Sensing and Image
Interpretation Thomas Lillesand
and Ralph Kiefer 1994, John
Wiley & Sons, Inc. in the Library
if you are unfamiliar with Aerial
Photo Interpretation

Remote Sensing Systems

Airborne multi-spectral scanners
Energy Sources
Land Observation Systems
Meteorological Observation Systems
Oceanography Systems
Radiometric and geometric calibration
4 - 7 Chapter 3, 6, 7, & 9

Test One 7

Research Study Project (Feature Analyst)

Pre-Processing and Enhancing Digital Imagery

Image Rectification and Restoration
Image Enhancement
Spectral pattern recognition
8 - 9 Chapter 10 & 11

Multi-spectral Image Processing and Spectral Pattern

Recognition

Leaf structure and Spectral response
Vegetation Indices
Unsupervised classification
Supervise classification
Change Detection
Classification Accuracy Assessment
10 - 16 Chapter 12, 13, & 14

FINAL (Research Project Paper) 16

Labs will be using these manuals to get an understanding of software used for Digital Remote Sensing in the first 7 to 8 weeks of this course:

Fundamentals of ERDAS IMAGINE I Manual & Data
Fundamentals of ERDAS IMAGINE II Manual & Data
Multispectral Classification Manual & Data
Feature Analyst Reference Manual 4.2 (Provided by Instructor)

Digital Remote Sensing (SIS 5313) Fall 2009 Page 7 of 8

Cheating and Plagiarism Requirement

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

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

When in doubt about the acceptance of providing or getting help for the activities mentioned

above, consult your instructor.

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

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

Examples of common knowledge compared to specific information are:

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

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

Examples using quotations and paraphrasing:

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

Correct direct quotation reads: “In hooved 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 hooved 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.

Digital Remote Sensing (SIS 5313) Fall 2009 Page 8 of 8

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

(1.) all aspects of the UA-M Conduct Code have been followed with respect to all assignments, laboratory reports, or exams to be completed during this semester;

(2.) the work you submit is yours and yours alone unless part of a group assignment or group laboratory report;
(3.) you will not cheat or plagiarize at any time while completing your assignments, laboratory reports, or exams; and

(4.) for exams, you will not discuss their content with any other student in the class until all students have completed the exam and the answers are made available.

Violation of any or all of these conditions, whether they are discovered or witnessed before, during, or after any assignments,

laboratory reports, or exams have been taken and/or completed and submitted for grade, will constitute a violation of the UA-M

conduct code and will be reported to and punishable by the UA-M Judicial System. The process is initiated through the Dean's office.

Signing or printing your name on assignments, lab reports, and exams during this semester means that you understand what you

signed today in class and will be liable for your actions.

*See the body for definitions and examples.

Signature: Date:

Printed Name:

Digital Photogrammetry

SIS 4633

SPRING 2010

INSTRUCTOR

Dr. Robert E. Kissell, Jr.
SFR Room 125
870-460-1192

Kissell@uamont.edu

Office Hours: TBA.

TIME AND PLACE

Lecture: TH, 10:10-11:00 AM, School of Forest Resources Room 211

Lab: T, 1:40-4:30 PM, School of Forest Resources Room 211

PREREQUISITES

FOR 3353 and SIS 3923.

COURSE DESCRIPTION

The course will cover image mosaicing, digital orthophoto creation, aerial triangulation, single and block image triangulation, ground control, digital terrain model extraction, orthorectification, and terrain editing.

COURSE OBJECTIVES

1. Understand the factors involved in metric- and non-metric-based photogrammetry.
2. Understand the process used to provide a professional product of photogrammetry using photos and images.
3. Become familiar with the advantages and limitations of photogrammetry for the purpose of acquiring spatial data.

REQUIRED TEXT

Wolf, P., and B. Dewitt. 2000. Elements of Photogrammetry: with Applications in GIS, 3rd edition. McGraw-Hill Companies, Inc., Boston. 608 pp.

Erdas, Inc. 2008. Introduction to LPS. Norcross, GA. 216 pp.

SUPPLEMENTAL READING

LPS Project Manager User Guide (within help menu of Erdas Imagine)

Erdas Imagine Essential Tour Guides (within help menu of Erdas Imagine)

Syllabus for Digital Photogrammetry

2

GRADING SYSTEM

Point distribution on which grade will be calculated.

Projects (3 @ 100 pts each) 300 Points

Exams (2 @ 100 pts each) 200 Points

Total 500 Points

A = 90% - 100% (450-500 pts)

B = 80% - 89% (400-449 pts)

C = 70% - 79% (350-399 pts)

D = 60% - 69% (300-349 pts)

F = 0 - 60% (< 300 pts)

INCLEMENT WEATHER POLICY

In case of inclement weather, this class will meet for lectures and scheduled exams unless UAM officially cancels all classes.

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.

Tentative Schedule

Topic Chapter(s) Date/Week

Introduction 1-11/1

Review of the Basics 1 & 2 1-18/2

Imaging cameras & Image measurements 3 & 4 1-25/3

Image measurements & Vertical Photos 4 & 6 2-1/4

Digital image matching & Planimetric

mapping/Project #1

15-6 & 9 2-8/5

Tilted Photos/Project #1 10 2-15/6

Analytical photogrammetry/Project #1 11 2-22/7

Review and Exam 3-1/8

Project #2 3-8/9

Project #2 3-15/10

Spring Break 3-22/11

Digital resampling & DEMs App. E & 13 3-29/12

Digital image processing & Softcopy

photogrammetry

14 & 15 4-5/13

Ground Control/Project #3 16 4-12/14

Project #3 4-19/15

Project #3 4-26/16

(Review) 5-3/17

Final Exam 5-10/18

Syllabus for Digital Photogrammetry

3

Overview of Projects:

Project 1 will require you to provide a single, complete image from scanned photos that will be provided. It is to be orthorectified and mosaiced. The associated DTM is also to be provided.

Project 2 will require you to provide a single, complete image from images provided. It is to be orthorectified and mosaiced. The associated DTM is also to be provided.

Project 3 will require you to provide an assessment of the georeferencing using control points.

Syllabus

Revised 1/2010

TITLE: Seminar NUM:BER FOR/WLF 4691

INSTRUCTOR: Dr. Lynne C. Thompson Phone: 460-1349

OFFICE: 116 HH Chamberlin Complex OFFICE HOURS: M & F 8-12

COURSE DESCRIPTION: Emphasizes the planning, organizational, and audio/visual computer skills necessary for delivering professional PowerPoint presentations. Oral presentations to students, staff, and faculty.

Goals: To gain valuable experience in making oral presentations using PowerPoint.

CORE COMPETENCIES: By the end of the semester, students will be able to:

1. Use outlining techniques to effectively plan oral presentations.
2. Employ graphs, tables, maps, and pictures to improve information transfer.
3. Effectively use the many software features in PowerPoint to improve presentations.
4. Improve critical thinking skills in oral presentation settings.
5. Know and apply the terminology of PowerPoint use to plan, deliver, and critique PowerPoint presentations.
6. Use your knowledge of first-rate oral presentations to effectively critique the presentations of others.

All students are required to demonstrate a minimum of 60% proficiency in all **6 core** competencies during the semester. Failure to demonstrate proficiency in all core competencies

will result in two options, determined by the instructor:

- 1) A course grade of "D" regardless of overall average.
- 2) A course grade of "I", which can be converted to a letter grade by the student (**see grading below**) for all work when the student demonstrates proficiency in all core competencies through additional assignments provided by the instructor. The time limit to satisfy this option is **4 weeks from the date of the last scheduled final examination** of the semester.

GRADING: For students that have demonstrated an understanding of all the core competencies,

their letter grade will be determined by their overall average on the following assignments given

during the semester:

Oral reports (2 @ 100 pts ea) 200 A = 90-100%

Outline reports (2 @ 25 pts ea) 50 B = 80-89

Professional presentation critiques (6 @ 17 pts ea) 100 C = 70-79

Student talk assessments (9 @ 5 pts ea) 45 D = 60-69

395 F = < 60

Five (5) points per day are deducted for outline reports turned in late, unless prior

arrangements
have been made.

Page -2-

POLICIES:

Attendance - Attendance is mandatory. Dr. Thompson should be informed in advance when you

can not make the class. In the event of an absence, it will be your responsibility to arrange for make-up work. Students participating in University sponsored events will be given a reasonable opportunity to make up assignments."

Reading Assignments - You are held responsible for all reading assignments, whether or not they are actually discussed in class.

Cheating - Cheating will not be tolerated. Verified cases of cheating will receive a grade of zero

for an assignment. Another offense will result in expulsion from the class with a grade of "F". See the SFR handout you received for details.

Conduct - The School of Forest Resources expects its students to comply with all parts of the

Student Conduct code. This includes an academic atmosphere free from 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."

Note - It is a UAM policy 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 special 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.

Presentations will be made in the SFR Conference Center and will be open to the public. I will

need an electronic **copy of both your PowerPoint presentations** to help me in grading and for use in educating future seminar students. I will get them off the SFR computer after the presentation.

1 Presentation. This first presentation will be made ~~s~~ early in the semester. It must be at least **5**

minutes long (but no longer than 7 minutes) and will include a 3 min question/answer period after the presentation to help you improve your critical thinking skills. Because this class is designed to help you learn how to use PowerPoint in your presentations, it must be used. Additionally, graphs and tables are typically used to show relationships in forestry and wildlife presentations. Thus, this presentation must include at least **ONE(1)** **graph and ONE(1) table, both made from original data**, and typically are developed from within th PP software (**graphs and tables can NOT be a picture or a map, nor**

can they be scanned from other documents). However, I encourage good use of pictures and other graphics to enhance knowledge transfer. The subject of the presentation is your choice, but **it MUST be on a natural resource topic**, and you **can NOT use a presentation previously made in another course**. **NOTE: as an incentive to do your best, if one gets almost perfect scores on outline #1 and presentation # 1, they are exempt from presentation # 2.**

Page -3-

2 Presentation. This presentation will be made *nd* near the end of the semester. It must be at least

10 minutes long (but no longer than 12 minutes) and will include a 3 minute question/answer period. Graphs and tables must be used; with **at least TWO(2) graphs (remember, pictures are NOT counted as graphs)** and **TWO(2) tables of original data**. The subject of the presentation is **YOUR choice**, but **it MUST be on a natural resource topic**, and you **can NOT use a presentation previously made in another course**, and subjects used in Presentation #1 can **NOT** be used in Presentation #2.

Outline Reports will cover the material discussed under **Presentations 1 and 2**. Each Outline Report is due **one week before** your presentation is to be made. Dr. Thompson will use this outline to **help you better plan and implement** your presentation. Each Report will be an **outline in sentence format** (with informative headings and logical sequences) of the material to be presented in the presentation. We will begin working on these outlines ASAP.

Individual student assessments of each final Seminar. All students will evaluate each others 2nd presentation using a standardized assessment form. Doing these evaluations will teach you to listen and think critically, and they will also help Dr. Thompson with his evaluations of your presentations. All 7 reports will be used in determining your final course grade.

A minimum of **six (6) additional outside of class Professional Presentations** will require your attendance. Examples of presentations that might satisfy these criteria include SAF or TWS speakers, SFR speakers (it takes 2 30-minute grad student presentations to equal 1 standard speaker), UAM speakers, or others cleared beforehand by Dr. Thompson. A certification of attendance is needed. This may be simply informing Dr. Thompson when he is also in attendance, or getting a written statement from another faculty member in attendance. Each critique must include:

1. Critique number [#] (in sequence from 1 to 6, placed close to the top of the page. This is need to help you and Dr. Thompson track how many you have done)
2. Speakers Name, his/her official job Title and Organization, and Sponsoring organization (like: SE-SAF, TWS, SFR, Ouachita SAF)
3. Date of presentation & date turned in
4. Length of presentation, including discussion (minutes)
5. How the presentation **helped enhance YOUR professional career aspirations**, with a justification of your assessment
6. Your opinion of the presentation's quality **WITH specifics about how it could have been improved**, with a justification of your assessment

7. **200 word (min) SUMMARY of the substance of the presentation** (this word count is for the summary text only and **NOT** all words in your report). Reports must be turned in **by 4:30 pm within 3 working days** of the presentation.

(As an example of word counting, the listing above includes 144 words.) (in MS Word, *highlight the paragraph, then use Tools: Word Count*)

Page -4-

Tentative Schedule

Fridays

Jan 15 - Introduction

22 - Outlining your seminar topic – with an example

29 - PowerPoint -- using graphics and text more effectively

Feb 05 - How to handle “hostile” questions, and other issues

12 - Designing your 5-min presentation (discussion of several presentation outlines)

19 - 5-min presentations [first 5 12:10 to about 1:15]

2 6 - 5-min presentations [second 5 12:10 to about 1:15]

Mar 05 - Critiquing presentations

12 - Resumes & letters of application

19 - NO class??? Wildlife Conclave

26 - SPRINGBREAK Week Forestry Conclave @ UAM

Apr 02 - Designing your 10-min presentation

09 - Arkansas Academy of Sciences – NO class

16 - 10 min presentations

23 -Course evaluation – Integrated Plans due this week

Professional Ethics #1 – Dr. Kluender

30 - Professional Ethics #2 – Dr. Kluender

May 5 thru 11 - Finals week

Syllabus

Revised 1/2010

TITLE: Seminar NUM:BER FCR/WLF 4691

INSTRUCTOR: Dr. Lynne C. Thompson Phone: 460-1349

OFFICE: 116 HH Chamberlin Complex OFFICE HOURS: M & F 8-12

COURSE DESCRIPTION: Emphasizes the planning, organizational, and audio/ visual computer skills necessary for delivering professional PowerPoint presentations. Oral presentations to students, staff, and faculty.

Goals: To gain valuable experience in making oral presentations using PowerPoint.

CORE COMPETENCIES: By the end of the semester, students will be able to:

1. Use outlining techniques to effectively plan oral presentations.
2. Employ graphs, tables, maps, and pictures to improve information transfer.
3. Effectively use the many software features in PowerPoint to improve presentations.
4. Improve critical thinking skills in oral presentation settings.
5. Know and apply the terminology of PowerPoint use to plan, deliver, and critique PowerPoint presentations.
6. Use your knowledge of first-rate oral presentations to effectively critique the presentations of others.

All students are required to demonstrate a minimum of 60% proficiency in all **6 core** competencies during the semester. Failure to demonstrate proficiency in all core competencies

will result in two options, determined by the instructor:

- 1) A course grade of "D" regardless of overall average.
- 2) A course grade of "I", which can be converted to a letter grade by the student (**see grading below**) for all work when the student demonstrates proficiency in all core competencies through additional assignments provided by the instructor. The time limit to satisfy this option is **4 weeks from the date of the last scheduled final examination** of the semester.

GRADING: For students that have demonstrated an understanding of all the core competencies,

their letter grade will be determined by their overall average on the following assignments given

during the semester:

Oral reports (2 @ 100 pts ea) 200 A = 90-100%

Outline reports (2 @ 25 pts ea) 50 B = 80-89

Professional presentation critiques (6 @ 17 pts ea) 100 C = 70-79

Student talk assessments (9 @ 5 pts ea) 45 D = 60-69

395 F = < 60

ADVANCED GEOGRAPHIC INFORMATION SYSTEMS II (SIS 4713)

Fall 2008 (3 credits)

*"Knowing where things are, and why, is essential to rational decision making"
Jack Dangermond, Environmental Systems Research Institute (ESRI)*

Instructor:

Dr. Alexandra Felix
123 Forest Resources Building
460-1748

felix@uamont.edu

Class Hours:

MW 11:10-12:00 P.M. Room 211 Forest Resources Building
Lab M 1:00-4:00

Office Hours:

T 8:00 – 10:00, Th 3:00 – 4:00
(or by appointment)

Prerequisites:

SIS 3843, CIS 3443

Required Text:

None.

Course Description:

This course will provide opportunities to learn advanced applications of GIS including complex spatial analysis and network analysis. Students will learn metadata creation tools and standards and how to design a data server and an internet-enabled GIS.

Core Competencies:

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 exams and assignments. 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:

5. A course grade of "D" regardless of the overall average, or
6. 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 2 weeks. Please note that if a grade of "I" is not replaced during the time period allotted, the grade of "F" will be assigned.

Learning Objectives

- ✓ Understand advanced spatial analysis techniques and solve complex spatial problems
- ✓ Create metadata for sample datasets and maintain metadata for newly created datasets used in class
- ✓ Create and enterprise database with proper administration of users. The database will be used for web-based GIS tasks
- ✓ Use ArcServer to create databases and to serve data to users

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.

Course Evaluation:

	Number of Points	% of Grade
Professionalism*	50	12.5
Lab assignments (10)	100	25
Exam I	100	25

ArcServer project	150	37.5
TOTAL POINTS	400	

*The professionalism score is COMPLETELY UP TO MY DISCRETION. Student actions such as text-messaging, answering phone calls, absences from class, disrespectful behavior, etc. will result in a low score for your professional grade.

Grading Scale:

Final Course grades will be assigned as follows:

90-100% (270-300 pts.)	A
80-89% (240-269 pts.)	B
70-79% (210-239 pts.)	C
60-69% (180-209 pts.)	D
0-59% (0-179 pts.)	F

Issuance of Grades:

UAM will no longer mail 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.

Tips for getting the most out of class:

9. Come to class willing to learn, take part in discussions, and just plain have fun!
10. Missing class HABITUALLY always results in lower grades! If you miss two or more classes (unexcused), it will result in the loss of one letter grade.
11. Keep up with reading and homework assignments.
12. 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 Expectations:

13. This course is VERY time consuming and computer intensive. Students should expect to spend many hours in the GIS lab outside of the formal class and lab each week.
14. I will work hard to help you understand and master the material. That is my job. I expect that you will also work hard to understand the material and complete assignments.
15. Discussion of assigned work between students is encouraged; however each student will be held accountable for learning the material.
16. 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 concerned.
17. 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.
18. Assignments are due on the date listed. No late papers will be accepted without a valid excuse. "Validity" is determined at the instructor's discretion.
19. **No Food, Drinks, or Tobacco of any kind are permitted in the Lecture or Computer Lab. No 'active' cell phones or 'active' pagers will be permitted during the class period.**

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.

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:

9. The UAM Code of Student Conduct published in the Student Catalog.
10. 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 Wildlife Society 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 or disruptive behavior will not be tolerated in the School of Forest Resources. Such conduct may result in dismissal from classes.

CHEATING AND PLAGIARISM:

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 hooved mammals there is so far no visible evidence of any density limit except the carrying capacity of food.

Correct direct quotation reads: "In hooved 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 hooved 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.

When in doubt about plagiarism consult your instructor.

Week	Date	Cool Topic	Cool lab topic
1	August 26	Course introduction and expectations	Temporal aspects of spatial data analysis
2	August 31	Overview of cool stuff this semester	
	September 2	Tracking Analyst	
3	September 9	Network Analyst	
4	September 14	Network Analyst	Network analyst
	September 16	Network Analyst	
5	September 21	Model Builder	Model builder
	September 23	Spatial simulation	
6	September 28	Spatial simulation	Spatial simulation
	September 30	Spatial simulation	
7	October 5	Metadata	
	October 7	Project discussion	
8	October 12	Spatial data analysis in 3D	3D spatial analysis
	October 14	Spatial data analysis in 3D	
9	October 19	ArcGlobe	3D spatial analysis
	October 21	Spatial data dissemination	
10	October 26	Introduction to ArcGIS Server	Computer and account management
	October 28	Catch-up	
		ArcGIS Server setup and administration	ArcGIS Server setup and administration
11	November 2		
	November 4	Explore ArcGIS Server	
		ArcGIS Server--map and image services	
12	November 9		Working with map and image services
	November 11	ArcGIS Server--working with 3D maps	
13	November 16		Working with 3D maps
	November 18	HAPPY GIS DAY!!	
14	November 23	ArcGIS Server--geoprocessing	Project work
		ArcGIS Server--web mapping applications	
15	November 30		Project work
	December 2	Project work	
16	December 7	Project work	Project work
	December 9	Peer-review and project assessment	

FINAL PROJECT IS DUE NO LATER THAN MONDAY DECEMBER 14 at 3:30pm

SIS Practicum (SIS 4883)

(3 credits)

INSTRUCTORS:

Dr. Alexandra Felix Locher
217 Forest Resources Complex
PHONE: 870-460-1748
Email: felix@uamont.edu

Mr. Tom Jacobs
101C Forest Resources Complex
PHONE: 870-460-1694
jacobst@uamont.edu

OFFICE HOURS:

by appointment

Time and Location: M 12:10 - 1:00 pm; Room 207 Forest Resources

Course Prerequisites:

Prerequisites: SIS 3843, SIS 4183 (can be taken concurrently), and SIS senior standing.

Required Text:

None.

Course Description:

An integrated problem solving course to apply geographic information systems (GIS), remote sensing, global positioning systems (GPS), and surveying to solve real-world problems. Students will work with an organization or federal, state, private, or non-profit agency using spatial technologies in their area of specialization to complete a project for that agency. Students will be involved in supervised decision-making and problem-solving activities. Students will provide a formal presentation of their project at the end of the semester.

Objectives:

This is a capstone course to give students an opportunity to integrate their knowledge in a supervised problem-solving environment. Students will accomplish the following objectives by the end of the semester:

- 1) Solve spatial-related problems and think independently.
- 2) Establish professional networks and contacts with an agency or organization.
- 3) Work with instructors and other professionals to apply knowledge and skills learned in previous courses to solve a real-world spatial problem.
- 4) Develop organization, time-management, and leadership skills.
- 5) Creatively and professionally communicate results of project to faculty, peers, and professionals in an oral and written form.

Core Competencies:

The following core competencies have been identified as important for this course. All students are required to complete each of the competencies listed below during the semester. At least 2 opportunities will be provided to demonstrate that objectives have been met. Demonstration of core competencies does not guarantee a certain grade, but will likely result in a better grade. Given a course grade of "C" or better has been earned, failure to demonstrate all 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 competencies have been demonstrated; the time limit is at the discretion of the instructor, but will not exceed 2 weeks.

Competencies

- 1) Meet scheduled goals on time
- 2) Demonstrate organization (in oral and written form)
- 3) Exhibit professionalism
- 4) Provide professional presentations
- 5) Provide professional, written products

Course Grading and Evaluation:	Points	% of grade
Clarity of goals/timeline	20	10%
Reports (oral and written) submitted at mid-term	80	20%
Formal oral presentation	80	20%
Written report and final product	200	50%

Grading Scale:

Final course grades will be assigned as follows:

90-100% of points	A
80-89% of points	B
70-79% of points	C
60-69% of points	D
0-59% of points	F

Issuance of Grades:

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Tentative Schedule

Subject	Week
Holiday	1-18
Practicum Assignment and Discussion	1-25
Project Topics and Description	2-1
Timeline and Goals/Tasks Report	2-8
Flowcharts and Project Methods	2-15
Presentation quality and delivery	2-22
Student progress presentations	3-1
Student progress presentations	3-8
Student progress presentations	3-15
Mid-term Progress Report	3-22
Spring Break	3-29
Draft Report and peer-review	4-5
Draft Report and peer-review	4-12
Lessons Learned and Debriefing	4-19
Formal Presentation of Project	4-26
Formal Presentation of Project	5-3
Written Report Due (no later than 10:30 am)	5-10

Other Information:**Students with Disabilities:**

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SCHOOL OF FOREST RESOURCES**UNIVERSITY OF ARKANSAS – MONTICELLO****PROFESSIONALISM STATEMENT**

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

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- Any person
- Any text from a book, journal, magazine, or other printed material
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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.

Examples using quotations and paraphrasing:

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

Plagiarized/incorrect quote reads: In hooved 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.

FOR 2231, DENDROLOGY LAB I

FALL 2009

INSTRUCTOR Dr. Jamie Schuler
215 Chamberlin
schuler@uamont.edu
Phone: 460-1448
Office Hours: Open door policy or by appointment

COURSE DESCRIPTION

Field practice in the identification, nomenclature, and classification of regional woody plants (trees, shrubs, and vines) in summer and fall condition. Emphasis will be placed on leaf and bark characteristics, and after leaves have fallen, twigs and buds.

COURSE FORMAT

Laboratory only: weather permitting, out-of-doors every week
Section 1, Thursday 1:40-4:30 pm

Each week, students will be taken to different forested areas in the vicinity of Monticello. About 15 new native, naturalized, or cultivated woody plant species will be introduced at each laboratory outing. Over the course of the semester, students will encounter approximately 135 species in a variety of natural habitats or horticultural settings. Each week, old material will be reviewed as new species are introduced. Any species introduced during any previous lab is fair game for a quiz: all quizzes and tests are comprehensive.

A total of 10 identification quizzes are given in the field, *regardless of weather conditions*. Quiz pads are available in the campus bookstore. Be sure to have them by the second meeting. The lowest grade will be dropped (i.e., 9 quizzes will comprise your quiz grade). In case of rain, bring a clear plastic bag and pencil—you will fill in the quiz slips inside the plastic bags! **There are no make-up quizzes.**

Quizzes and exams require you to indicate the family, genus, species and common name for each specimen selected. In all cases, the family name is worth 1 point, and Latin species and common names are worth 2 points. Incorrectly spelled names received $\frac{1}{2}$ the point value.

A leaf collection of ten species of native or naturalized woody plants not on our course list can replace the lowest quiz grade, including a grade of zero for a quiz missed during an absence. For each species, at least one representative leaf attached to the stem should be flattened, dried, and glued to an 8.5 x 11 sheet of high-quality paper. Family name, binomial, and common name should be written at the top of the page, the student's name at the bottom. The ten sheets can be submitted in a manila folder.

The mid-term is given in the lab, using leafy branches with or without fruits. The final exam is

given in the field. Students in both sections will take the midterm and final exams at the same time (see below).

COURSE OBJECTIVES

To familiarize students with:

- (1) morphological (structural) features that characterize woody plant species,
- (2) the use of those features for recognition and identification of woody plants,
- (3) technical (scientific) names and standard common names of those species, and
- (4) the diversity of woody plants and their ecological roles in our Southern forests.

CORE COMPETENCIES

Students will be required to:

- (1) correctly identify using the common name 100% of the core competency species at least one time on an exam (see attached list)
- (2) correctly spell the Latin name of at least 100% of the core competency species at least one time on an exam

Students will be given several opportunities to fulfill these competencies during the semester. Failure to achieve mastery in all of these competencies will result in an "I", regardless of the overall course grade. Incompletes can be converted into a letter grade if, through additional work provided by the instructor, the student demonstrates mastery of the unachieved competencies before the start of classes for the next semester. Failure to achieve these competencies will result in either a "D" (if the overall course grade was A-D), or "F".

GRADING

		<u>Final Grade:</u>
a.	IDENTIFICATION QUIZZES	45%
b.	MIDTERM EXAM	25%
c.	COMPREHENSIVE FINAL EXAM	30%

Midterm exam: Friday, Oct. 10, 1:10 pm

Final exam: Friday, Nov. 20, 1:10 pm

Alternate Final Exam date (in case of inclement weather): Friday, Dec. 5, 1:10 pm

Make-Up Exams:

If you miss the midterm exam and have a valid medical or personal excuse for missing it, the comprehensive final exam will replace the midterm exam grade. If you miss the final exam for a valid reason, you will receive an "incomplete (I)" for the course until the exam can be made up.

IF YOU ARE UNABLE TO TAKE AN EXAM AT ITS SCHEDULED TIME, NOTIFY THE INSTRUCTOR BEFORE THE EXAM IS GIVEN. Medical excuses must be accompanied by written verification of a doctor's visit on or before the day of the exam.

Attendance: There is no substitute for a field laboratory—a missed field experience cannot be made up by copying another student's notes or doing extra reading. Therefore, attendance is compulsory. If you must miss a lab, please notify the instructor beforehand, if possible, or as soon as you return to campus after the absence for instructions on getting missed material. **A missed class will result in a zero quiz grade.**

EQUIPMENT

Texts

1. Forest trees, Lisa Samuelson, 2006
2. Trees, Shrubs and Vines of Arkansas, Carl Hunter, 1989
3. Quiz slips

Supplies

1. **YOU MUST HAVE HARD HAT** by lab #3. You can order on-line from Forestry Suppliers or Ben Meadows. Also, several places in town sell hard hats (e.g., Barton's, Fastenal). (\$5-10)
2. Clipboard and note paper or notebook and pen/pencil.
3. I also recommend: a small pocket knife and hand lens, bug spray, hat and sun block, and WATER.

HELPFUL HINTS

Numerous internet sites illustrate, describe, and discuss woody plants, especially trees. For example, search “dendrology images” or go directly to www.forestryimages.org. Dr. John Seiler at Virginia Tech and Will Cook at Duke Univ. also have very good dendrology websites (<http://www.fw.vt.edu/dendro/dendrology/main.htm>) and (<http://www.duke.edu/~cwcook/trees>).

Dendrology I is a tree identification course, requiring two things:

1. RECOGNITION of species.
2. MEMORIZATION of scientific (and common) names.

Recognition and memorization demand practice. Use your textbooks!

I strongly suggest that you: (1) make a leaf collection to help you recognize the plants and learn their names, (2) make flash cards to help memorize spellings for both common and scientific names. Spelling always counts!!!

UAM/SFR POLICIES

1. It is the policy of the University of AR 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.
2. Students in the School of Forest Resources are pursuing courses of study that prepare them for careers as natural resource professionals. Professional education is much more than technical training and encompasses professional resource education as well as general education, social science and humanities courses. Collectively, these subjects constitute professional education.
3. Since the School is dedicated to professional education rather than technical training, the faculty and staff have certain expectations of themselves and of SFR students with regard to professionalism and personal conduct in their preparation for careers in the natural resource professions. Thus, 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,
-- the UAM Code of Student Conduct published in the University catalog,
-- attitudes appropriate for resource professionals of the 21st Century:
respect for others and for their ideas;
appreciation for ethnic and gender diversity in the workplace;
sensitivity to environmental quality;
adherence to professional ethics, e.g., the Society of American Foresters Code of Ethics.
Instructors reserve the right to reduce student grades or withdraw the students from class for unprofessional behavior.

Cheating and plagiarism in any aspect of this class are not acceptable. Students involved in these activities may receive a zero for a particular assignment, or may be removed from the course with a failing grade.

Disorderly conduct is defined in the student handbook as "any behavior that disrupts the regular or normal functions of the University community, including behavior which breaches the peace or violates the rights of others". This action is prohibited under the Student Conduct Code. Disorderly conduct or disruptive behavior will not be tolerated in the School of Forest Resources. Such conduct may result in dismissal from classes.

No talking is allowed during quizzes and tests!!!

Penalty for talking during quiz or test:
1st time: warning
2nd time: zero on quiz or test
3rd time: dropped from course with F

Penalty for cheating:

1st time: zero on quiz or test

2nd time: dropped from course with F

4. The University of Arkansas at Monticello no longer mails grade reports to students at the end of the term. For the convenience, grades and other information can be accessed through Campus Connect, located on the UAM homepage, www.uamont.edu. However, any student who wishes to have a mailed grade report must complete a request with the Registrar's Office prior to the last day of final exams. This form is also available in the Student Services offices at Crossett and McGehee. Questions should be directed to the Registrar's Office at 870-460-1034.

SPECIES LIST AND LAB DESTINATIONS FOR DENDROLOGY I: FALL 2008

This list is the source for all acceptable spellings for common and scientific names. “*” indicates a core competency species.

LAB #1. FORESTRY BUILDING (9/3)

- Betula nigra*, river birch (*Betulaceae*)
Carya illinoiensis, pecan (*Juglandaceae*)*
Castanea mollissima, Chinese chestnut (*Fagaceae*)
Cercis canadensis, redbud (*Fabaceae*)
Diospyros virginiana, persimmon (*Ebenaceae*)*
Fraxinus americana, white ash (*Oleaceae*)*
Ginkgo biloba, ginkgo (*Ginkgoaceae*)
Juniperus virginiana, eastern redcedar, juniper (*Cupressaceae*)
Prunus serotina, black cherry (*Rosaceae*)*
Quercus acutissima, sawtooth oak (*Fagaceae*)
Quercus nigra, water oak (*Fagaceae*)*
Quercus phellos, willow oak (*Fagaceae*)*
Quercus pagoda, cherrybark oak (*Fagaceae*)*
Taxodium distichum, baldcypress (*Cupressaceae*)*
Ulmus alata, winged elm (*Ulmaceae*)*

LAB #2. UAM CAMPUS (9/10)

- Acer saccharinum*, silver maple (*Aceraceae*)
Campsis radicans, trumpet creeper (*Bignoniaceae*)
Catalpa sp., catalpa (*Bignoniaceae*)
Cephalanthus occidentalis, buttonbush (*Rubiaceae*)
Chionanthus virginicus, fringe tree (*Oleaceae*)
Fraxinus pennsylvanica, green ash (*Oleaceae*)*
Gleditsia triacanthos, honey locust (*Fabaceae*)
Liriodendron tulipifera, yellow-poplar, tulip-poplar (*Magnoliaceae*)
Magnolia grandiflora, southern magnolia (*Magnoliaceae*)
Nyssa sylvatica, blackgum (*Cornaceae*)*
Pinus elliottii, slash pine (*Pinaceae*)
Pinus taeda, loblolly pine (*Pinaceae*)*
Platanus occidentalis, sycamore (*Platanaceae*)*
Populus deltoides, eastern cottonwood (*Salicaceae*)
Populus heterophylla, swamp cottonwood (*Salicaceae*)
Quercus alba, white oak (*Fagaceae*)*
Quercus falcata, southern red oak (*Fagaceae*)*
Quercus palustris, pin oak (*Fagaceae*)
Quercus stellata, post oak (*Fagaceae*)*

LAB #3. UNIVERSITY CENTER & WEST BLOCK (9/17)

Acer rubrum, red maple (*Aceraceae*)*
Aesculus pavia, red buckeye (*Hippocastanaceae*)
Ampelopsis arborea, pepper vine (*Vitaceae*)
Cornus florida, flowering dogwood (*Cornaceae*)*
Ilex decidua, possum haw (*Aquifoliaceae*)
Juglans nigra, black walnut (*Juglandaceae*)
Ligustrum sinense, privet (*Oleaceae*)
Liquidambar styraciflua, sweetgum (*Hamamelidaceae*)*
Maclura pomifera, Osage orange (*Moraceae*)
Melia azedarach, Chinaberry (*Meliaceae*)
Parthenocissus quinquefolia, Virginia creeper (*Vitaceae*)
Pinus echinata, shortleaf pine (*Pinaceae*)*
Quercus marilandica, blackjack oak (*Fagaceae*)
Rhus copallina, winged sumac (*Anacardiaceae*)
Salix nigra, black willow (*Salicaceae*)
Sassafras albidum, sassafras (*Lauraceae*)*
Smilax sp., greenbriar (*Smilacaceae*)
Toxicodendron radicans, poison ivy (*Anacardiaceae*)

LAB #4. UAM EAST BLOCK (9/24)

Callicarpa americana, French-mulberry, American beautyberry (*Verbenaceae*)
Carya ovata, shagbark hickory (*Juglandaceae*)
Carya texana, black hickory (*Juglandaceae*)
Carya tomentosa, mockernut hickory (*Juglandaceae*)*
Crataegus marshallii, parsley hawthorn (*Rosaceae*)
Lonicera japonica, Japanese honeysuckle (*Caprifoliaceae*)
Morus rubra, red mulberry (*Moraceae*)
Ostrya virginiana, hophornbeam (*Betulaceae*)*
Quercus shumardii, Shumard oak (*Fagaceae*)
Quercus virginiana, live oak (*Fagaceae*)
Rhus aromatica, fragrant sumac (*Anacardiaceae*)
Salix exigua, sandbar willow, (*Salicaceae*)
Vaccinium arboreum, sparkleberry (*Ericaceae*)
Vitis rotundifolia, muscadine (*Vitaceae*)
Wisteria sp., wisteria (*Fabaceae*)

LAB #5. SEVEN DEVILS SWAMP (10/1)

Albizia julibrissin, silktree, mimosa (Fabaceae)
Aralia spinosa, devil's walking stick (Araliaceae)
Gleditsia aquatica, water locust (Fabaceae)
Nyssa aquatica, water tupelo (Nyssaceae)
Paulownia tomentosa, royal paulownia (Scrophulariaceae)
Planera aquatica, water elm (Ulmaceae)
Prunus mexicana, Mexican plum (Rosaceae)
Quercus lyrata, overcup oak (Fagaceae)*
Quercus michauxii, swamp chestnut oak, cow oak (Fagaceae)*
Quercus texana, Nuttall oak (Fagaceae)
Quercus velutina, black oak (Fagaceae)
Rhamnus caroliniana, Carolina buckthorn (Rhamnaceae)
Rhus glabra, smooth sumac (Anacardiaceae)
Sambucus canadensis, elderberry (Caprifoliaceae)
Ulmus rubra, slippery elm (Ulmaceae)

LAB #6. UAM POW CAMP (10/8)

Amelanchier arborea, serviceberry (Rosaceae)
Castanea pumila, chinkapin (Fagaceae)
Corylus americana, hazelnut (Betulaceae)
Hamamelis virginiana, witch hazel (Hamamelidaceae)
Pinus palustris, longleaf pine (Pinaceae)
Pinus virginiana, Virginia pine (Pinaceae)
Rubus sp., blackberry (Rosaceae)

*****MIDTERM EXAM FRIDAY, 10/9*****

LAB #7. HUNGER RUN BOTTOMS (10/15)

Arundinaria gigantea, cane (Poaceae)
Asimina triloba, paw paw (Annonaceae)
Berchemia scandens, rattan vine (Rhamnaceae)
Carpinus caroliniana, hornbeam (Betulaceae)
Carya cordiformis, bitternut hickory (Juglandaceae)
Celtis laevigata, sugarberry (Ulmaceae)
Symplocos tinctoria, sweetleaf, horse sugar (Symplocaceae)
Tilia americana, basswood (Tiliaceae)
Ulmus americana, American elm (Ulmaceae)
Vitis sp., wild grape (Vitaceae)

LAB #8. BAYOU BARTHOLOMEW & TILLAR (10/22)

Acer negundo, boxelder (Aceraceae)
Carya aquatica, water hickory, bitter pecan (Juglandaceae)
Carya myristiciformis, nutmeg hickory (Juglandaceae)
Citrus trifoliata, trifoliate orange (Rutaceae)
Crataegus sp., hawthorn (Rosaceae)
Forestiera acuminata, swamp privet (Oleaceae)
Populus alba, white poplar (Salicaceae)
Robinia pseudo-acacia, black locust (Fabaceae)
Sapium sebiferum, Chinese tallow tree (Euphorbiaceae)
Ulmus crassifolia, cedar elm (Ulmaceae)
Zanthoxylum clava-herculis, Hercules club, toothache tree (Rutaceae)

LAB #9. SALINE RIVER at OZMENT BLUFF (10/29)

Carya glabra, pignut hickory (Juglandaceae)
Ilex opaca, American holly (Aquifoliaceae)
Pyrus calleryana, Callery pear (Rosaceae)
Rhododendron canescens, wild azalea (Ericaceae)
Sideroxylon lanuginosum, gum bumelia (Sapotaceae)
Vaccinium sp., blueberry (Ericaceae)
Viburnum rufidulum, rusty black haw (Caprifoliaceae)

LAB #10. WARREN PRAIRIE NATURAL AREA & BRADLEY CO. PARK (11/5)

Baccharis halimifolia, eastern baccharis (Asteraceae)
Fraxinus caroliniana, Carolina ash (Oleaceae)
Morella cerifera, wax-myrtle (Myricaceae)
Quercus muehlenbergii, chinkapin oak (Fagaceae)
Quercus rubra, northern red oak (Fagaceae)
Sabal minor, dwarf palmetto (Arecaceae)
Styrax grandifolia, bigleaf snow-bell (Styracaceae)

LAB #11. DOWNTOWN MONTICELLO (11/12)

Acer saccharum, sugar maple (Aceraceae)
Ailanthus altissima, tree of heaven (Simaroubaceae)
Broussonetia papyrifera, paper mulberry (Moraceae)
Fagus grandifolia, American beech (Fagaceae)
Firmiana simplex, Chinese parasol tree (Sterculiaceae)
Pinus strobus, eastern white pine (Pinaceae)
Phoradendron tomentosum, mistletoe (Viscaceae)
Pseudotsuga menziesii, Douglas-fir (Pinaceae)
Prunus caroliniana, Carolina laurelcherry (Rosaceae)
Pueraria lobata, kudzu (Fabaceae)
Tsuga canadensis, eastern hemlock (Pinaceae)

Dendrology II
Course Syllabus
Spring 2010

Instructor: Jamie Schuler, Assistant Professor
215 H.H. Chamberlin Forest Resource Complex
870-460-1448, schuler@uamont.edu

Time & Place: Wednesdays 1:10-4:00 pm, Room 209 Chamberlin (when indoors)

Office Hours: TBA, open door policy, or by appointment

Course Description:

Field and laboratory practice in the identification, nomenclature, classification, and ecology of both regional woody plants and North American conifers in winter and spring condition. Twig, fruit, and cone characteristics will be emphasized in indoor laboratory classes from January to March. After Spring Break, the course will focus on North American conifer species and outdoor field identification of old and a few new species.

Course Objectives:

1. Review morphological features that characterize woody plant species.
2. Review the utilization of those features for identification of woody plants in winter and spring condition.
3. Memorize the technical names and standard common names of those species.
4. To learn the silvical characteristics of the woody plants.

Required Texts (same as for Dendrology I):

1. Samuelson, L.J. and M.E. Hogan. 2006. Forest trees: a guide to the eastern United States. Pearson Prentice Hall. 539 p.
2. Quiz slips

Online Material:

Burns, R.M., and B.H. Honkala. 1990. Silvics of North America: 1. Conifers; 2. Hardwoods. Agriculture Handbook 654. USDA For. Serv., Washington, DC., 877 p.
http://www.na.fs.fed.us/spfo/pubs/silvics_manual/table_of_contents.htm

Grading

Identification Quizzes (9 of 10)	50%
Midterm Exam	25%
Comprehensive Final	25%

Final Grade

90 – 100 %	A
80 – 89 %	B
70 – 79 %	C
60 – 69 %	D
<60%	F

Attendance

Obviously attendance is critical. If you miss a lab, you should notify the instructor to find out what was covered during the lab period. You are still responsible for the course material.

Make-up Quizzes and Exams

If you miss the midterm exam with a valid excused absence, you may take a make-up exam at the instructor's convenience. If you miss the final exam with a valid excused absence, you will receive an "I" until the exam can be made up.

Weekly quizzes cannot be made up. The lowest quiz grades will be dropped, but you will still be responsible for the core competencies (see below).

Instructor's Expectations:

After Spring Break, laboratory classes will generally be held outdoors regardless of weather conditions. Required attire for all outdoor classes includes hardhat and closed-toed shoes (no sandals, flip-flops, etc.). I will supply quiz sheets for both indoor and outdoor labs. On occasion, outdoor classes will return after 4:00 pm. Punctuality is expected; class will start at 1:10 p.m.

Core Competencies:

Students are required to achieve an overall grade of at least a "C" in order to receive credit for this course. Additionally, students are also required to demonstrate understanding and mastery of the specific core competencies listed below.

1. Knowledge of the silvical characteristics of the trees in a forest stand is extremely important in determining whether cultural treatment will be biologically successful. You are required to know and describe the silvical characteristics of the following 24 woody species common to the southern U.S.:

loblolly pine	Nuttall oak	white ash
longleaf pine	northern red oak	green ash
shortleaf pine	black oak	blackgum
water oak	black cherry	pecan
white oak	sugarberry	baldcypress
black willow	black walnut	mockernut hickory
shagbark hickory	cherrybark oak	red maple
sweetgum	Shumard oak	overcup oak

The characteristics to be considered are natural range, associated species, tolerance to shade (five levels) and to poor soil aeration, and the season when seed falls. Assessment will occur on the midterm and final exams.

2. Be able to identify a woody species by its fruit. You must have at least an overall quiz average of 60% for this section.
3. Be able to identify a woody species by its twig characteristics. You must have at least an overall quiz average of 60% for this section.

Students will be given several opportunities to fulfill these competencies during the semester. Failure to achieve mastery in all of these competencies will result in an "I", regardless of the overall course grade. Incompletes can be converted into a letter grade if, through additional work provided by the instructor, the student demonstrates mastery of the unachieved competencies before the start of classes for the next semester (summer I). A failure to achieve these competencies will result in either a "D" (if the overall course grade was A-D, or "F".

UAM/SFR Policies

1. It is the policy of the University of AR 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.

2. Students in the School of Forest Resources are pursuing courses of study that prepare them for careers as natural resource professionals. Professional education is much more than technical training and encompasses professional resource education as well as general education, social science and humanities courses. Collectively, these subjects constitute professional education.

Since 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,

--the UAM Code of Student Conduct published in the University catalog,

--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.

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

- a) Cheating and plagiarism in any aspect of this class are not acceptable. Students involved in these activities may receive a zero for a particular assignment, or may be removed from the course with a failing grade.
- b) Disorderly conduct is defined in the student handbook as "any behavior that disrupts the regular or normal functions of the University community, including behavior which breaches the peace or violates the rights of others". This action is prohibited under the Student Conduct Code. Disorderly conduct or disruptive behavior will not be tolerated in the School of Forest Resources. Such conduct may result in dismissal from classes.

Tentative Laboratory Schedule

Week 1 (Jan. 13)—Introduction, review of syllabus, and review of terminology

Week 2 (Jan. 20)—Review of woody plants and winter twig identification

Week 3 (Jan. 27)—Review of woody plants and winter twig identification (QUIZ 1)

Week 4 (Feb. 3)—Review of woody plants and winter twig identification (Q2)

Week 5 (Feb. 10)—Field review & bark characteristics (Q3)

Week 6 (Feb. 17)—Field review & bark characteristics (Q4)

Week 7 (Feb. 24)—Hardwood fruits

Week 8 (Mar. 3)—Hardwood fruits (Q5)

Week 9 (Mar. 10)—Hardwood fruits (Q6)

Week 10 (Mar. 17)—Midterm exam (indoors)

Week 11 (Mar. 24)—Spring Break-No class

Week 12 (Mar. 31)—North American conifers

Week 13 (Apr. 7)—Field review (Q7)

Week 14 (Apr. 14)—Field review (Q8)

Week 15 (Apr. 21)—Field review (Q9)

Week 16 (Apr. 28)—Review for Field Final Exam (Q10)

Final Exam Date: May 6 at 8am

Quizzes will focus mainly on the previous week's material, but may include any species covered to that point (i.e., quizzes are cumulative). The midterm exam will include materials from weeks 1 to 9, inclusive. The field final will cover all species seen during the semester--indoors and outdoors.

Twig Lab # 1

Acer rubrum
Acer negundo
Betula nigra
Catalpa sp.
Diospyros virginiana
Liquidambar styraciflua
Liriodendron tulipifera
Melia azedarach
Nyssa sylvatica
Ostrya virginiana
Platanus occidentalis
Prunus serotina
Ulmus alata

Twig Lab # 2

Aralia spinosa
Carpinus caroliniana
Cercis canadensis
Cornus florida
Fraxinus pennsylvanica
Hamamelis virginiana
Juglans nigra
Populus deltoides
Rhus glabra
Robinia pseudoacacia
Salix nigra
Sassafras albidum
Taxodium distichum

Twig lab # 3

Carya cordiformis
Carya illinoensis
Carya ovata
Carya texana
Carya tomentosa
Quercus alba
Quercus falcata
Quercus marilandica
Quercus nigra
Quercus phellos
Quercus shumardii
Quercus stellata
Quercus lyrata

Fruit Lab # 1

Acer negundo
Acer rubrum
Acer saccharinum
Aesculus pavia
Campsis radicans
Catalpa sp.
Cephalanthus occidentalis
Diospyros virginiana
Liquidambar styraciflua
Liriodendron tulipifera
Magnolia grandiflora
Melia azedarach
Nyssa sylvatica
Ostrya virginiana
Platanus occidentalis
Robinia pseudoacacia

Fruit Lab # 2

Carpinus caroliniana
Castanea mollissima
Castanea pumila
Cercis canadensis
Fraxinus americana
Fraxinus pennsylvanica
Fraxinus caroliniana
Gleditsia aquatica
Gleditsia triacanthos
Gymnocladus dioica
Juglans nigra
Paulownia tomentosa
Taxodium distichum
Ulmus alata
Ulmus americana
Ulmus rubra

Fruit Lab # 3

Carya aquatica
Carya cordiformis
Carya illinoiensis
Carya myristiciformis
Carya ovata
Carya texana
Carya tomentosa
Quercus acutissima
Quercus alba
Quercus falcata
Quercus lyrata
Quercus marilandica
Quercus michauxii
Quercus nigra
Quercus pagoda
Quercus palustris
Quercus phellos
Quercus rubra
Quercus shumardii
Quercus stellata
Quercus texana
Quercus velutina

BIOMETRICS IN NATURAL RESOURCES

FOR 3353

SPRING 2010

INSTRUCTOR

Dr. Robert E. Kissell, Jr.

SFR Room 125

870-460-1192

Kissell@uamont.edu

Office Hours: TBA.

TIME AND PLACE

Lecture: Tuesday and Thursday 8:10-9:00 am, School of Forest Resources Room 209.

Lab: Wednesday 1:10-4:00 pm, School of Forest Resources Room 210.

PREREQUISITES

MATH 1043 or MATH 1033.

COURSE DESCRIPTION

The course will cover collection and analysis of data, probability, frequency distributions, measures of central tendency and dispersion, estimation of parameters, linear regression, chi-square, and analysis of variance with an emphasis on hand-calculations and software-based statistical computations.

COURSE OBJECTIVES

1. Develop the ability to communicate with other natural resource managers and the public in general about biological and statistical measurements.
2. Apply rules of probability and discrete and continuous distributions to determine probabilities in the context of natural resource management.
3. Gain an understanding of both descriptive and inferential statistics and their application in natural resource management.
4. Gain an understanding of the process behind estimating parameters of regression models and their usefulness in natural resource management.
5. Gain an understanding of the concepts behind comparing population means and sample means and the usefulness of these procedures in natural resource management.

REQUIRED TEXT

Sokal, R. R., and F. J. Rohlf. 2009. Introduction to Biostatistics, 2nd edition.

Dover Publications, Inc., Mineola, NY. 363 p.

Syllabus for Biometrics in Natural Resources

2

GRADING SYSTEM

Point distribution on which grade will be calculated.

Homework 200 Points

Labs 200 Points

Quizzes 100 Points

Exams – 3 300 Points

Total 800 Points

A = 90% - 100% (720-800 pts)

B = 80% - 89% (640-719 pts)

C = 70% - 79% (560-639 pts)

D = 60% - 69% (480-559 pts)

F = 0 - 60% (< 480 pts)

Home work will be assigned each week and collected each week at the beginning of the Tuesday class. Late work or multiple pages that are not stapled together will NOT be accepted.

You will be collecting data in groups. However, unique lab reports are expected from each student. Helping fellow students or asking other students for help is encouraged. In the professional world, it is good to get second opinions and to ask advice. As a professional, it is often expected that you help others. With that said, please be wise as to who you ask for help!

The format for lab reports will be discussed during the first lab period (today). Lab reports that contain multiple pages must be stapled and reports must be typed. Each person will turn in weekly lab assignments. Lab assignments are due at the beginning of the class each Tuesday morning. Late work or work not typed (and stapled when appropriate) will NOT be accepted. If you know you will miss a lab prior to the lab, see me BEFORE you miss lab; in the case of an emergency, contact me (by phone, email, or in person) as soon as possible. If you miss lab without a valid excuse, you will receive a "zero" for that lab assignment. There will be 10 labs worth points at 20 points each.

A total of 10 quizzes will be given during the semester. Each quiz will be worth 10 points and will cover terms and calculations. Quizzes will be given at the beginning of the lecture period.

There will be three exams. Each exam is worth 100 points. Note that the final exam is comprehensive. You must take the exams at the scheduled times unless you make prior arrangements with me. If you know you will miss an exam due to a university sanctioned event, you must inform me ahead of time. If you are unable to take an exam at the scheduled time for some unforeseen reason, contact me as soon as possible.

The exam will be rescheduled providing a valid excuse is provided. Unexcused absences from exams will result in zeroes. See the tentative schedule below for dates.

Syllabus for Biometrics in Natural Resources

3

Attendance

Attendance in lecture will not be formally tracked. However, there is a direct correlation, even a cause and effect relationship, between attendance and success. Yes, this class begins at 8:10 am and you are expected to be punctual (that means prompt and prepared). Tardiness will not be tolerated, as it interrupts me and your fellow students.

Expectations

This course is a time and computer intense course. You will be using software such as Excel and SAS, data sets that accompany your text, data provided by your instructor, and data you collect personally. As an applied statistics course, biometrics has many terms and concepts that will be completely new to you and will take a considerable amount of time to fully understand. You should expect to spend considerable time in achieving the successful completion of this course.

Reading material will be assigned each week. Although no one reading assignment is long, there is much detail to understand and may require more than one or two reads.

Reading topics to be covered each week are given in the tentative schedule below. Unless instructed otherwise, you are to read the material prior to coming to class. I plan on having fun in this class and I hope you will also. After many years of applying biometrics, I have found that any 5 year old can adeptly apply biometrics with 20 years of practice – that's a joke. Cell phones should be turned off during lecture and lab. Any cell phone ringing, vibrating, or otherwise interrupting the class will be answered by me – what fun!

CORE COMPETENCIES

The following objectives have been identified as important for this course. All students are required to complete each of the objectives listed below during the semester. At least two (2) opportunities to demonstrate that objectives have been met will be provided during exams and quizzes. To successfully demonstrate that you met each objective, you must answer at least 60% of the question(s) relating to that objective correctly.

Demonstration of objectives does not guarantee a certain grade, but will likely result in a better grade. Given a course grade of "C" or better has been earned, failure to demonstrate all 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 objectives have been demonstrated; the time limit is at the discretion of the instructor, but will not exceed 2 weeks. It should be noted that if a grade of "I" is not replaced during the time period allotted the grade of "F" will be assigned.

Syllabus for Biometrics in Natural Resources

4

Objectives

- 1) Provide an understand of sampling approaches
- 2) Calculate measures of central tendency and dispersion
- 3) Understand and apply Binomial, Poisson, Normal, F- and t-distributions, and Chi-square distributions
- 4) Define, understand, and demonstrate the Central Limit Theorem
- 5) Calculate sample size for given levels of alpha, beta, and effect size

INCLEMENT WEATHER POLICY

In case of inclement weather, this class will meet for lectures and scheduled exams unless UAM officially cancels all classes.

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.

Tentative Lecture Schedule a

Topic Chapter(s) Date/Week

Introduction/Discussion 1-12/1

Sampling/Descriptive Statistics 3 1-19/2
Descriptive Statistics/Probability 3 1-26/3

Normal Distribution/Central Limit Theorem 5 & 6 2-2/4

T-distribution/ 6 2-11/5

Chi-square distribution 6 & 13 2-16/6

Review/Exam 1-5 2-23/7

Binomial distribution 4 3-1/8

Poisson distribution and test selection 4 3-9/9

Review/Exam 1-6 3-16/10

Spring Break 3-23/11

Analysis of Variance 7 & 8 3-30/12

Analysis of Variance 7 & 8 4-6/13

Linear Regression 11 4-13/14

Linear Regression 11 4-20/15

Correlation 12 4-27/16

Final Exam 5-3/17

aSubject to change.

Syllabus for Biometrics in Natural Resources

5

Tentative Laboratory Schedule

Topic Date/Week

Introduction/Reading 1-13/1

Sampling/Descriptive Statistics 1-20/2

Descriptive Statistics/Probability 1-27/3

Central Limit Theorem 2-3/4

Z-tests/t-tests 2-10/5

Chi-square tests 2-17/6

Exam 1 2-24/7

Binomial tests 3-3/8

Poisson tests/Choosing appropriate tests 3-10/9

Exam 2 3-17/10

Spring Break 3-24/11

ANOVA 3-31/12

ANOVA 4-7/13

Linear regression 4-14/14

Linear regression 4-21/15

Correlations 4-28/16

aLaboratory reports are due at the beginning of Tuesday lecture following lab.

Syllabus for Biometrics in Natural Resources

6

Laboratory Report Format

Name Date

Purpose: The purpose of this laboratory is to ...

Methods: Provide a description of the methods used to achieve the obtained results.

Methods should be detailed sufficiently such that the work can be replicated by someone else.

Results: Provide written results with any necessary tables and figures. Each table and figure should each be placed on a single sheet of paper with tables placed ahead of figures. In the text of your written results refer to tables and figures in their order of presentation and place tables and figures following text. Be sure to include table descriptions on top of the tables and figure legends at the bottom of figures.

Conclusions: Provide a summary that succinctly gives the “take home message” of your work.

In the header, place your name. Also, make sure you provide page numbers (as on this syllabus). There is no minimum or maximum length for laboratory reports.

Correct spelling (please use the spell checker of your preferred word processor software), grammar, and numerical reporting are expected on all lab reports and will be graded along with report content.

Use 12 pt, Arial font (like this one) and 1 inch margins all around. Use double spacing of text. Notice there is no extra return before a new heading (see below).

Lab reports will have the following point distribution:

Purpose – 1 pt

Methods – 8 pts

Results – 5 pts

Conclusion – 4 pts

Grammar, spelling, and scientific notation – 2 pts

Syllabus for Biometrics in Natural Resources

7

Dr. Robert Kissell

Purpose: The purpose of this laboratory is to provide an example of what is expected in a properly written report.

Methods: I read the instructions and wrote a draft report. After making corrections I consulted my fellow students and then Dr. Kissell. I incorporated the recommendations suggested. I recorded the number of times I corrected the report and the time it took for each correction. I plotted the number of times I corrected the report by the time it took to make each correction.

Results: I corrected the report 5 times and the time required for each revision was less than the one preceding (Figure 1). I was unable to place a header and page number on this particular report because there is a header incorporated into this syllabus and would be confusing.

Conclusion: Writing lab reports takes a lot of time and cannot be done quickly. Several revisions are required for a quality lab report. Over time writing lab reports become easier and take less time.

Syllabus for Biometrics in Natural Resources

8

Figure 1. The relationship between the number of revisions to prepare my lab report and the time it takes to complete the revisions.

$$y = -25.6\ln(x) + 45.51$$

$$R^2 = 0.9893$$

0

5

10

15

20

25

30

35

40

45

50

0 1 2 3 4 5 6

Time (minutes)

Number of Revisions

**Programming Logic & Design
CIS 2203**

ASSOC. PROF: Lori Selby

OFFICE: BBC 108

DIRECT PHONE: 460-1811

CIS OFFICE PHONE: 460-1031

Email Address: selby@uamont.edu

Web Site: <http://www.uamont.edu/facultyweb/selby/>

OFFICE HOURS:

Mon, Wed -- 9:00 - 10:00, 12:00- 1:00

Tues, Thurs – 9:30 - 11:00, 12:30 - 1:30

Friday -- 9:00-10:00

Textbook: Joyce Farrell, *Programming Logic and Design, Fifth Edition, Comprehensive*. Thomson Course Technology, ISBN 1-4239-0195-9

COURSE OBJECTIVES

The student should be able to demonstrate an in-depth knowledge of developing structured programming logic techniques. The course introduces programming concepts and enforces good style and logical thinking and does not focus on any one particular language. The student is assessed on their ability in the following: analysis of the problem; logical sequencing using hierarchy charts, and program flowcharts; printer/monitor spacing charts for report writing; and to code the problems using concepts taught in class/text utilizing pseudocode to display their ability to logically solve word problems.

COURSE ASSIGNMENTS:

There will be program assignments from each chapter designed to test the students' ability regarding each new concept. The student will turn in a printer spacing chart of the output, a flowchart using Microsoft VISIO, and the pseudocode listing for each assignment for a total of 30 points. Late assignments will not be accepted, however, hand in whatever you have completed for partial credit. Students are expected to complete all assignments on time. The instructor does NOT guarantee make-up assignments or credit for work that is turned in late.

GRADING AND EVALUATION CRITERIA

Exams 80%

Exam I - Ch 1 - 2

Exam II - Ch 3 – 4

Exam III - Ch 5 – 6

Final - Ch 7 - 8 May 7, 1:30-3:30

Program Assignments..... 10%

CIS 3443 Syllabus - Spring 2010
Object-Oriented Programming Languages

Instructor: J. Hendrix
Office: BBC 117
Phone: 460-1711
E-mail: hendrix@uamont.edu

Office Hours: M & W 11-12, 1 – 2:30
Tues & Thur 10-12
Fri 11-12
and as arranged

Course Purpose/Objectives: To provide concepts and applications of information systems development utilizing the object-oriented (OO) paradigm. Students will incorporate basic concepts of programming, problem solving, programming logic, and design techniques within a popular event-driven language. Topics will be presented in a sequence so as to prepare programmers to write visual interfaces while acquiring important programming skills such as creating projects with loops, decision structures, and sound data management controls.

Prerequisite: CIS 2203 – Programming Logic & Design (with "C" or better)

Text/Materials:

1. Programming in Visual BASIC.net 2005 Bradley & Millspaugh, Irwin McGraw-Hill
2. One USB memory stick
3. A pencil 4. An e-mail account

Course Policies:

Students are expected to attend all classes. In the rare event that a student must be absent it is her/his responsibility to obtain materials which may have been distributed. Points for missed in-class assignments normally cannot be redeemed for more than $\frac{1}{4}$ credit and at the discretion of the instructor only. Exams can be taken early but no student should expect to take make-up exams. See or call your instructor within 18 hours of an unusual absence

CIS Division policy dictates that students must be current with course work assignments and/or exams and must have completed at least 75% of all required course assignments and/or examinations to be considered for a grade of incomplete ("I"). Likewise, this grade will only be considered at the discretion of the instructor.

All students are required to comply with the requirements of the Student Conduct Code as specified in the UAM Student Handbook. The handbook, which includes the conduct code, is available online at <http://www.uamont.edu/pdf/StudentHandbook.pdf>.

The use of cell phones or any other personal electronic device within the classroom should be considered prohibited at all times. Points will be deducted if this policy is disregarded.

Assignments: All assignments are expected no later than the end of the day (5 o'clock) on the due date. Late submission of assignments is defined as three days passed the original due date and these assignments will be assessed a minimum penalty of 25%. However, all assignments must be completed for students to earn a passing grade in the course (that is, whether credit is earned or not).

Academic Dishonesty: Plagiarism and cheating are serious offenses and may be punished by failure on exam, paper or project; failure in course; and or expulsion from the University. For more information refer to the "Academic Dishonesty" policy in the University Undergraduate Catalog.

Posting of Grades: UAM will no longer send 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.

CIS 3103 – Advanced MICROCOMPUTER APPLICATIONS

COURSE SYLLABUS – SPRING 2010

INSTRUCTOR:	Angela Marsh	OFFICE	10:00 a.m. – 11:00 p.m. MWF
		HOURS:	9:30 a.m. – 12:00 p.m. TT
OFFICE:	BBC Room 118		12:00 p.m. – 1:00 p.m. MW
			Other hours by appointment
PHONE:	870.460.1341 (direct) 870.460.1031 (CIS office)	EMAIL:	marsh@uamont.edu

WEB SITE: <http://www.uamont.edu/FacultyWeb/Marsh/>

COURSE PREREQUISITE:
CIS 2223 – Microcomputer Applications

COURSE TEXT:

Microsoft® Office 2007, Advanced Concepts and Techniques; Shelly, Cashman, and Vermatt; Thomson Course Technology; 2008.
Microsoft® Access 2007: Introductory Concepts and Techniques; Shelly, Cashman, and Pratt; Thomson Course Technology; 2008.

SUPPLEMENTAL MATERIALS:

Each student should have at least one memory stick to process and store data for assignments and exams.

COURSE OBJECTIVES:

The student who successfully completes this course will be able to demonstrate an advanced knowledge of

- PowerPoint – presentation application,
- Access – database application,
- Excel – spreadsheet applications, and
- Word – word processing application.

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.

ATTENDANCE:

Students are expected to attend all classes regularly and punctually. For late arrivals, it is the student's responsibility to notify the instructor after class to prevent incurring an absence.

STUDENT CONDUCT CODE:

All students are required to comply with the requirements of the Student Conduct Code as specified in the *Student Handbook*. The handbook which includes the conduct code is available online at: <http://www.uamont.edu/pdf/StudentHandbook.pdf>.

3243 INTRO TO JAVA PROG

Course Syllabus- Spring 2010

Instructor: Bryan Fendley

Office: Library Technology Center

Email: Fendley@uamont.edu

Web: <http://www.uamont.edu/facultyweb/fendley>

Phone: 460-1663 (direct)

Office Hours: By appointment

Course Description

3 credits: 3 hours lecture

Prerequisite: General Education Mathematics, Grade of "C" or better in CIS 2203

Provides the student with theory and application of the java programming language utilizing object-oriented technology. Topics include: Foundations of object orientation and application structures.

Required Text:

Java Software Solutions, Lewis & Loftus 6th edition

Supplemental Materials:

USB memory key to process and store data for assigned projects and exams.

Each student should have a computer account which provides access to UAM e-mail.

Course Objectives:

To provide a basic understanding and proficiency in the use of Java. The student who completes this course will:

1. Understand the basic concepts of programming, problem solving, and programming logic
2. Explain the design techniques of the java programming language
3. Program using java
4. Create products with loops, decisions, and date management

CIS 3433 Syllabus – Fall 2009
Introduction to C# Programming

Instructor: J. Hendrix
Office: BBC 117
Phone: 460-1711
E-Mail: hendrix@uamont.edu

Office Hours: Mon & Wed 11 – 12, 1 – 2:30
Tues & Thurs 10 - 12
Fri 11 - 12
and as arranged

Course Purpose/Objectives:

Using a task-driven approach, students will have the opportunity to reinforce programming concepts ; learn another high-level programming language; demonstrate integrated computing skills; compare and contrast the structure and usage of different programming languages; and integrate OOP with a database .

Prerequisite: CIS 2203

Required Text and Materials:

- 1) Programming in Visual C# 2005, Millspaugh/Bradley, McGraw-Hill 2008
- 2) A (USB) memory stick 3) pencil 4) an e-mail account

Special Note:

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

Teaching Methods & Course Format:

Lectures, computer lab assignments, written assignments, student demonstrations, quizzes, hands-on and written exams, and an integrated project should be expected.

Grading:

Approximately 400 points may be earned during the semester: two major exams @100 points each; individual programming assignments & short exercises @ 125 ; and a student presentation @ 75 points.

Grading Scale:

Semester letter grades will be determined using the following standard percentage for junior/senior courses:

A 93%-100%	B 80%-92%	C 70%-79%	D 60%-69%	F Below 60%
(see the instructor before this occurs)				

CIS 4623 – Database Management Systems
Spring 2010

Instructor: J. Hendrix
Office: BBC 117
Phone: 460-1711
E-mail: hendrix@uamont.edu

Office Hours: Mon & Wed 11-12, 1-2:30
Tues & Thurs 10-12
Friday 11-12
and as arranged

Course Purpose/Objectives: This course covers the classic aspects of database systems: design, implementation and management. Special attention is given to design and implementation and practical aspects of each are stressed. A semester project allows students the opportunity to create a working system using a popular database product.

Specific topic coverage includes:

Database Systems
Data Models
The Relational Database Model
Entity Relationship (ER) Modeling
Normalization of Database Tables
Advanced Data Modeling
Introduction to Structured Query language (SQL)
Advanced SQL
More on Database Design
Selected Database Security Topics

Prerequisite: CIS 2223, CIS 3103, CIS 3423 and CIS 3443

Text/Materials:

- 1) *Database Concepts: Fourth Edition*, Kroenke & Auer,
Pearson/Prentice Hall, 2009
- 2) *Introduction to SQL Server 2005*, Perry & Post, Pearson/Prentice Hall
- 3) (USB) Memory stick 4) pencil 5) an e-mail account

Special Note:

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

Teaching Methods & Course Format:

Lectures, computer lab & written assignments, quizzes, written exams, and a team project should be expected.

Grading:

Final grades will be based upon four major exams @ 100-130 points each, a team project @ 50 points and weekly assignments and quizzes @ approximately 150 points.

Semester letter grades will be determined using the following standard percentage for junior/senior courses:

A 93%-100% B 80%-92% C 70%-79% D 60%-69% F Below 60%
(see the instructor before this occurs)

UNIVERSITY OF ARKANSAS, MONTICELLO
SCHOOL OF BUSINESS
Course Syllabus

MGMT 3473 PRINCIPLES OF MANAGEMENT/ ORG BEHAVIOR Fall 2010
Class time: 1:10pm - 2:30pm. MW

Course Prerequisites: None

Required Texts: Jones/George, **Contemporary Management, 6/e**, ISBN: 0-07-3530437

Instructor: Dr. Michael Alexander Sr.
Office: 312 B Babin Business Center
Phone: (870) 460-1241
E-mail: alexander@uamont.edu
Website: www.uamont.edu/facultyweb/alexander

Office hours: 11:15am - 11:30am MWF; 10:00am - 11:30 am TH; ; also by appointment

Statement of Special Policies

Proper behavior is expected at all times. For MWF classes the class period is 50 minutes, for TH classes it is 75 minutes. Plan on being here the entire time. Do not ask for class to end early and do not arrive late. **All cell phone need to be turned off. Do not text message with the cell phones or any other device. The first offense will be a verbal warning, and may be asked to leave the class; continued offenders will be subject to disciplinary action under student code of conduct.** Do not eat, drink, read newspapers, make phone call or leave class during the period unless it is an emergency.

Because group settings contribute to the learning of cross cultural understanding and to the development of strategic thinking, attendance and **active** participation in class discussions are expected. It is your responsibility to sign the roster sheet each class meeting. Failure to sign in will result in an absence for the day. Excessive absences can result in your being dropped from the course with a W or F, whichever is appropriate. Excessive absences are defined as more than six (6) lecture hours. The allowable exceptions allowing late cases or makeup exams are illness or injury requiring a doctor's care, death or serious illness in your family that requires your absence from campus, unforeseen demands of your job, unavoidable transportation problems, and court appearances. Job interviews, wherever they are conducted, *are not* legitimate excuses for presenting work late, or for makeup exams. The instructor reserves the right to verify any excuses presented by the student, to include contacting and collecting information from any party or individual.

In accordance with new federal regulations requiring 60% or greater attendance by anyone on any type of federal student aid, attendance will be taken. This will be done using a sign-in sheet at the Monticello campus, and by instructor observation of attendance at off-campus locations. Students must sign ONLY their own names to the sheet. Anyone signing for another student will be subject to the penalties for academic dishonesty in the UAM student code.

Cheating will not be tolerated in class. Students found cheating on projects, quiz, test or any other assigned task in the class will be given an F for the assignment and/or drop from the course, whichever is deemed appropriate.

Plagiarism is serious. You must give credit for five or more words in a sequence taken from another source by using quotation marks and indicating the source of the quote, and you must indicate the source of other factual information and ideas, **whether you are quoting or paraphrasing. Citing a source does not excuse the practice of copying and pasting text into your paper. All material must be**

either quoted with quotation marks or paraphrased in your own words. Copying another student's work in part or whole is also plagiarism. Plagiarism in an assignment may result in a failing grade for the assignment. You cannot self-plagiarize by turning in papers or assignments that were prepared for other classes without prior permission from the instructor. If a student is found to have plagiarized parts of an assignment, a failing grade on the assignment may be given. If an entire assignment is found to be plagiarized the student will be given a failing grade in the course.

Special Dates

The last date to drop classes is November 10, 2010. Special Project is due on Wednesday December 8, 2010; Post Test Exam: Wednesday December 8, 2010; FINAL EXAM: Wednesday December 15, 2010 at 8:00 am to 10:00 am

Course Goal

The following student learning outcomes (SLOs) were adopted by the School of Business in 2008: The student graduating from the School of Business at the University of Arkansas at Monticello will be able to:

1. demonstrate familiarity with theory and practice in the business core and in a chosen area of concentration,
2. demonstrate understanding of international business and international effects on US firms in an interdependent world,
3. be able to gather, analyze, and present results of research and business analysis,
4. demonstrate competence in the use of common business application software and an understanding of the role of information systems in business,
5. demonstrate critical thinking and communication skills by analyzing business problems, and clearly presenting solutions to those problems, either orally or in writing.

Course Objectives

This course is intended as a survey course for non-business majors and as an introductory course for students considering a business school major. The purpose of the course is to familiarize non-business students with the basic functions of business, its terminology, and its methods. For prospective business majors, especially for those with little prior knowledge of business, the purpose is the same, but an additional purpose is to prepare students to begin taking business courses. At the end of the course, students should be familiar with the basic concepts of accounting, management, finance, marketing, and economics. Students should also be able to define basic terms, and to apply core concepts to new situations.

1. Describe what management is, why management is important, what managers do, and how managers utilize organizational resources efficiently and effectively to achieve organizational goals.
2. Distinguish among planning, organizing, leading, and controlling (the four main management functions) and explain how managers' ability to handle each one can affect organizational performance.
3. Describe how the need to increase organizational efficiency and effectiveness has guided the evolution of management theory.
4. Describe the various personality traits that affect how managers think, feel, and behave.
5. Define organizational culture and explain how managers both create, and are influenced by, organizational culture.
6. Explain why managers should strive to create ethical organizational cultures.
7. Understand why the effective management of diversity is both an ethical and business imperative.
8. Identify the main forces in a global organization's task and general environments, and describe the challenges that each environment presents to managers.
9. Explain why the global environment is becoming more open and competitive, and why barriers to the global transfer of goods and services are falling, increasing the opportunities, complexities, challenges, and threats that managers face.
10. Describe the six steps that managers should take to make the best decisions.
11. Identify the advantages and disadvantages of group decision-making, and describe techniques that

- can improve it.
12. Describe the three steps of the planning process and the relationship between planning and strategy.
 13. Outline the main steps in SWOT analysis.
 14. Identify the factors that influence managers' choice of an organizational structure.
 15. Describe the types of organizational structures managers can design, and explain why they choose one structure over another.
 16. Define organizational control, and describe the four steps of the control process.
 17. Identify the main output controls, and discuss their advantages and disadvantages as means of coordinating and motivating employees.
 18. Identify the main behavior controls, and discuss their advantages and disadvantages as means of coordinating and motivating employees.
 19. Describe from the perspectives of expectancy theory and equity theory what managers should do to have a highly motivated workforce.
 20. Identify the motivation lessons that managers can learn from operant conditioning theory and social learning theory.
 21. Describe what leadership is, when leaders are effective and ineffective, and the sources of power that enable managers to be effective leaders.
 22. Identify the traits that show the strongest relationship to leadership, the behaviors in which leaders engage, and the limitations of the trait and behavior models of leadership.
 23. Describe what transformational leadership is and explain how managers can engage in it.
 24. Identify the different types of groups and teams that help managers and organizations achieve their goals.
 25. Describe how managers can motivate group members to achieve organizational goals and reduce social loafing in groups and teams.
 26. Describe the steps managers take to recruit and select organizational members.
 27. Identify some of the types of performance appraisal and feedback and explain why they are such a crucial activity, and list the choices managers must make in designing effective performance appraisal and feedback procedures.
 28. Explain why effective communication – the sharing of information – helps an organization gain a competitive advantage and describe the communication process.
 29. Define information richness, and describe the information richness of communication media available to managers.
 30. Describe the computer hardware and software innovations that have created the information technology revolution.
 31. Describe what customers want, and explain why it is so important for managers to be responsive to customer needs.
 32. Explain why achieving superior quality in an organization's operations and processes is so important.
 33. Explain why achieving superior efficiency is so important.
 34. Differentiate among facilities layout, flexible manufacturing, just-in-time inventory, and process reengineering.

Course Outline

This outline is not a contract between the instructor and students. Additional material can be assigned for reading, and material may be omitted, or not discussed in class at the instructor's discretion. All students are responsible for all readings assigned, whether or not discussed in class.

Week One

Readings Chapter 1,2,3,4 text

Week Two

Readings Chapter 1,2,3,4 text

Week Three

Readings Chapter 1,2,3,4 text

Week Four

Readings Chapter 1,2,3,4 text

EXAM ONE**Week Five**

Reading: Chapters 5, 6, 7, 8,9 text

Week Six

Reading: Chapters 5, 6, 7, 8,9 text

Week Seven

Reading: Chapters 5, 6, 7, 8,9 text

Week Eight

Reading: Chapters 5, 6, 7, 8,9 text

EXAM TWO**Week Nine**

Reading: Chapters 10,11,12, 13 text

Week Ten

Reading: Chapters 10,11,12, 13 text

Week Eleven

Reading: Chapters 10,11,12, 13 text

Week Twelve

Chapters 10,11,12, 13 text

EXAM THREE**Week Thirteen**

Readings: Chapters 14, 15, 16, 17, 18 text

Week Fourteen

Readings: Chapters 14, 15, 16, 17, 18 text

Week Fifteen

Readings: Chapters 14, 15, 16, 17, 18 text

Special Projects**Self-assessment Journal**

Your textbook “Building Management Skills” exercises, which are appropriate for this assignment. The purpose of this project is to build self-awareness, because self-knowledge is critical to success as a manager. At the end of the term, you will be required to submit a journal consisting of the completed exercises (type or write the question in the journal), along with your **critical self-analysis** of the meaning each question in the exercise, in addition align each analysis to the corresponding question(s) in the exercise. These self-analyses can be handwritten. These will be graded according to the guidelines below:

Six points will be awarded for each analysis completed, and one point for including questions in your response. Each exercise will be evaluated for a total of 140 points.

Ch1—1,3 Ch2---2 Ch3---2,3 Ch4---1 Ch5 2,4 Ch6—3 Ch 7 1,2 Ch11 1,6
Ch12—1,3 Ch13---4,7 Ch14--- 3 Ch16---2 Ch18---1

Test and Evaluations

Exams

There will be three regular exams, each covering between 3-4 chapters and one comprehensive final exam. Each exam will cover the readings in the text, and **any lecture material supplemental to these materials**. These may consist of a number of multiple choice and short answer essay questions, and will be written in such a manner that they can be completed in 50-55 minutes. These questions will not test your knowledge of facts, per se, but your ability to apply principles, to describe concepts and to understand limitations of particular techniques, and to explain differences and similarities between different management techniques and theories. NO MAKEUP EXAM WILL BE GIVEN EXCEPT FOR EXTREME SITUATIONS. The desire to leave early for a weekend, a break, or for an interview is not an extreme situation.

Quiz

During the semester a series of quizzes will be administered, in the classroom and online. In the classroom, quizzes may be given at **beginning, middle, end of class or at the discretion of the instructor**. NO MAKE UP ON QIZZES WILL BE ALLOWED. Quiz point will range for 5 pts -150 pts, at the instructor discretion.

Scantron Cards

During the semester you will need one scantron card in your **possession each classes meeting MWF or TH**. Failure to bring or have a scantron in your possession will prevent you from completing the exam or quiz. You will need approximately 25 scantron cards for the semester. **The instructor will not provide scantron cards.**

Miscellaneous Points

The instructor at any given time, may add or subtract up to 25 points as necessary for class participation, quizzes, case studies and extra point projects. **The instructor is not limited to the describe list but may introduce new areas as deemed necessary.** These points will change the student's point score.

Course Grading

Students will be evaluated on the instructor's assessment of their performance on exams, quizzes, class participation, attendance and short internet and/or library projects or case studies.

Item	Points
Exam One	100
Exam Two	100
Exam Three	100
Final Exam	100
Self-Assessment Journal	140
Quizzes	<u>160</u>
Total Points	700

Grading Standards

- A greater than or equal to 89 per cent, or outstanding work, clearly demonstrating ability to integrate material from several sources, and to apply principles.
- B between 76 and 88 per cent, or very good work. Less skilled in integration; ability to apply may be as good as above.

- C between 66 and 75 per cent, or some aspects of work good, but major flaws, weaknesses or shortcomings exists. Only limited ability to integrate, or apply concepts.
- D between 55 and 65 per cent, or major problems evident in student's ability to apply / understand material, as demonstrated by lack of ability to integrate. Can apply principles to a limited extent, knowledge of facts limited.
- F less than 55 per cent, or very poor work. Can only recall limited numbers of facts; no evidence of the ability to integrate material, or apply concepts.

Grade Report Information

UAM will no longer mail grade reports to all students. You may access your grades through Weevil Net 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 McGehee.

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.

For assistance on a College of Technology campus contact:

McGehee: Office of Special Student Services representative on campus; phone 870 222-5360; fax 870 222-1105.

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

AA Doc. 8/9//2010

Statement of Disruptive Behavior

The following action is prohibited under the Student Conduct Code: Disorderly Conduct: 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.

BUSINESS LAW - G.B. 3533
Department of Business Administration
University of Arkansas at Monticello

AM

Fall Term
August 26, 2010 - December 14, 2010

INSTRUCTOR:

Bill Daniels
William R. Daniels, P. A. , Attorney at Law
104 North Main Street
Monticello, Arkansas 71655
870-367-8181

TEXT REQUIRED:

ESSENTIALS OF BUSINESS LAW AND THE LEGAL ENVIRONMENT-
10TH Edition, Mann & Roberts
SOUTH-WESTERN, Cengage Learning

COURSE FORMAT:

Classes are scheduled to meet at 8:10 A.M. - 9:30 A.M. on each Tuesday & Thursday during the fall school term, beginning on Thursday, August 26. Classes will be conducted with a combination of lectures and question and answer/discussion. Students are encouraged to ask questions and will be expected to participate in discussions.

ATTENDANCE POLICY:

Students will be expected to attend all classes on a regular and punctual basis. Lecture discussions may be essential to your performance on examinations. No children or cell phone usage is allowed in the classroom. All cell phones need to be turned off. Do not text messages with the cell phones or any other device. The first offense will be a verbal warning, and the offender may be asked to leave the class; continued offenders will be subject to disciplinary action under student code of conduct. Do not eat, drink, read newspapers, make phone calls or leave class during the class period unless it is an emergency.

GRADING POLICY:

There will be two (2) regular exams which will cover material dealt with in the course text book, lectures, and class discussions. In addition, there will be a comprehensive final exam. The final exam will be 50% of your total grade. Each exam will be for 100 points, and grades will be assigned as follows:

90 - 100 = A
80 - 89 = B
70 - 79 = C
60 - 69 = D
Below 60 = F

The Exams will primarily be objective, but some factual situations may be presented for your discussion and analysis, particularly on the final examination.

I cannot guarantee make-up exams in this course. Should you be unable to take an exam due to sickness, emergency, or some other reason, you should notify me or the Business Department Secretary (460-1041) BEFORE the scheduled exam period; failure to notify me in a satisfactory manner can result in a grade of "0" being assigned for the missed examination.

Gregory A. Borse, Ph.D.
MCB 122

Logic
870/460-1778; borse@uamont.edu

Spring 10

Texts: *Introduction to Logic and Critical Thinking*, Merrilee H. Salmon (Thomson/Wadsworth, 2007)

Objectives: Fulfill the general education requirement; Development of critical thinking skills applicable to any field, including but not limited to the study of deductive and inductive reasoning, causal arguments, categorical syllogisms, and proof methods for truth-function logic.

Pre-requisites: Completion of English 1023 or equivalent.

Requirements: Class attendance is mandatory. Excused absences and late work are at the discretion of the instructor. Excessive absences **may** result in failure of the course. Absences of UAM sanctioned student activities are allowed with ample prior notice to the instructor. Students who must miss class because of a sanctioned student activity *must follow the prescribed policy contained in the university catalog. Attendance and in-class participation comprise 20% of the course grade.* (In-class participation includes but is not limited to class discussion, responses to in-class writing prompts, and unannounced quizzes).

Homework/Quizzes: Homework/Quizzes/In-class exercises are to document *attendance* and *class participation*. This work will be reviewed at midterm and at the end of the semester. Homework/Quizzes is worth 20% of the course grade.

Exams: Two exams, each worth 40% of the course grade—a midterm and a final.

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

Students with disabilities: it is the policy of UAM 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 must contact the Office of Special Student Services located in Harris Hall (Rm 120; 870/450-1026; TDD 870/460-1626; Fax 870/460-1926) in order to obtain the appropriate documentation for the accommodations. Accommodations cannot be made without the necessary documentation from the Office of Special Student Services.

NB: the following action is prohibited under the Student Code of Conduct: Disorderly Conduct—Any behavior that disrupts the regular or normal functions of the University community, including behavior that breaches the peace or violates the rights of others. Such behavior can include but is not limited to spoken or written language and/or actions or physical behavior or gestures that constitute racial, ethnic, religious, or sexual harassment.

Note: The instructor reserves the right to change the syllabus for any reason at any time.

COMMUNICATION in SMALL GROUPS

**Fall 2K10
Speech 3483, 3 credit hours**

**Professor Gary Marshall, Ph. D.
University of Arkansas at Monticello
School of Arts and Humanities
Monticello, AR 71656**

**Office # 126 Sorrells Hall
Phone: (870) 460-1947
e-mail: marshall@uamont.edu**

OFFICE HOURS

The following hours are reserved for you - NO APPOINTMENT NECESSARY!

MWF 11 a.m. -- Noon

T H 10– 11 a.m.

Appointments may be made any other time we are both free.

COURSE DESCRIPTION

This course will provide insights into small group communication theory and practice of communication skills. This includes interpersonal interaction, creative & critical thinking, conflict management, and decision making in problem solving work groups.

LEARNING OUTCOMES /COURSE OBJECTIVES

Upon passing this course you will:

- 1) have a basic understanding of communication theory as applied to small group communication.
- 2) have learned steps to problem solving as applied to small group communication.
- 3) have practiced and improved the small group communication skills we have introduced in class.

TEXT & MATERIALS

You will choose one on the books in the UAM Library under the subject heading problem solving.

An inexpensive binder to keep your work for each formal problem-solving group project.

TOPICS

What are Small Groups?

What is problem-solving?

Problem Solving Procedures

What communication theories apply to small group communication?

Creative and Critical Thinking

Planning, Organizing and Delivering Small Group Oral Presentations
Interpersonal Skills
Verbal and Nonverbal Communication

GRADES / EVALUATION

Class Participation and assignments.....	20% of final grade
Exams.....	20%
Formal Problem Solving Group Discussions.....	60%

CLASS PARTICIPATION

For every day class participation, ask yourself:

"Do I keep notes?"

"Do I keep up on the reading so that I can actively and intelligently participate in class discussions?"

"Do I volunteer examples during discussions?"

"Do I listen to other students in class?"

"Am I distracting other students during class?"

"When we are working in small groups, do I focus my energy on the assignment or do I encourage our group to get off the subject inappropriately?"

(from the UAM Student Handbook) The following action is prohibited under the Student Conduct Code: Disorderly Conduct: 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.

Turn OFF electronics. E-devices, cell-phones should not be seen or heard during class.

NO skull candy, texting, sexting, blogging, tweeting, twerping, surfing, remove Ear Buds.

Typical assignments included in class participation e.g. quizzes, written assignments, informal problem solving situations, and other class activities.

Group class participation exercises cannot be made-up. They can be excused IF you have an excused absence.

Excused absences will be considered for the following reasons: Medical/Health Problems, Participation in university sponsored activities, Personal/ Family crisis, Religious holidays not observed by the university, and Judiciary obligations.

Before you miss class talk to me in person, or call me (460-1947). If I'm not in my office you will be connected to UAM Voice Mail (24 hours a day), leave a message telling why you will not be in class. Or e-mail me: marshall@uamont.edu

EXAMS

Multiple choice and/or essay exams will cover our reading and class discussion.

Exams will be graded as follows: Suppose there are 100 possible points on a test. If you get 99 - 91 correct your grade will be an "A." 90 correct ..."A-." 89..."B+." 88 - 81..."B." 80..."B-." 79..."C+." 78 - 71..."C." 70..."C-." 69..."D+." 68 - 61..."D." 60..."D-." 59 and below..."F."

If no one scores 90% or above, I will add points so there will be at least one A- on each test.

FORMAL PROBLEM-SOLVING GROUP DISCUSSIONS

Each of your four formal problem solving group projects will be graded on individual research, planning, organizing, and presenting your work. You are required to keep a journal, a record of your work. Portions of the journal will be hand written notes, parts will be typed or word processed, segments will be checked in class as assignments. Completed journals are due at the beginning of class, on the day of your presentation. NO MAKE-UP is possible for formal presentations. You will receive a grade on your journal and your presentation. The average of these two grades will be recorded for the project.

WHERE DO FINAL GRADES COME FROM?

Each assignment and exam will be given a letter grade which converts to the number value listed below.

A = 11 points	A- = 10	B+ = 9	B = 8
B- = 7	C+ = 6	C = 5	C- = 4
D+ = 3	D = 2	D- = 1	F = 0

These numbers will be used in computing your average, e.g.

- .20.....class participation average "A-" (10)
- .20.....exam average "A" (11)
- .60.....formal problem solving group discussions "B+" (9)

$$\begin{array}{r} .20 \times 10 + .20 \times 11 + .60 \times 9 = \text{final average} \\ 2 + \quad 2.2 \quad + 5.4 \quad = 9.6 \text{ or B+.} \end{array}$$

HOWEVER, if the decimal portion of your final average is above .5, your final average will be rounded to the next whole number. In this case a (10) or A-. We cannot record "+"s or "-"s on your UAM transcript, the grade recorded would be an "A.."

POLICY ON CLASS WORK

Avoid A Penalty: Be in class -- Get your work in on time!

Written assignments must be typed or word processed (EXCEPT specified journal entries). For each day late, your grade on written assignments drops one letter.

Before the day your written work is due, we can sometimes make arrangements to postpone deadlines.

Group discussion presentations cannot be made up. If you miss class on the date your group presents their discussion you will get an F on the presentation portion of your grade. Journals will not be accepted late unless arrangements have been made before your presentation.

SUSPECTED and/or PROVEN: DECEPTION (e.g. cheating on tests) or **PLAGIARISM** (e.g. turning in work that is not yours, without giving credit to the author) WILL RESULT IN AN "F" ON THAT ASSIGNMENT OR TEST. No possibility of changing that grade!

DATES TO REMEMBER

September 6 (Monday): Labor Day Holiday.
September 13 -14. I'll be in Little Rock – Medical
November 10 (Wednesday): Last day to drop with W
November 24-26 (Wednesday-Friday): Thanksgiving Holiday.
December 7 (Tuesday): Last day to withdraw from class
December 10 (Friday): Last day of classes.
Final Exam.: Thursday, December 16 : 10:30 - 12:30

STUDENTS WITH SPECIAL NEEDS

It is the policy of the University of AR at Monticello to accommodate individuals with disabilities pursuant to federal law and the University's commitment to equal 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.

APPENDIX 4. Background and experience information for Spatial Information Systems faculty within the School of Forest Resources at the University of Arkansas at Monticello.

Individual SIS Faculty Information

1. Name:	ALEXANDRA FELIX-LOCHER		
2. Academic rank:	Assistant Professor		
Specialization:	Spatial Information Systems and Wildlife Management		
Appointment basis:	12-month		
3. Academic education:	Ph.D.	Michigan State Univ.	Fisheries and Wildlife
	May 2008		Jan. 2003 – May 2008
M.S.	Michigan State Univ.	Fisheries and Wildlife	Aug. 1999 – May 2003
B.S.	Michigan State Univ.	Fisheries and Wildlife	Aug. 1994 – May 1998

4. Professional/research experience:

University of Arkansas – Monticello, School of Forest Resources, Monticello, AR

Assistant Professor of Spatial Information Systems and Wildlife Management

Conduct research in wildlife-habitat relationships; teach spatial information systems and GIS courses

July 2008 – present (2 years)

Michigan State University, Fisheries and Wildlife, East Lansing, MI

Graduate Research Assistant/Teaching Assistant/Instructor

Conducted field research in forest management and wildlife habitat management

May 2003 – May 2008 (5 years)

Durkee Lake Land Company, Fairview, MI

Wildlife Consultant

Conducted white-tailed deer and population assessment

July 2006 – November 2006 (0.5 year)

Michigan State University, Fisheries and Wildlife

Graduate Research Assistant/Teaching Assistant

Designed spatially explicit models for deer habitat potential; researched factors associated with the captive cervid industry

August 1999 – May 2003 (3.5 years)

Michigan State University, Fisheries and Wildlife

Wildlife Research Consultant

Developed habitat suitability models for various wildlife species for use in forest management planning

December 1997 – November 1999 (2 years)

Critter Control, Rochester Hills, MI

Critter Control Service Technician

Nuisance animal control and wildlife management

June 1998 – January 1999 (0.5 year)

Michigan United Conservation Clubs, Lansing, MI

Assistant in the Land Conservancy Project

Collected and analyzed land use data from various land conservancies

January 1998 – May 1998 (0.5 year)

Lost Lake Woods Club, Lincoln, MI

Wildlife Management Consultant

Assessed habitat conditions for various wildlife species; recommended habitat improvement techniques
Summer 1997

5. Teaching experience:

University of Arkansas – Monticello
Assistant Professor
Spatial Information Systems, GIS, GPS, Remote Sensing
August 2008 – present (2 academic years)
Michigan State University
Instructor
Fisheries, Wildlife, Biology, Ecology, Anatomy
Spring 1998 – May 2007 (7 academic years)

6. Dates of appointment and promotions:

Appointment: Assistant Professor July 2008

7. Publications (last 5 years):

Felix-Locher, A. and H. Campa, III. 2010. Importance of habitat type classifications for predicting ruffed grouse use of areas for drumming. *Forest Ecology and Management*. In Press.

Felix-Locher, A. and H. Campa, III. 2010. Relating ecological properties of habitat types to differences in aspen stand structure and succession for managing timber and wildlife resources. *Northern Journal of Applied Forest Research*. In Press.

Felix, A. B. 2009. Aspen: from a bird's eye. *Jack Pine Warbler* 86(1): 10–11.

Hiller, T. L., **A. B. Felix**, and F. S. Guthery. 2009. Association of northern bobwhites with surface water in the semi-arid Texas Panhandle. *Wilson Journal of Ornithology*. 121: 135-140.
Christoffel, R. A., **A. B. Felix**, D. B. Kramer, and N. E. Lamp. 2008. Adapting adaptive management; applying a management framework to course development. *The Wildlife Professional* 2:45-47.

Felix, A. B., H. Campa, III. 2008. Aspen, soils, and tales of grouse. *Woods-N-Water News*, April Issue, 2008.

Felix, A. B., D. P. Walsh, H. Campa, III, S. R. Winterstein. 2008. Who moved my deer? *Woods-N-Water News*, March Issue, 2008.

Felix, A. B., D. P. Walsh, B. D. Hughey, H. Campa, III, S. R. Winterstein. 2007. Applying landscape-scale habitat-potential models to understand deer spatial structure and movement patterns. *Journal of Wildlife Management* 71:804-810.

Felix, A. B., D. W. Linden, H. Campa, III. 2007. Building and using habitat models for assessing temporal changes in forest ecosystems. *In J. A. Bissonette and I. Storch, editors. Temporal explicitness in landscape ecology: wildlife responses to changes in time*. Springer, New York, New York, USA.

Felix, A. B., H. Campa, III. 2006. Where are the deer? Michigan United Conservation Clubs. Michigan Out-of-Doors 60(3):26-29.

Felix, Alexandra. 2005. New partnership between MFL and MSU! MFL Gazette Volume 5, Issue 4. Mid-Forest Lodge, Prudenville, Michigan.

8. Off-campus consulting, other professional activities, honors, recognition (last 5 years):

Faculty Service and Achievement Award 2009-2010 from the School of Forest Resources, University of Arkansas at Monticello. Received Spring 2010.

Outstanding Faculty Member 2009 from the Graduate Student Association of the School of Forest Resources, University of Arkansas at Monticello. Received Spring 2009.

Best Student Poster Award for the 13th Annual Wildlife Society Conference, Anchorage, AK.

Received Fall 2006. *Poster title: Development of a natural resources field course: Shaping future professionals through experiential learning and teaching*

N. E. Lamp, **A. B. Felix**, R. A. Christoffel, D. B. Kramer, D. Hayes, L. Wolfson, K. F. Millenbah, H. Campa, III. Michigan State University, East Lansing, MI, USA.

Graduate Student Teaching Award of Merit from the North American Colleges and Teachers of Agriculture. Received Fall 2006.

Outstanding Volunteer of the Year, Safari Club International, Novi Chapter. Received June 2006.

9. Professional organization memberships and offices held:

Member, The Wildlife Society

Member, North American Colleges and Teachers of Agriculture

Member, Safari Club International

Member, Arkansas Academy of Sciences

10. Major professional self-improvement activities (last 10 years):

ESRI ArcServer Setup and Administration. St. Louis office, St. Charles, MO. (June 22-23, 2009)

MSU Lilly Teaching Seminar Series: Overcoming Apathy in the Classroom: Teaching Strategies Drawn from the Psychology of Learning, with *Todd Zakrajsek* (Spring 2007)

MSU workshop: LON-CAPA user workshop (Spring 2003)

MSU workshop: Introduction to LON-CAPA (Learning Online Network with a Computer Assisted Personalized Approach) (Spring 2003)

MSU workshop: Cooperative Learning Basics with *Karl Smith* (Summer 2002)

11. External grants and other research funding (last 5 years):

US Fish and Wildlife Service, Division of Migratory Birds (**\$5748**). Received Summer 2010.

American woodcock (Scolopax minor) migration chronology and clearcut use within Arkansas.

Felix-Locher, A., and A. Long

Arkansas Game and Fish Commission (**\$7500**). Received Fall 2009.

Efficacy of non-invasive techniques for surveying feral hog populations.

Felix-Locher, A., R. Kissell, D. White, Jr.

Berryman Institute (**\$10,100**). Received Fall 2009.

Efficacy of non-invasive techniques for surveying feral hog populations.

Felix-Locher, A., R. Kissell, D. White, Jr.

Arkansas State Wildlife Grant (**\$21,157**). Received Fall 2009.

Adapting a habitat model for timber rattlesnakes (Crotalus horridus) to assess the potential distribution of western diamondback rattlesnakes (C. atrox) in Arkansas.

Fearer, T. M., **A. B. Felix**, G. Manning, B. Holimon.

Faculty Research Grant (**\$2500**). Received Fall 2008.

Understanding woodcock (Scolopax minor) fall, winter, and spring habitat requirements in the Saline River bottoms in Central Arkansas

Horsehead Lake Association (**\$3000**). Received Spring and Fall 2007 for fish sampling and educational activities at Horsehead Lake, Mecosta County, Michigan.

CREES United States Department of Agriculture, Higher Education Challenge Grants Program (**\$71,880**). Received Fall 2005.

Development of a natural resources field institute: shaping future professionals through experiential learning and teaching

Kramer, D., R.A. Christoffel, **A. B. Felix**, N. E. Lamp, L. G. Wolfson, H. Campa, III, D. Hayes, K. F. Millenbah, J. Tsao.

Individual SIS Faculty Information

- 1. Name:** RONALD R. HARRIS
- 2. Academic rank:** Instructor
- Specialization:** Surveying
- Appointment basis:** 12-month
- 3. Academic education:**
- B.S. Nov. 1995 Michigan Technological Univ. Land Surveying Sept. 1992-Nov. 1995
AAA May 1980 Suomi College Recreational Leadership Sept. 1978 - May 1980
- 4. Professional/research experience:**
- Michigan Consulting and Environmental, Mount Pleasant, MI
Environmental Scientist
Performed and prepared documentation for Phase 1 and 2 Environmental Site Assessments. Related items include research of sites, title liens, aerial photographs, field inspections of project sites, mapping and AutoCAD drafting of base maps of project sites.
January 2008 - October 2009 (2 years)
Mid-Michigan Engineering, Mount Pleasant, MI
Project Surveyor
Oversaw daily operations of the survey department
August 2006 – January 2008 (1.5 years)
Site Services, Inc., Grand Ledge, MI
Vice-President of Surveying
Oversaw daily operations of the survey department and office management
January 2006 – July 2006 (0.5 year)
Spicer Group, St. Johns, MI
Project Surveyor
Oversaw daily operations of the survey department and office management
February 2004 - January 2006 (2 years)
Lapham Associates, Gladwin, MI
Survey Division Manager
Oversaw daily operations of the survey department and office management
January 2000 - January 2004 (4 years)
ROWE Incorporated, Mount Pleasant, MI
Project Surveyor
Oversaw daily operations of the survey department
November 1995 – January 2000 (4 years)
ROWE Incorporated, Flint, MI
Survey Field Crew
General surveying
August 1979 – August 1992 (13 years)

5. Teaching experience:

University of Arkansas – Monticello, School of Forest Resources, Monticello, AR
Instructor of Land Surveying

Teach land surveying and related courses
August 2009 – present (1 year)

6. Dates of appointment and promotions:

Appointment: October 2009 Instructor

7. Publications (last 5 years):

None

8. Off-campus consulting, other professional activities, honors, recognition (last 5 years):

President's Award, Michigan Society of Professional Surveyors 1997
Coach's Award, Amateur Hockey Association of Mount Pleasant 2000
Service Appreciation, Michigan Society of Professional Surveyors 2009
Firefighter Certificates I & II: 1985
Licensed Professional Surveyor: State of Michigan 1996

9. Professional organization memberships and offices held:

1999-2009	Michigan Society of Professional Surveyors	Board of Directors
2002-2003	Michigan Society of Professional Surveyors	Treasurer
2003-2004	Michigan Society of Professional Surveyors	Secretary
2004-2005	Michigan Society of Professional Surveyors	Treasurer
2005-2006	Michigan Society of Professional Surveyors	Second Vice-President
2006-2007	Michigan Society of Professional Surveyors	First Vice-President
1996-2009	Mid-MI Chapter MSPS	Chapter Officer

10. Major professional self-improvement activities (last 10 years):

Aquinas College, Grand Rapids, MI / Management Training Course
MSPS Annual Conferences / Seminars for Professional Development
ACSM/NSPS National Conference

1999
1996-2009
1999

11. External grants and other research funding (last 5 years):

None

Individual SIS Faculty Information

1. Name: THOMAS D. JACOBS
2. Academic rank: Instructor
Specialization: Surveying
Appointment basis: 12-month
3. Academic education:
B.S. May 1978 University of Arkansas at Monticello Forestry Aug. 1973 – Dec. 1977

4. Professional/research experience:

Anthony Timberlands Inc., Bearden, AR
Land Survey Division Manager
In charge of all land surveys, construction surveys, boundary maintenance, etc. for
Timber Company in South Arkansas
December 1984 – August 2006 (22 years)

Jacobs Surveying Co., Camden, AR
Owner – Manager
Managed surveying company- surveyed for number of diverse clients
May 1983 – December 1984 (1.5 years)

J.M. Hart & Assoc., Camden, AR
Project Surveyor
In charge of survey crews from project beginning to finish
July 1981- May 1983 (2 years)

Ray Camp Inc., Camden, AR
Survey Field Crew
Worked on Survey field crew beginning as rodman and working up to crew chief
September 1979 – July 1981 (3 years)

5. Teaching experience:

University of Arkansas – Monticello, School of Forest Resources, Monticello, AR
SIS Instructor of Surveying
Teach Land Surveying and Surveying related courses
August 2006 – Present (3 academic years)

6. Dates of appointment and promotions:

Appointment: August 2006 Instructor

7. Publications (last 5 years):

None

8. Off-campus consulting, other professional activities, honors, recognition (last 5 years):

Surveyor Education Advisory Task Force – Arkansas Board of Licensure for Professional Engineers and Professional Surveyors
Arkansas Specific Surveying Examination for Professional Licensure Advisory committee –
Arkansas Board of Licensure for Professional Engineers and Professional Surveyors

9. Professional organization memberships and offices held:

Member – Arkansas Society of Professional Surveyors (ASPS)
ASPS District 4 Director, 2009 – Present
ASPS Education Committee member, 2007 – Present

10. Major professional self-improvement activities (last 10 years):

Attended the following Professional Training Courses:

DC CAD, AutoCAD 2009 Essentials – July, 2008
Avatech, Civil 3D 2009 Fundamentals – August, 2008
Comm.tech, Civil 3D 2010 for Surveyors – July, 2009
Navigation Electronics - Integrating GPS with Robotic Total Stations – Dec. 2009

Attended ASPS Fall Short Courses – Fall of 2006, 2007, 2008, 2009

Attended ASPS Spring Conferences – Spring of 2005, 2006, 2007, 2008, 2009

11. External grants and other research funding (last 5 years):

None

Individual SIS Faculty Information

1. Name: ROBERT E. KISSELL, JR.
2. Academic rank: Associate Professor
Specialization: Spatial Information Systems/ Wildlife Management
Appointment basis: 12-month
3. Academic education:
Ph.D. Dec. 1996 Montana State Univ. Fish and Wildlife Mgt Jan. 2003 - Dec. 1996
M.S. May 1990 University of Memphis Vertebrate Zoology Aug. 1987 - May 1990
B.S. May 1986 Christian Brothers Univ. Biology Aug. 1982 - May 1986

4. Professional/research experience:

University of Arkansas – Monticello, School of Forest Resources, Monticello, AR
Associate Professor
Teaching, research, and service
July 2008 – present (2 years)
University of Arkansas – Monticello, School of Forest Resources
Assistant Professor
Teaching, research, and service
July 2002 – June 2008 (6 years)
Lincoln University, Division of Agriculture and Natural Sciences, Jefferson City, MO
Assistant Professor
Teaching, research, and service
January 2002 – June 2002 (0.5 year)
Arkansas State University, Dept. of Biological Sciences, State University, AR
Visiting Assistant Professor
Teaching, research, and service
August 2000 – December 2001 (1.5 years)
University of Idaho, Dept. of Fish and Wildlife Resources, Moscow, ID
Research Associate
Directed mule deer ecology research
April 1999 – July 2000 (1 year)
Mississippi Dept. of Wildlife, Fisheries, & Parks, Brookhaven, MS
Conservation Resources Biologist
Applied wildlife management knowledge for public and private stakeholders
December 1996 – April 1999 (2.5 years)

5. Teaching experience:

University of Arkansas – Monticello, School of Forest Resources
Associate Professor
Application of GIS and remote sensing to natural resource issues
July 2008 – present (2 academic years)
University of Arkansas – Monticello, School of Forest Resources
Assistant Professor
Application of GIS and remote sensing to natural resource issues
July 2002 – June 2008 (6 academic years)

Lincoln University, Division of Agriculture and Natural Sciences
Assistant Professor
Wildlife Management and Ecology
January 2002 – June 2002 (0.5 academic year)
Arkansas State University, Dept. of Biological Sciences,
Visiting Assistant Professor
Wildlife Management and Ecology
August 2000 – December 2001 (1.5 academic years)

6. Dates of appointment and promotions:

Appointment: July 2002 Assistant Professor
Promotion: July 2008 Associate Professor

7. Publications (last 5 years):

Vale, K. B., and **R. E. Kissell, Jr.** In Press. Male Swamp Rabbit (*Sylvilagus aquaticus*)
Habitat Selection at Multiple Scales. Southeastern Naturalist.

Kidd, J. B., and **R. E. Kissell, Jr.** In Press. Relationships between Groundwater Level and
Furbearer Abundance in the Northern Arkansas Mississippi Alluvial Valley. Journal of
Ecohydrology.

Fowler, A. T., and **R. E. Kissell, Jr.** 2007. Distribution and Ecology of the Swamp Rabbit in
the Mississippi Alluvial Plain of Arkansas. Southeastern Naturalist 6:247-258.

Ficklin, R. L., S. M. Foley, and **R. E. Kissell, Jr.** 2007. Evaluating soil chemical properties
and nutrient concentrations through the use of chemical and near infrared spectroscopic
analytical techniques. Journal of the Arkansas Academy of Science 61:44-50.

Smyth, W., K. B. Vale, and **R. E. Kissell, Jr.** 2007. Habitat factors affecting trap success of
swamp rabbits. Journal of the Arkansas Academy of Science 61:94-98.

Kissell, Jr., R. E., and P. A. Tappe. 2005. Response of an Arkansas white-tailed deer
population to harvest. Journal of the Arkansas Academy of Science 59:209-212.

Kissell, Jr., R. E., and P. A. Tappe. 2004. An assessment of thermal infrared detection
rates using white-tailed deer surrogates. Journal of the Arkansas Academy of Science
58:70-73.

**8. Off-campus consulting, other professional activities, honors, recognition (last 5
years):**

Appointed as a Board Member of the Arkansas Geographic Information Systems Board
(2009-2013) by Arkansas's Governor Mike Beebe.

Appointed as a Board Member of the Arkansas Geographic Information Systems Board
(2005-2009) by Arkansas's Governor Mike Huckabee.

Webmaster for the Spatial Ecology and Telemetry Working Group of TWS (2006-present)
Mentor for TWS Student Mentoring Program (2007)
Arkansas State Land Information Board Member (2005-2009)
Arkansas Geographic Information Board Member (2009-2013)

9. Professional organization memberships and offices held:

The Wildlife Society, Arkansas Chapter of The Wildlife Society, and Southeastern Section of The Wildlife Society

TWS Spatial Ecology and Telemetry Working Group Secretary (2006-2008).

American Society of Mammalogists
Arkansas Academy of Science

10. Major professional self-improvement activities (last 10 years):

Arkansas Academy of Science (2003-2005, 2007)

Arkansas Forest Resources Center Symposium (2004)

Arkansas GIS Users Forum (2003-2009)

ESRI Education Conference (2002 and 2003)

ESRI International Users Conference (2002 and 2003)

Mid-West Deer and Turkey Study Group Meeting (2002)

Missouri Academy of Science (2002)

Southeast Deer Study Group (2003-2005, 2007)

Southeastern Association of Fish and Wildlife Agencies (2002)

The Wildlife Society's Annual Conference (2002-2007).

Habitat Selection and Space Use Workshop, University of Idaho, 2005

Grant Writing workshop, National Science Foundation, 2004

Grantsmanship Skills workshop, USDA, 2002.

11. External grants and other research funding (last 5 years):

Kissell, Jr., R. E. 2008-2009. Monitoring protocol and baseline study for white-tailed deer on the Vicksburg National Military Park. Cooperative Ecosystems Studies Unit Grant. \$11,100.

Kissell, Jr., R. E. 2006-2007. Effect of streamside management zones on the ecology of swamp rabbits. University of Arkansas at Monticello Faculty Research Grant. \$2,161.

Kissell, Jr., R. E. 2005-2008. Effect of ground water level on meso-mammalian population abundance. Arkansas Forest Resources Center. \$40,208.

Kissell, Jr., R. E., and R. L. Ficklin. 2005-2006. Effect of hardwood canopy coverage on accuracy of recreational GPS units. Arkansas Space Grant Consortium (NASA) and the University of Arkansas at Monticello Faculty Research Grant. \$5,945.

Ficklin, R. L., and **R. E. Kissell, Jr.** 2005-2007. Relationships among soils, key-forage plant quality, and white-tailed deer reproduction in the Ozarks. Arkansas Agricultural Experiment Station and the Arkansas Forest Resources Center. \$49,208.

Individual SIS Faculty Information

1. Name:

LYNNE C. THOMPSON

2. Academic rank:

Professor

Specialization:

Pest management, Fire, Herbicides

Appointment basis:

12-month

3. Academic education:

Ph.D. June 1976, Univ. of Minnesota Forest Entomology June 1973 - June 1976

M.S. June 1973, Univ. of Minnesota Forest Entomology June 1970 - June 1973

B.S. May 1970, Kansas State University Agriculture June 1966 - May 1970

4. Professional/research experience:

University of Arkansas – Monticello, School of Forest Resources, Monticello, AR
Professor

Teach forest pestilence classes, research on forest insects

May 1991 – present (19 years)

University of Arkansas – Monticello, School of Forest Resources
Associate Professor

Teach forest pestilence classes, research on forest insects

May 1986 – May 1991 (5 years)

University of Arkansas – Monticello, School of Forest Resources
Assistant Professor

Teach forest pestilence classes, research on forest insects

August 1980 – May 1986 (6 years)

Kansas State University, Dept. of Entomology, Manhattan, KS

Extension Entomologist

Urban and horticultural insects

June 1977 – August 1980 (3 years)

University of Minnesota, Dept. of Entomology, St. Paul, MN

Postdoctoral Associate

Studied sawfly natural enemies

June 1976 – August 1977 (1 year)

5. Teaching experience:

University of Arkansas – Monticello, School of Forest Resources

Professor

Pest management, Fire, Herbicides

May 1991 – present (19 academic years)

University of Arkansas – Monticello, School of Forest Resources, Monticello, AR

Associate Professor

Pest management, Fire, Herbicides

May 1986 – May 1991 (5 academic years)

University of Arkansas – Monticello, School of Forest Resources, Monticello, AR

Assistant Professor
Pest management, Fire, Herbicides
August 1980 – May 1986 (6 academic years)

6. Dates of appointment and promotions:

Appointment: August 1980 Assistant Professor
Promotion: May 1986 Associate Professor
Promotion: May 1991 Professor

7. Publications (last 5 years):

General, David M., and **Lynne C. Thompson**. 2009. New distributional records of ants in Arkansas for 2008. Journal Arkansas Academy of Science. In Press

Thompson, Lynne C., David M. General, and Brian Roy Lockhart. 2008. Effects of harvesting treatments on the ant community in a Mississippi River bottomland hardwood forest in westcentral Mississippi. Proceedings, of the 14th biennial southern research conference. Gen Tech Rep SRS-XX. Asheville, NC: USDA, FS, Southern Research Station. XXX p. IN PRESS

General, David M., and **Lynne C. Thompson**. 2008. Ants of Arkansas Post National Memorial: How and where collected. Journal of the Arkansas Academy of Science, 62: 52-60.

General, David M., and **Lynne C. Thompson**. 2008. New distributional records of ants in Arkansas. Journal of the Arkansas Academy of Science, 62: 148-150.

General, David M., and **Lynne C. Thompson**. 2007. Ants (Hymenoptera: Formicidae) of Arkansas Post National Memorial. Journal Arkansas Academy of Science. Vol 61: 59-64.

Thompson, L.C., and B.R. Lockhart. 2006. Effects of silvicultural operations in a Mississippi River bottomland hardwood forest on ground beetles in the genus *Brachinus*. In: Connor, Kristina F., ed. Proceedings, 13 Biennial Southern Silvicultural Research Conference, Memphis, TN. Gen. Tech. Rep. SRS-92, Asheville, NC: U.S. Forest Service, Southern Research Station. Pp. 459-463.

Zeide, B, and **L.C. Thompson**. 2005. Impact of spring sawfly defoliation on growth of loblolly pine stands. Southern Journal of Applied Forestry 29(1): 33-39.

8. Off-campus consulting, other professional activities, honors, recognition (last 5 years):

Undergraduate forestry student advising @ UAM: 5 freshmen and sophomores.

Graduate committees, UAM 4 MS, UAF 1 MS.

Principal faculty advisor, UAM Forestry Club

Chair, SFR Undergraduate Curriculum Committee.

Member, SFR Faculty-Student Relations and Assessment Committees.

Member, UAM Library and General Education Committees

Member, ***Blue-Ribbon Panel for the USDA-ARS***. Served as one of 5 national members to assess the pros and cons of releasing another species of exotic Phorid into the U.S. to control red imported fire ants.

Past Secretary-Treasurer (10 years), Southeastern Group, Arkansas Chapter, Ouachita Society of American Foresters.

Member, Protection Committee, Arkansas Forestry Association.

Member, Steering Committee, Prescribed Fire Course for Arkansas.

Vice-President, Board of Directors, Drew County Developmental Disabilities Council, Inc.

9. Professional organization memberships and offices held:

Society of American Foresters - Member of 3 working groups: Forest Pest Management, Forest Ecology, and Fire.

International Union of Forestry Research Organizations - Member, Insects Affecting Reforestation Working Party.

Entomological Society of America.

Ecological Society of America.

American Institute of Biological Sciences.

Sigma Xi [Scientific Research Society].

Georgia Entomological Society.

Central States Entomological Society.

International Union for the Study of Social Insects.

Arkansas Academy of Science.

Arkansas Entomological Society.

Arkansas Forestry Association.

10. Major professional self-improvement activities (last 10 years):

None

11. External grants and other research funding (last 5 years):

Thompson, L.C. 2009. Ants of some rare southern Arkansas Prairies, UAM Faculty Research Committee, \$1,500 for 1 year

Thompson, L.C. 2009. Effects of restoration on the ants of Warren Prairie natural Area. Arkansas Natural Heritage Commission, \$4,500 for 1 year

Thompson, L.C. 2008. Ants of selected prairies in eastern and southern Arkansas. UAM Research Committee, \$2,000 for 1 year

Individual SIS Faculty Information

- 1. Name:** ROBERT C. WEIH, JR.
- 2. Academic rank:** Professor
- Specialization:** Spatial Information Systems/ Forest Biometrics
- Appointment basis:** 12- month
- 3. Academic education:**
- Ph.D. February 1991 Virginia Tech Univ. Forest Biometrics Sept. 1987 – Feb. 1991
M.S. June 1984 University of Minnesota Forestry Sept. 1982 – June 1984
B.S. May 1982 N. Arizona Univ. Forestry and Range Mgt. Sept. 1978 – May 1982
A.S. June 1977 NW Connecticut Comm. College Park Mgt. and Design Sept. 1975 –
June 1977
- 4. Professional/research experience:**
- University of Arkansas – Monticello, School of Forest Resources, Monticello, AR
Professor
Conduct GIS, Remote Sensing, GPS, and Expert System Research; Director of
Spatial Analysis Laboratory and Spatial Information Systems Program
July 2003 – present (7 years)
University of Arkansas – Monticello, School of Forest Resources
Associate Professor
Conduct GIS, Remote Sensing, GPS, and Expert System Research; Director of
Spatial Analysis Laboratory and Spatial Information Systems Program
July 1997 – June 2003 (6 years)
University of Arkansas – Monticello, School of Forest Resources
Assistant Professor
Conduct GIS, Remote Sensing, GPS, and Expert System Research; Director of
Spatial Analysis Laboratory
January 1994 – June 1997 (3.5 years)
Colorado State University, College of Natural Resources, Fort Collins, CO and
Department of the Army, Center for Ecological Management of Military Lands
Remote Sensing/GIS Consultant
Evaluated GIS and natural resource database management systems for the Army
January 1994 – December 1995 (2 years)
NASA Stennis Space Center, Institute for Technology Development, Space Remote
Sensing Center, Mississippi
Senior Scientist
Oversaw all SRSC remote sensing and GIS projects in Environmental Monitoring,
Forestry, and Agriculture
March 1993 – January 1994 (1 year)
NASA Stennis Space Center, Institute for Technology Development, Space Remote
Sensing Center, Mississippi
Forestry Program Manager
Supervised and coordinated all remote sensing and GIS projects for the forestry
program
May 1991 – March 1993 (2 years)

Virginia Polytechnic Institute and State University, Blacksburg, VA
Research Assistant
Conducted ARC/Info analyses for Jefferson National Forest; developed software program for thinning trees
September 1990 – May 1991 (0.5 year)

Food and Agriculture Organization of the United Nations, Jakarta, Indonesia
Natural Resource GIS/Remote Sensing Advisor
Helped design a forest land use and management planning and data base system
June 1990 – September 1990 (0.5 year)

Virginia Polytechnic Institute and State University, Blacksburg, VA
Research Assistant
Worked on various GIS projects; developed growth and yield software program
August 1987 – June 1990 (3 years)

Coconino County Highway Department, Flagstaff, AZ
Project Research Analyst
Used GIS and database management for various roads/highway projects
October 1985 – August 1987 (2 years)

Dixie National Forest, Escalante, UT
Lead Forest Technician
Led forest inventory team; forest fire crew boss; tree planting
April 1985 – October 1985 (0.5 year)

University of Minnesota, St. Paul, MN
Research Assistant
Aerial photography interpretation, thermal imaging
January 1983 – June 1984 (1.5 years)

Dixie National Forest, Escalante, UT
Forest Technician
Supervised and inspected thinning operations; marked timber sales, seedling survival checks
May 1982 – November 1982 (0.5 year)

5. Teaching experience:

University of Arkansas – Monticello, School of Forest Resources
Professor
Forest Measurements, GIS, GPS, Remote Sensing
July 2003 – present (7 academic years)

University of Arkansas – Monticello
Associate Professor
GIS, GPS, Remote Sensing
July 1997 – June 2003 (6 academic years)

University of Arkansas – Monticello, School of Forest Resources, Monticello, AR
Assistant Professor
GIS, Photogrammetry, Biometrics
January 1994 – June 1997 (3.5 years)

6. Dates of appointment and promotions:

Appointment: January 1994 Assistant Professor
Promotion: July 1997 Associate Professor
Promotion: July 2003 Professor

7. Publications (last 5 years):

(Training and Lab manuals)

Weih, R. and C. Guffey. 2008. A Practical Guide to Recreational GPS Data Collection and Mapping. Arkansas Forest Resource Center. University of Arkansas at Monticello. Monticello, Arkansas. 43 pp.

Weih, R. 2008. Forestry GIS (fGIS) Basics (3rd Edition). Arkansas Forest Resource Center. University of Arkansas at Monticello. Monticello, Arkansas. (with CD) 72 pp.

Weih, R. 2007. Forestry GIS (fGIS) Basics (2nd Edition). Arkansas Forest Resource Center. University of Arkansas at Monticello. Monticello, Arkansas. (with CD) 61 pp.

Weih, R. 2006. ArcGIS 9.x Basics (2nd Edition). Arkansas Forest Resource Center. University of Arkansas at Monticello. Monticello, Arkansas. (with CD) 60 pp.

Weih, R. 2005. ArcGIS 9.x Basics (1st Edition). Arkansas Forest Resource Center. University of Arkansas at Monticello. Monticello, Arkansas. (with CD) 68 pp.

Weih, R. 2005. Forestry GIS (fGIS) Basics. Arkansas Forest Resource Center. University of Arkansas at Monticello. Monticello, Arkansas. (with CD) 58 pp.

Other

Weih, R. 2008. Modeling the Pre-Euroamerican Landscape with GLO Surveys and Geostatistics. *Transactions in GIS*. 12(4):443-457.

Weih, R. 2008. Spatial Information System (SIS) Program in Arkansas. Twenty-Eighth Annual ESRI International User Conference. San Diego, CA. Presentation and publication on conference CD.

Weih, R. and D. White. 2008. Land-Use/Land-Cover Characterization Using an Object-Based Classifier for the Buffalo River Sub-Basin in North-Central Arkansas. *Journal of the Arkansas Academy of Science*. 62:125-131.

Weih, R. and A. Dick. 2008. Historical Forest Landscape Changes in the Buffalo River Sub-Basin in Arkansas. *Journal of the Arkansas Academy of Science*. 62:115-124.

Weih R. 2008. Assessing the Spatial Accuracy of Applanix DSS™ Model-301 Sensor for the collection of geographic information system data. Faculty Impact Statements 2007. Research Series 559. Pg 117-118.

Weih, R. and J. Hartshorn 2008. The Avenue to Wild Fire Dispatching using GIS. Proceedings of 6th Southern Forestry and Natural Resources GIS Conference. Orlando, FL. Pg 60-65

Weih, R. C., T. Jacobs, and W. Fletcher. 2007. Spatial Information System Program at UAM. Point of Intersection. Little Rock, AR. Vol 7:9

Cross, J., D. General, M. Gilbert, A. Harper, and **R. Weih**. 2007. Determining the Spatial Accuracy of High Resolution Applanix Digital Orthophotos. Twenty-Seventh Annual ESRI International User Conference. San Diego, CA. (Poster) - Also presented poster and Abstract Pg. 23 at the Arkansas GIS Forum Symposium

Bragg, D.C. and **R.C. Weih, Jr.** 2007. Notable environmental features in some historical aerial photographs from Ashley County, Arkansas. *Journal of the Arkansas Academy of Science*. 61:27-36.

Weih, R.C. and D. Rowton. 2007. Assessing the Spatial Accuracy of Applanix DSS™ Model-

- 301 Sensor Stereo Imagery using a Survey GPS Ground Control Network. Journal of the Arkansas Academy of Science. 61:113-119.
- Enderle, D. and **R. Weih**. 2005. Integrating Supervised and Unsupervised Classification Methods to Develop a More Accurate Land Cover Classification. Journal of the Arkansas Academy of Science 59:65-73.
- Lockhart, B., **R. Weih**, and K. Smith. 2005. Crown Radius and Diameter at Breast Height Relationships for Six Bottomland Hardwood Species. Journal of the Arkansas Academy of Science 59:110-115.
- White, D., M. Cartwright, and **R. Weih**. 2005. Helicopter, Radio Waves Deliver Data about Arkansas Elk. Arkansas Wildlife. Vol 36(6): 6-12.
- Loehle, C., T. Wigley, S. Rutzmoser, J. Gerwin, P. Keyser, R. Lancia, C. Reynolds, R. Thill, **R. Weih**, D. White, and P. Wood. 2005. Managed forest landscape structure and avian species richness in southeastern US. Forest Ecology and Management. 214:279-293.
- Weih, R.** 2005. Avenue-to-forest fire dispatching using Geographic Information System (GIS). University of Arkansas Research Series 528. Page 87.

8. Off-campus consulting, other professional activities, honors, recognition (last 5 years):

- Received Environmental and Spatial Technology (EAST) Certificate of Appreciation for teaching, organizing, and hosting the 2008 EAST Summer Camp (2008)
- Received Arkansas State Parks Director's Special Commendation for expertise in mapping and assisted in the development of the Cane Creek Lake Hiking/Biking Trail (2008)
- Received 3rd Place Best Instructional Presentation at ESRI 26th Annual International User Conference (2006)
- Received ESRI top five Authorized instructors award based on the number of students that I taught for the fourth quarter in 2005
- Received ESRI top five Authorized instructors award based on the number of students that I taught for the second quarter in 2005
- Received the Excellence Award for excellence in geospatial education and research in the state of Arkansas from Arkansas GIS Forum (2005)

9. Professional organization memberships and offices held:

- Member, Wildlife Society
- Member, International Association for Landscape Ecology
- Member, Geographic and Land Information Society
- Member, Cartography and Geographic Information Society
- Member, Arkansas Forestry Association (AFA)
- Member, International Society of Tropical Foresters
- Member, Society of American Foresters (SAF) (20+ years)
- Member, American Society of Photogrammetry and Remote Sensing (ASPRS) (20+ years)
- Member, Association of American Geographers
- Member, Arkansas GIS Forum (Charter member)

Member, The American Forestry Association
Member, Association of Consulting Foresters of America
Member, American Statistical Association
Member, The Biometric Society
Member, The Nature Conservancy (20+ years)
Member, National Eagle Scout Association (lifetime)
Member, National Parks and Conservation Association
Member, Xi Sigma Pi

10. Major professional self-improvement activities (last 10 years):

- Introduction to Geoprocessing Scripts Using Python (2009)
- Writing Advanced Geoprocessing Scripts Using Python (2009)
- Universal Trail Assessment Program (UTAP) Workshop (2008)
- ArcGIS Desktop I (2008)
- ArcGIS Desktop II (2008)
- ArcGIS Desktop III (2008)
- Spatial Modeling and Expert Systems with Leica Imagine (2006)
- FIA Data Workshop (2006)
- Spatial Modeling and Expert Systems with Leica Imagine (2006)
- Multispectral Classification with Leica Imagine (2006)
- Hyperspectral Imaging Exploitation and Analysis with Leica Imagine (2006)
- Beginning Feature Analyst (2006)
- Advanced Feature Analyst (2006)
- Network Analyst with ArcGIS (2006)
- Market Area Analysis with ArcGIS Business Analyst (2006)
- USDA-CSREES Grantsmanship Workshop (2006)
- Advanced Analysis with ArcGIS (2005)
- Introduction to Geoprocessing Scripts Using Python (2005)
- Building Geodatabase I (2004)
- Building Geodatabase II (2004)
- Working with ArcGIS Spatial Analyst 9.x (2004)
- National Science Foundation Workshop (2004)
- Autodesk Essentials Land Desktop 2005 (2004)
- Autodesk Essentials Survey 2005 (2004)
- Trimble Geomantics Office (2003)
- Fuzzy Logic and Application in GIS (2003)
- Working with ArcGIS Spatial Analyst 8.x (2002)
- Introduction to Programming ArcObjects with VBA (2002)
- Introduction to Survey Analyst (2002)
- Introduction to ArcSDE using ArcInfo 8.x (2002)
- Integrating Survey and GIS using ArcGIS Survey Analyst (2002)
- Introduction to ArcGIS I (2001)

- Working with Model Builder (2001)
- Introduction to ArcGIS II (2001)
- Mapping with Imagine OrthoBASE (2001)
- Introduction to ArcIMS (2000)
- Getting into GIS without going Broke Workshop (2000)
- Photogrammetry, GIS, the Professional Land Surveyor Workshop (2000)
- Spatial Modeling with ArcView Model Builder (2000)
- Introduction to Digital Photogrammetry on the Desktop (2000)
- Building Address Databases (2000)
- Advanced Database Design (2000)

11. External grants and other research funding (last 5 years):

ESRI Education Student Software Grant (2009), ESRI, \$30,000

Effect of Scale on the Accuracy of the National Land Cover Database Impervious Surface Layer (2008), UAM, \$1,700

The Interpretation of Land Use Change and Development of Monitoring Protocol for the Heartland Network Hot Springs National Park (2006-07), National Park Service, \$31,400

Determining the Ecological Implication of Error for Mapped Survey Corners (2006-07), USFS Southern Research Station, \$10,500

The Interpretation of Land Use Change and Development of Monitoring Protocol for the Heartland Network Hot Springs National Park (2005-06), National Park Service, \$48,060

APPENDIX 5. School of Forest Resources faculty evaluation form.



PMGS0
7-3
10/1/200
Annual Faculty Evaluation
**Division of Agriculture/College of Agriculture,
Food and Life Sciences** 7

Name: _____ Rank: _____

Department Unit: _____ Appointment: _____

Evaluator: _____ Performance Period: _____

		Rating	X	%Weight	=	Total Score
A.	Teaching/Advising (overall score)			0.00	0.00%	0.00
1	Significant accomplishments					
2	Students directed Master's or doctoral committee					
3	memberships					
4	Teaching effectiveness, innovation and improvement					
5	Advising students, clubs, special problems, honors students					
6	Publications					
7	Presentations Patents, copyrights, licenses, intellectual					
8	property					
9	Other creative endeavors					
10	Grants, gifts					
11	Behavioral Dimensions					
B.	Research/Technical (overall score)			0.00	0.00%	0.00
1	Significant accomplishments					
2	Publications					
3	Presentations Patents, copyrights, licenses, intellectual					
4	property					
5	Other creative endeavors					
6	Grants, gifts					
7	Interdisciplinary research					
8	Behavioral Dimensions					
C.	Extension (overall score)			0.00	0.00%	0.00
1	Significant accomplishments					
2	Program planning					
3	Faculty and staff training					
4	Implementation & evaluation of educational programs					
5	Publications & materials developed					
6	Grants, gifts					

- 7 Collaborations
- 8 Extension presentations, program development & awards
Patents, copyrights, licenses, intellectual
- 9 property
- 10 Behavioral Dimensions

D.	Service (overall score)	0.00	0.00%	0.00
1	Significant contributions			
2	Contributions/service to department/Division/college/University			
3	Service to professional organizations Direct service to			
4	people/communities/client groups			
5	Behavioral Dimensions			
E.	Administration (overall score)	0.00	0.00%	0.00
1	Leadership			
2	Technical Competence Knowledge of program planning			
3	process			
4	Recruitment/Retention of faculty			
5	Evaluation of programs/faculty			
6	Maintenance of employment records			
7	Behavioral Dimensions			
		Overall Score		0.00

[Faculty Performance Measures Definitions:](#)
[PMGS07-2](#)

Evaluation Rating

5	Exceptional	Weighting in each category may not be identical with official appointment.
4.0 - 4.9	Exceeds Expecations	If no responsibility in a category, indicate by "NA"
3.0 - 3.9	Meets Expectations	Sum of % weight should be
2.0 - 2.9	Below Expectations	100%
1.0 - 1.9	Unsatisfactory Performance	Overall score should reflect sum of all weighted category scores

Evaluation Narrative (below or attached sheet):

Evaluator Name(s): _____

Evaluator Signature: _____

Date: _____

Evaluator Signature
(joint evaluator) _____

Date: _____

Faculty Signature _____

Date: _____

Dean/Director Signature _____

Date: _____

University of Arkansas at Monticello -
Provost _____

Date: _____

Associate Vice-President - Extension _____

Date: _____

Associate Vice-President - Research _____

Date: _____

APPENDIX 6. Equivalent courses for students transferring from other Arkansas institutions of higher education into the School of Forest Resources to pursue a degree in Spatial Information Systems.

School of Forest Resources
University of Arkansas - Monticello
Equivalent Courses

Spatial Information Systems
Geographic Information Systems (GIS) Option

UAM Courses			UACC Batesville Courses		
Freshman Year, Fall Semester					
ART 1053	Art Appreciation (or Music Appreciation)	3	FAV 2023	Visual Art	or FAM 2003 Music
CIS 2223	Microcomputer Applications	3	CIS 1053	Computer Software Applications	English
ENGL 1013	Composition I	3	ENGL 1103	Composition I	
HIST 1013	Survey of Civilization I or II (Same period as Lit.)	3	HIST 1013	World Civilization I	or HIST 1023 World Civ II
MATH 1043	College Algebra	3	MTH 1023	College Algebra	
SIS 1001	Introduction to Spatial Information Systems (SIS)	1			
Freshman Year, Spring Semester					
CIS 2203	Programming Logic and Design	3		English	
ENGL 1023	Composition II	3	ENGL 1203	Composition II	
MATH 1033	Trigonometry	3	MTH 1013	Trigonometry	
PSY 1013	Intro to Psychology (or Intro to Sociology)	3	PSY 1003	General Psychology	or SOC 2003 Prin. of Sociology
SIS 2023	Geographic Coordinate Systems & Cartography	3			
Sophomore Year, Fall Semester					
ENGL 2283	Survey of World Literature I or II (Same period as Civ.)	3	ENG 2113	World Literature I	or ENG 2213 World Lit. II
ENGL 3253	Technical Writing	3	ENG 1303	Technical Writing	
GEOG 2213	General Geography I	3			
MATH 1073	Compact Calculus (or Calculus I)	3	MTH 2003	Survey of Calculus	or MTH 2005 Calc I
SIS 2014	Boundary Surveying	4			
Sophomore Year, Spring Semester					
CIS 3443	Object-Oriented Program Lang (or Intro to C# Program)	3			
ESCI 1073	Earth and Atmosphere (or Elements of Geology)	3	GEL 1003	Physical Geology	
ESCI 1081	Earth & Atmosphere Lab (or Elements of Geology Lab)	1	GEL 1001	Physical Geology Lab	
FOR 3353	Biometrics in Natural Resources	3	MTH 2053	Statistics	
PHIL 3523	Logic (or Ethics or US Congress or Public Admin)	3			

SIS 3814 Introduction to GIS, GPS, and Remote Sensing 4

Junior Year, Fall Semester

CIS 4623 Database Management Systems 3
PHYS 1003 Elements of Physics (or General Physics) 3
PHYS 1021 Elements of Physics Lab (or Gen & Univ. Physics Lab I) 1
PSCI 2213 American National Government 3
SIS 3923 Remote Sensing 3
Free Electives 3

PHS 2014 Physics for Health Sciences
(Physics for Health Sciences Lab included)
POSC 2103 US Government or HIST 2003/2013 US Hist. I or II

Junior Year, Spring Semester

GEOG 2223 General Geography II 3
MGMT 3473 Principles of Management & Organizational Behavior 3
SIS 3843 Advanced GIS I 3
SIS 4633 Digital Photogrammetry 3
COMM xxx3 Any General Education Speech Class 3
SPC 1003 Oral Communication

Senior Year, Fall Semester

SIS 4183 Law & Professionalism in Geomatics 3
SIS 4193 Advanced GPS 3
SIS 4713 Advanced GIS II 3
Free Electives 6

Senior Year, Spring Semester

SIS 4886 SIS Practicum 6
Free Electives 8

Total Hours **124**

School of Forest Resources
University of Arkansas - Monticello
Equivalent Courses

Spatial Information Systems
Surveying Option

UAM Courses		UACC Batesville Courses			
Freshman Year, Fall Semester					
ART 1053	Art Appreciation (or Music Appreciation)	3	FAV 2023	Visual Art Computer Software	or FAM 2003 Music
CIS 2223	Microcomputer Applications	3	CIS 1053 ENGL	Applications	
ENGL 1013	Composition I	3	1103	English Composition I	
HIST 1013	Survey of Civilization I or II (Same period as Lit.)	3	HIST 1013	World Civilization I	or HIST 1023 World Civ. II
MATH 1043	College Algebra	3	MTH 1023	College Algebra	
SIS 1001	Introduction to Spatial Information Systems (SIS)	1			
Freshman Year, Spring Semester					
CIS 2203	Programming Logic and Design	3	ENGL		
ENGL 1023	Composition II	3	1203	English Composition II	
MATH 1033	Trigonometry	3	MTH 1013	Trigonometry	
PSY 1013	Intro to Psychology (or Intro to Sociology)	3	PSY 1003	General Psychology	or SOC 2003 Prin. of Sociology
SIS 2023	Geographic Coordinate Systems & Cartography	3			
Sophomore Year, Fall Semester					
ENGL 2283	Survey of World Literature I or II (Same period as Civ.)	3	ENG 2113	World Literature I	or ENG 2213 World Lit. II
ENGL 3253	Technical Writing	3	ENG 1303	Technical Writing	
GEOG 2213	General Geography I or II	3			
MATH 1073	Compact Calculus (or Calculus I)	3	MTH 2003	Survey of Calculus	or MTH 2005 Calc. I
SIS 2114	Plane Surveying	4			
Sophomore Year, Spring Semester					
ESCI 1073	Earth and Atmosphere (or Elements of Geology)	3	GEL 1003	Physical Geology	
ESCI 1081	Earth & Atmosphere Lab (or Elements of Geology Lab)	1	GEL 1001	Physical Geology Lab	
FOR 3353	Biometrics in Natural Resources	3	MTH 2053	Statistics	
PHIL 3523	Logic (or Ethics or US Congress or Public Administration)	3			
PSCI 2213	American National Government	3	POSC 2103	US Government	or HIST 2003/2013 US Hist. I or II

SIS 3814	Introduction to GIS, GPS, and Remote Sensing	4		
Junior Year, Fall Semester				
FOR 2231	Dendrology Laboratory I	1		
PHYS 1003	Elements of Physics (or General Physics)	3	PHS 2014	Physics for Health Sciences
PHYS 1021	Elements of Physics Lab (or Gen & Univ. Physics Lab I)	1		(Physics for Health Sciences Lab included)
SIS 2014	Boundary Surveying	4		
SIS 3923	Remote Sensing	3		
	Free Electives	3		
Junior Year, Spring Semester				
FOR 2291	Dendrology Laboratory II	1		
SIS 3153	Survey Plats and Deeds	3		
SIS 3264	Route and Construction Surveying	4		
SIS 3843	Advanced GIS I	3		
COMM xxx3	Any General Education Speech Class	3	SPC 1003	Oral Communication
Senior Year, Fall Semester				
MGMT 3473	Principles of Management & Organizational Behavior	3		
SIS 4183	Law & Professionalism in Geomatics	3		
SIS 4193	Advanced GPS	3		
SIS 4454	Advanced Surveying	4		
	Free Electives	3		
Senior Year, Spring Semester				
SIS 4886	SIS Practicum	6		
	Free Electives	7		
Total Hours		122		

School of Forest Resources
University of Arkansas - Monticello
Equivalent Courses

Spatial Information Systems
Geographic Information Systems (GIS) Option

UAM Courses		Cossatot CCUA Courses		
Freshman Year, Fall Semester				
ART 1053	Art Appreciation (or Music Appreciation)	3	FA 2003	Intro to Fine Arts: ART or FA 2013 Intro to Fine Arts: Music
CIS 2223	Microcomputer Applications	3	BUS 1003	Micro Computer Applications
ENGL 1013	Composition I	3	ENGL 1113	Composition I Western Civilization to
HIST 1013	Survey of Civilization I or II (Same period as Lit.)	3	HIST 1003	1700 or HIST 1013 Western Civ.Since 1700
MATH 1043	College Algebra	3	MATH 1023	College Algebra
SIS 1001	Introduction to Spatial Information Systems (SIS)	1		
Freshman Year, Spring Semester				
CIS 2203	Programming Logic and Design	3		
ENGL 1023	Composition II	3	ENGL 1123	Composition II
MATH 1033	Trigonometry	3	MATH 2043	Trigonometry and Analytical Geometry
PSY 1013	Intro to Psychology (or Intro to Sociology)	3	PSY 2003	General Psychology or SOC 2033 Intro to Soc.
SIS 2023	Geographic Coordinate Systems & Cartography	3		
Sophomore Year, Fall Semester				
ENGL 2283	Survey of World Lit. I or II (Same period as Civ.)	3	ENGL 2213	World Literature I or ENGL 2223 World Lit. II
ENGL 3253	Technical Writing	3	ENGL 1133	Technical Writing
GEOG 2213	General Geography I	3	GEOG 200	Introduction to Geography
MATH 1073	Compact Calculus (or Calculus I)	3	MATH 2055	Calculus I
SIS 2014	Boundary Surveying	4		
Sophomore Year, Spring Semester				
CIS 3443	Object-Oriented Program Lang (or Intro to C# Program)	3		
ESCI 1073	Earth and Atmosphere (or Elements of Geology)	3	GEOL 1004	Geology
ESCI 1081	Earth & Atm. Lab (or Elements of Geology Lab)	1		(Geology Lab included)
FOR 3353	Biometrics in Natural Resources	3	MATH 2023	Introduction to Statistics

PHIL 3523	Logic (or Ethics or US Congress or Public Admin.)	3			
SIS 3814	Introduction to GIS, GPS, and Remote Sensing	4			
Junior Year, Fall Semester					
CIS 4623	Database Management Systems	3			
PHYS 1003	Elements of Physics (or General Physics)	3	PHYS 2044	College Physics (Lab included)	or PHYS 2024 Physical Science (Lab included)
PHYS 1021	Elem. of Physics Lab (or Gen & Univ. Phys. Lab I)	1			
PSCI 2213	American National Government	3	PSCI 2003	American Government	or HIS 2013 or HIST 2023
SIS 3923	Remote Sensing	3			
	Free Electives	3			
Junior Year, Spring Semester					
GEOG 2223	General Geography II	3			
	Principles of Management & Organizational				
MGMT 3473	Behavior	3	MNG 2313	Principles of Management	
SIS 3843	Advanced GIS I	3			
SIS 4633	Digital Photogrammetry	3			
COMM xxx3	Any General Education Speech Class	3	SPCH 1113	Principles of Speech	
Senior Year, Fall Semester					
SIS 4183	Law & Professionalism in Geomatics	3			
SIS 4193	Advanced GPS	3			
SIS 4713	Advanced GIS II	3			
	Free Electives	6			
Senior Year, Spring Semester					
SIS 4886	SIS Practicum	6			
	Free Electives	8			
Total Hours		124			

School of Forest Resources**University of Arkansas - Monticello****Equivalent Courses****Spatial Information Systems****Surveying Option**

UAM Courses			Cossatot CCUA Courses		
Freshman Year, Fall Semester					
ART 1053	Art Appreciation (or Music Appreciation)	3	FA 2003	Intro to Fine Arts: ART	or FA 2013 Intro to Fine Arts: Music
CIS 2223	Microcomputer Applications	3	BUS 1003	Micro Computer Applications	
ENGL 1013	Composition I	3	ENGL 1113	Composition I	
HIST 1013	Survey of Civilization I or II (Same period as Lit.)	3	HIST 1003	Western Civ. to 1700	or HIST 1013 Western Civ. Since 1700
MATH 1043	College Algebra	3	MATH 1023	College Algebra	
SIS 1001	Introduction to Spatial Information Systems (SIS)	1			
Freshman Year, Spring Semester					
CIS 2203	Programming Logic and Design	3			
ENGL 1023	Composition II	3	ENGL 1123	Composition II	
MATH 1033	Trigonometry	3	MATH 2043	Trigonometry and Analytical Geometry	
PSY 1013	Intro to Psychology (or Intro to Sociology)	3	PSY 2003	General Psychology	or SOC 2033 Intro. to Sociology
SIS 2023	Geographic Coordinate Systems & Cartography	3			
Sophomore Year, Fall Semester					
Survey of World Literature I or II (Same period as Civ.)			3	ENGL 2213	World Literature I
ENGL 2283					or ENGL 2223 World Lit. II
ENGL 3253	Technical Writing	3	ENGL 1133	Technical Writing	
GEOG 2213	General Geography I or II	3	GEOG 200	Introduction to Geography	
MATH 1073	Compact Calculus (or Calculus I)	3	MATH 2055	Calculus I	
SIS 2114	Plane Surveying	4			
Sophomore Year, Spring Semester					
ESCI 1073	Earth and Atmosphere (or Elements of Geology)	3	GEOL 1004	Geology	
	Earth & Atmosphere Lab (or Elements of Geology Lab)				
ESCI 1081	Lab)	1		(Geology Lab included)	
FOR 3353	Biometrics in Natural Resources	3	MATH 2023	Introduction to Statistics	
PHIL 3523	Logic (or Ethics or US Congress or Public Admin)	3			

PSCI 2213	American National Government	3	PSCI 2003	American Government	or	HIS 2013 or HIST 2023
SIS 3814	Introduction to GIS, GPS, and Remote Sensing	4				
Junior Year, Fall Semester						
FOR 2231	Dendrology Laboratory I	1				
PHYS 1003	Elements of Physics (or General Physics)	3	PHYS 2044	College Physics	or	PHYS 2024 Physical Science
	Elements of Physics Lab (or Gen & Univ. Physics			(College Physics Lab		(Physical Science Lab
PHYS 1021	Lab I)	1		included)		included)
SIS 2014	Boundary Surveying	4				
SIS 3923	Remote Sensing	3				
	Free Electives	3				
Junior Year, Spring Semester						
FOR 2291	Dendrology Laboratory II	1				
SIS 3153	Survey Plats and Deeds	3				
SIS 3264	Route and Construction Surveying	4				
SIS 3843	Advanced GIS I	3				
COMM						
xxx3	Any General Education Speech Class	3	SPCH 1113	Principles of Speech		
Senior Year, Fall Semester						
MGMT 3473	Principles of Management & Organizational Behavior	3	MNG 2313	Principles of Management		
SIS 4183	Law & Professionalism in Geomatics	3				
SIS 4193	Advanced GPS	3				
SIS 4454	Advanced Surveying	4				
	Free Electives	3				
Senior Year, Spring Semester						
SIS 4886	SIS Practicum	6				
	Free Electives	7				
Total Hours		122				

School of Forest Resources
University of Arkansas - Monticello
Equivalent Courses

Spatial Information Systems
Geographic Information Systems (GIS) Option

UAM Courses			UACC Hope Courses		
Freshman Year, Fall Semester					
ART 1053	Art Appreciation (or Music Appreciation)	3	ARTS 2003	Art Appreciation	or MUSI 2103 Music Appreciation
CIS 2223	Microcomputer Applications	3	CISS 1123	Computer Software Applications	
ENGL 1013	Composition I	3	ENGL 1013	English Composition I	HIST 1013 History of Civilization
HIST 1013	Survey of Civilization I or II (Same period as Lit.)	3	HIST 1003	History of Civ. to 1660	or since 1660
MATH 1043	College Algebra	3	MATH 1053	College Algebra	
SIS 1001	Introduction to Spatial Information Systems (SIS)	1			
Freshman Year, Spring Semester					
CIS 2203	Programming Logic and Design	3			
ENGL 1023	Composition II	3	ENGL 1023	English Composition II	
MATH 1033	Trigonometry	3	MATH 1043	Plane Trigonometry	
PSY 1013	Intro to Psychology (or Intro to Sociology)	3	PSYC 2303	General Psychology	or SOCI 2413 Sociology
SIS 2023	Geographic Coordinate Systems & Cartography	3			
Sophomore Year, Fall Semester					
	Survey of World Literature I or II (Same period as Civ.)				
ENGL 2283		3			
ENGL 3253	Technical Writing	3	ENGL 2253	Technical Writing	
				Introduction to	
GEOG 2213	General Geography I	3	GEOG 2203	Geography	
MATH 1073	Compact Calculus (or Calculus I)	3	MATH 2015	Calculus I	
SIS 2014	Boundary Surveying	4			
Sophomore Year, Spring Semester					
	Object-Oriented Prog Lang (or Intro to C# Program)				
CIS 3443		3			
ESCI 1073	Earth and Atmosphere (or Elements of Geology)	3	GEOL 1004	Physical Geology	
ESCI 1081	Earth & Atmosphere Lab (or Elem. of Geol. Lab)	1		(Physical Geology Lab included)	

FOR 3353	Biometrics in Natural Resources Logic (or Ethics or US Congress or Public Administration)	3	MATH 2003	Elementary Statistics
PHIL 3523		3		
SIS 3814	Introduction to GIS, GPS, and Remote Sensing	4		
Junior Year, Fall Semester				
CIS 4623	Database Management Systems	3		
PHYS 1003	Elements of Physics (or General Physics)	3	PHSC 1024	Physical Science
PHYS 1021	Elem. of Phys. Lab (or Gen & Univ. Phys. Lab I)	1		(Physical Science Lab included)
PSCI 2213	American National Government	3	PLSC 2103	American Government
SIS 3923	Remote Sensing	3		HIST 2013/2023 US Hist.to 1865 or
	Free Electives	3		or Since 1865
Junior Year, Spring Semester				
GEOG 2223	General Geography II Principles of Management & Organizational Behavior	3		
MGMT 3473		3		
SIS 3843	Advanced GIS I	3		
SIS 4633	Digital Photogrammetry	3		
COMM xxx3	Any General Education Speech Class	3	SPCH 1313	Principles of Speech
Senior Year, Fall Semester				
SIS 4183	Law & Professionalism in Geomatics	3		
SIS 4193	Advanced GPS	3		
SIS 4713	Advanced GIS II	3		
	Free Electives	6		
Senior Year, Spring Semester				
SIS 4886	SIS Practicum	6		
	Free Electives	8		
Total Hours		124		

School of Forest Resources
University of Arkansas - Monticello
Equivalent Courses

Spatial Information Systems
Surveying Option

UAM Courses				UACC Hope Courses	
Freshman Year, Fall Semester					
ART 1053	Art Appreciation (or Music Appreciation)	3	ARTS 2003	Art Appreciation	MUSI 2103 Music Appreciation
CIS 2223	Microcomputer Applications	3	CISS 1123	Computer Software	
ENGL 1013	Composition I	3	ENGL 1013	English Composition I	HIST 1013 History of Civilization since 1660
HIST 1013	Survey of Civilization I or II (Same period as Lit.)	3	HIST 1003	History of Civ. to 1660	
MATH 1043	College Algebra	3	MATH 1053	College Algebra	
SIS 1001	Introduction to Spatial Information Systems (SIS)	1			
Freshman Year, Spring Semester					
CIS 2203	Programming Logic and Design	3			
ENGL 1023	Composition II	3	ENGL 1023	English Composition II	
MATH 1033	Trigonometry	3	MATH 1043	Plane Trigonometry	
PSY 1013	Intro to Psychology (or Intro to Sociology)	3	PSYC 2303	General Psychology	or SOCI 2413 Sociology
SIS 2023	Geographic Coordinate Systems & Cartography	3			
Sophomore Year, Fall Semester					
ENGL 2283	Survey of World Literature I or II (Same period as Civ.)	3			
ENGL 3253	Technical Writing	3	ENGL 2253	Technical Writing	
GEOG 2213	General Geography I or II	3	GEOG 2203	Introduction to Geography	
MATH 1073	Compact Calculus (or Calculus I)	3	MATH 2015	Calculus I	
SIS 2114	Plane Surveying	4			
Sophomore Year, Spring Semester					
ESCI 1073	Earth and Atmosphere (or Elements of Geology)	3	GEOL 1004	Physical Geology	
ESCI 1081	Earth & Atmosphere Lab (or Elements of Geology Lab)	1		(Lab included)	
FOR 3353	Biometrics in Natural Resources	3	MATH 2003	Elementary Statistics	
PHIL 3523	Logic (or Ethics or US Congress or Public Admin)	3			

PSCI 2213	American National Government	3	PLSC 2103	American Government	HIST 2013/2023 US History or to 1865 or Since 1865
SIS 3814	Introduction to GIS, GPS, and Remote Sensing	4			
Junior Year, Fall Semester					
FOR 2231	Dendrology Laboratory I	1			
PHYS 1003	Elements of Physics (or General Physics)	3	PHSC 1024	Physical Science	
PHYS 1021	Elements of Physics Lab (or Gen & Univ. Phys. Lab I)	1		(Lab included)	
SIS 2014	Boundary Surveying	4			
SIS 3923	Remote Sensing	3			
	Free Electives	3			
Junior Year, Spring Semester					
FOR 2291	Dendrology Laboratory II	1			
SIS 3153	Survey Plats and Deeds	3			
SIS 3264	Route and Construction Surveying	4			
SIS 3843	Advanced GIS I	3			
COMM					
xxx3	Any General Education Speech Class	3	SPCH 1313	Principles of Speech	
Senior Year, Fall Semester					
MGMT					
3473	Principles of Management & Organizational Behavior	3			
SIS 4183	Law & Professionalism in Geomatics	3			
SIS 4193	Advanced GPS	3			
SIS 4454	Advanced Surveying	4			
	Free Electives	3			
Senior Year, Spring Semester					
SIS 4886	SIS Practicum	6			
	Free Electives	7			
Total Hours		122			

School of Forest Resources**University of Arkansas - Monticello****Equivalent Courses****Spatial Information Systems****Geographic Information Systems (GIS) Option**

UAM Courses			UACC Morrilton Courses		
Freshman Year, Fall Semester					
ART 1053	Art Appreciation (or Music Appreciation)	3	ART 2003	Art Appreciation	or MUS 2003 Music Apprec.
CIS 2223	Microcomputer Applications	3	BUS 1213	Computer Applications	
ENGL 1013	Composition I Survey of Civilization I or II (Same period as Lit.)	3	ENG 1013	Composition I	
HIST 1013		3	HIST 1003	World Civilization I	or HIST 1013 World Civ. II
MATH 1043	College Algebra Introduction to Spatial Information Systems	3	MATH 1203	College Algebra	
SIS 1001	(SIS)	1	GIS 2203	Introduction to GIS	
Freshman Year, Spring Semester					
CIS 2203	Programming Logic and Design	3			
ENGL 1023	Composition II	3	ENG 1023	Composition II	
MATH 1033	Trigonometry	3	MATH 1213	Plane Trigonometry	SOC 2013 Intro. to Sociology
PSY 1013	Intro to Psychology (or Intro to Sociology)	3	PSY 2003	General Psychology	or SOC 2013 Intro. to Sociology
SIS 2023	Geographic Coordinate Systems & Cartography	3			
Sophomore Year, Fall Semester					
ENGL 2283	Survey of World Lit. I or II (Same period as Civ.)	3	ENG 2213	World Literature I	or ENG 2223 World Lit. II
ENGL 3253	Technical Writing	3	ENG 2023	Technical Communications	
GEOG 2213	General Geography I	3	GEOG 2013	Regional Geog. of the World	MATH 2015
MATH 1073	Compact Calculus (or Calculus I)	3	MATH 2023	Calculus for Business	or Calculus I
SIS 2014	Boundary Surveying	4	SUR 1224	Boundary Surveying	
Sophomore Year, Spring Semester					
CIS 3443	Object-Oriented Prog. Lang (or Intro to C# Program)	3			
ESCI 1073	Earth and Atmosphere (or Elements of Geology)	3	SCI 2014	Earth Science	GEOL 1104 General Physical Geology

ESCI 1081	Earth & Atmosphere Lab (or Elements of Geology Lab)	1	(Earth Science Lab included)	(Lab included)
FOR 3353	Biometrics in Natural Resources	3		
PHIL 3523	Logic (or Ethics or US Congress or Public Admin)	3		
SIS 3814	Introduction to GIS, GPS, and Remote Sensing	4		
Junior Year, Fall Semester				
CIS 4623	Database Management Systems	3		
PHYS 1003	Elements of Physics (or General Physics)	3	PHY 2004	Physical Science
PHYS 1021	Elements of Physics Lab (or Gen & Univ. Physics Lab I)	1		(Lab included)
PSCI 2213	American National Government	3	PSCI 2003	American Government
SIS 3923	Remote Sensing	3		
	Free Electives	3		
Junior Year, Spring Semester				
GEOG 2223	General Geography II	3		
MGMT 3473	Principles of Mgmt. & Organizational Behavior	3		
SIS 3843	Advanced GIS I	3		
SIS 4633	Digital Photogrammetry	3		
COMM xxx3	Any General Education Speech Class	3	SPH 2303	Public Speaking
Senior Year, Fall Semester				
SIS 4183	Law & Professionalism in Geomatics	3		
SIS 4193	Advanced GPS	3		
SIS 4713	Advanced GIS II	3		
	Free Electives	6		
Senior Year, Spring Semester				
SIS 4886	SIS Practicum	6		
	Free Electives	8		
Total Hours		124		

School of Forest Resources**University of Arkansas - Monticello****Equivalent Courses****Spatial Information Systems****Surveying Option**

UAM Courses			UACC Morrilton Courses		
Freshman Year, Fall Semester					
ART 1053	Art Appreciation (or Music Appreciation)	3	ART 2003	Art Appreciation	or MUS 2003 Music Appreciation
CIS 2223	Microcomputer Applications	3	BUS 1213	Computer Applications	
ENGL 1013	Composition I Survey of Civilization I or II (Same period as Lit.)	3	ENG 1013	Composition I	
HIST 1013		3	HIST 1003 MATH 1203	World Civilization I College Algebra	or HIST 1013 World Civilization II
MATH 1043	College Algebra	3			
SIS 1001	Introduction to Spatial Information Systems (SIS)	1	GIS 2203	Introduction to Geographic Information Systems	
Freshman Year, Spring Semester					
CIS 2203	Programming Logic and Design	3			
ENGL 1023	Composition II	3	ENG 1023 MATH 1213	Composition II Plane Trigonometry	
MATH 1033	Trigonometry	3			SOC 2013 Introduction to Sociology
PSY 1013	Intro to Psychology (or Intro to Sociology)	3	PSY 2003	General Psychology	or SOC 2013 Introduction to Sociology
SIS 2023	Geographic Coordinate Systems & Cartography	3			
Sophomore Year, Fall Semester					
ENGL 2283	Survey of World Literature I or II (Same period as Civ.)	3	ENG 2213	World Literature I	or ENG 2223 World Literature II
ENGL 3253	Technical Writing	3	ENG 2023 GEOG 2013	Technical Communications Regional Geography of the World	
GEOG 2213	General Geography I or II	3			MATH 2015
MATH 1073	Compact Calculus (or Calculus I)	3	2023 MATH 2023	Calculus for Business	or Calculus I
SIS 2114	Plane Surveying	4	SUR 1204	Plane Surveying	
Sophomore Year, Spring Semester					
ESCI 1073	Earth and Atmosphere (or Elements of Geology)	3	SCI 2014	Earth Science	GEOL 1104 General Physical Geology

ESCI 1081	Earth & Atmosphere Lab (or Elements of Geology Lab)	1	(Earth Science Lab included)	(General Physical Geology Lab included)
FOR 3353	Biometrics in Natural Resources	3		
PHIL 3523	Logic (or Ethics or US Congress or Public Administration)	3		
PSCI 2213	American National Government	3	PSCI 2003 American Government	or HIST 2003/2013 US History I or II
SIS 3814	Introduction to GIS, GPS, and Remote Sensing	4		
Junior Year, Fall Semester				
FOR 2231	Dendrology Laboratory I	1		
PHYS 1003	Elements of Physics (or General Physics) Elements of Physics Lab (or Gen & Univ.)	3	PHY 2004 Physical Science	
PHYS 1021	Physics Lab I)	1		(Physical Science Lab included)
SIS 2014	Boundary Surveying	4	SUR 1224 Boundary Surveying	
SIS 3923	Remote Sensing	3		
	Free Electives	3		
Junior Year, Spring Semester				
FOR 2291	Dendrology Laboratory II	1		
SIS 3153	Survey Plats and Deeds	3		
SIS 3264	Route and Construction Surveying	4		
SIS 3843	Advanced GIS I	3		
COMM xxx3	Any General Education Speech Class	3	SPH 2303 Public Speaking	
Senior Year, Fall Semester				
MGMT 3473	Principles of Management & Organizational Behavior	3		
SIS 4183	Law & Professionalism in Geomatics	3		
SIS 4193	Advanced GPS	3		
SIS 4454	Advanced Surveying	4		
	Free Electives	3		
Senior Year, Spring Semester				
SIS 4886	SIS Practicum	6		
	Free Electives	7		
Total Hours		122		

School of Forest Resources**University of Arkansas - Monticello****Equivalent Courses****Spatial Information Systems****Geographic Information Systems (GIS) Option**

UAM Courses			Phillips CCUA Courses		
Freshman Year, Fall Semester					
ART 1053	Art Appreciation (or Music Appreciation)	3	FA 213	Fine Arts	or MSC 223 Music Appreciation
CIS 2223	Microcomputer Applications	3	CT 213	Microcomputer Business Applications	
ENGL 1013	Composition I	3	EH 113	Freshman English I	
HIST 1013	Survey of Civilization I or II (Same period as Lit.)	3	HY 113	History of Western Civilization I	HY 123 History of Western Civilization II
MATH 1043	College Algebra	3	MS 123	College Algebra	
SIS 1001	Introduction to Spatial Information Systems (SIS)	1			
Freshman Year, Spring Semester					
CIS 2203	Programming Logic and Design	3			
ENGL 1023	Composition II	3	EH 123	Freshman English II	
MATH 1033	Trigonometry	3	MS 133	Trigonometry	
PSY 1013	Intro to Psychology (or Intro to Sociology)	3	PSY 213	General Psychology	or SY 213 Fundamental Sociology
SIS 2023	Geographic Coordinate Systems & Cartography	3			
Sophomore Year, Fall Semester					
ENGL 2283	Survey of World Literature I or II (Same period as Civ.)	3	EH 233	World Literature I	or EH 243 World Literature II
ENGL 3253	Technical Writing	3	EH 273	Technical Writing	
GEOG 2213	General Geography I	3	GEOG 213	Introductory Geography	
MATH 1073	Compact Calculus (or Calculus I)	3	MS 215	Calculus I	
SIS 2014	Boundary Surveying	4			
Sophomore Year, Spring Semester					
CIS 3443	Object-Oriented Program Lang (or Intro to C# Program)	3			
ESCI 1073	Earth and Atmosphere (or Elements of Geology)	3			
ESCI 1081	Earth & Atmosphere Lab (or Elements of Geology Lab)	1			
FOR 3353	Biometrics in Natural Resources	3	MS 253	Math Statistics	or BMGT 283 Business Statistics
PHIL 3523	Logic (or Ethics or US Congress or Public Admin)	3			

SIS 3814	Introduction to GIS, GPS, and Remote Sensing	4				
Junior Year, Fall Semester						
CIS 4623	Database Management Systems	3				
PHYS 1003	Elements of Physics (or General Physics)	3	PS 215	General Physics		
PHYS 1021	Elements of Phys Lab (or Gen & Univ. Physics Lab I)	1		(Lab included)		
PSCI 2213	American National Government	3	PLS 213	American Federal Government		
SIS 3923	Remote Sensing	3				
	Free Electives	3				
Junior Year, Spring Semester						
GEOG 2223	General Geography II	3				
MGMT 3473	Principles of Management & Organizational Behavior	3				
SIS 3843	Advanced GIS I	3				
SIS 4633	Digital Photogrammetry	3				
COMM xxx3	Any General Education Speech Class	3	SP 243	Fundamentals of Speech		
Senior Year, Fall Semester						
SIS 4183	Law & Professionalism in Geomatics	3				
SIS 4193	Advanced GPS	3				
SIS 4713	Advanced GIS II	3				
	Free Electives	6				
Senior Year, Spring Semester						
SIS 4886	SIS Practicum	6				
	Free Electives	8				
Total Hours		124				

School of Forest Resources
University of Arkansas - Monticello
Equivalent Courses

Spatial Information Systems
Surveying Option

UAM Courses				Phillips CCUA Courses	
Freshman Year, Fall Semester					
ART 1053	Art Appreciation (or Music Appreciation)	3	FA 213	Fine Arts	or MSC 223 Music Appreciation
CIS 2223	Microcomputer Applications	3	CT 213	Microcomputer Business Applications	
ENGL 1013	Composition I	3	EH 113	Freshman English I	HY 123 History of Western Civilization II
HIST 1013	Survey of Civilization I or II (Same period as Lit.)	3	HY 113	History of Western Civilization I	or
MATH 1043	College Algebra	3	MS 123	College Algebra	
SIS 1001	Introduction to Spatial Information Systems (SIS)	1			
Freshman Year, Spring Semester					
CIS 2203	Programming Logic and Design	3			
ENGL 1023	Composition II	3	EH 123	Freshman English II	
MATH 1033	Trigonometry	3	MS 133	Trigonometry	
PSY 1013	Intro to Psychology (or Intro to Sociology)	3	PSY 213	General Psychology	or SY 213 Fundamental Sociology
SIS 2023	Geographic Coordinate Systems & Cartography	3			
Sophomore Year, Fall Semester					
ENGL 2283	Survey of World Lit. I or II (Same period as Civ.)	3	EH 233	World Literature I	or EH 243 World Literature II
ENGL 3253	Technical Writing	3	EH 273	Technical Writing	
GEOG 2213	General Geography I or II	3	GEOG 213	Introductory Geography	
MATH 1073	Compact Calculus (or Calculus I)	3	MS 215	Calculus I	
SIS 2114	Plane Surveying	4			
Sophomore Year, Spring Semester					
ESCI 1073	Earth and Atmosphere (or Elements of Geology)	3			
	Earth & Atmosphere Lab (or Elements of Geology Lab)	1			
FOR 3353	Biometrics in Natural Resources	3	MS 253	Math Statistics	or BMGT 283 Business Statistics
PHIL 3523	Logic (or Ethics or US Congress or Public Admin)	3			

PSCI 2213	American National Government	3	PLS 213	American Federal Government	or	HY 213/223 US History to 1877 or Since 1877
SIS 3814	Introduction to GIS, GPS, and Remote Sensing	4				
Junior Year, Fall Semester						
FOR 2231	Dendrology Laboratory I	1				
PHYS 1003	Elements of Physics (or General Physics)	3	PS 215	General Physics		
	Elements of Physics Lab (or Gen & Univ. Physics					
PHYS 1021	Lab I	1		(General Physics Lab included)		
SIS 2014	Boundary Surveying	4				
SIS 3923	Remote Sensing	3				
	Free Electives	3				
Junior Year, Spring Semester						
FOR 2291	Dendrology Laboratory II	1				
SIS 3153	Survey Plats and Deeds	3				
SIS 3264	Route and Construction Surveying	4				
SIS 3843	Advanced GIS I	3				
COMM						
xxx3	Any General Education Speech Class	3	SP 243	Fundamentals of Speech		
Senior Year, Fall Semester						
MGMT 3473	Principles of Management & Organizational Behavior	3				
SIS 4183	Law & Professionalism in Geomatics	3				
SIS 4193	Advanced GPS	3				
SIS 4454	Advanced Surveying	4				
	Free Electives	3				
Senior Year, Spring Semester						
SIS 4886	SIS Practicum	6				
	Free Electives	7				
Total Hours		122				

School of Forest Resources
University of Arkansas - Monticello
Equivalent Courses

Spatial Information Systems
Geographic Information Systems (GIS) Option

UAM Courses			North Arkansas College Courses		
Freshman Year, Fall Semester					
ART 1053	Art Appreciation (or Music Appreciation)	3	ART 1003	Art Appreciation	MUS 1003 Music Appreciation
CIS 2223	Microcomputer Applications	3	CIS 1103	Introduction to Information Technology	
ENGL 1013	Composition I	3	ENGL 1013	English Composition I	HIST 1013 History of Western Civilization II
HIST 1013	Survey of Civilization I or II (Same period as Lit.)	3	HIST 1003	History of Western Civilization I	or HIST 1013 History of Western Civilization II
MATH 1043	College Algebra	3	MAT 1223	College Algebra	
SIS 1001	Introduction to Spatial Information Systems (SIS)	1			
Freshman Year, Spring Semester					
CIS 2203	Programming Logic and Design	3			
ENGL 1023	Composition II	3	ENGL 1023	English Composition II	
MATH 1033	Trigonometry	3	MAT 1233	Trigonometry	SOC 2013 Introduction to Sociology
PSY 1013	Intro to Psychology (or Intro to Sociology)	3	PSYC 2003	General Psychology	or CAD 1003 Blueprint Reading
SIS 2023	Geographic Coordinate Systems & Cartography	3	GEOG 2103	Cartography	and
Sophomore Year, Fall Semester					
ENGL 2283	Survey of World Lit. I or II (Same period as Civ.)	3	ENGL 2213	World Literature I	ENGL 2223 World Literature II
ENGL 3253	Technical Writing	3	ENGL 1033	Technical Report Writing	or
GEOG 2213	General Geography I	3	GEOG 1003	Elements of Physical Geography	
MATH 1073	Compact Calculus (or Calculus I)	3	MAT 2123	Survey of Calculus	
SIS 2014	Boundary Surveying	4			
Sophomore Year, Spring Semester					
CIS 3443	Object-Oriented Program Lang (or Intro to C# Program)	3			
ESCI 1073	Earth and Atmosphere (or Elements of Geology)	3	GEOL 1014	General Geology	

ESCI 1081	Earth & Atmosphere Lab (or Elements of Geology Lab)	1		(General Geology Lab included)	
FOR 3353	Biometrics in Natural Resources	3			
PHIL 3523	Logic (or Ethics or US Congress or Public Admin)	3			
SIS 3814	Introduction to GIS, GPS, and Remote Sensing	4	CIS 1123	Introduction to GIS and GPS	CIS 1133 Intermediate and GIS
Junior Year, Fall Semester					
CIS 4623	Database Management Systems	3			
PHYS 1003	Elements of Physics (or General Physics) Elements of Physics Lab (or Gen & Univ. Physics	3	PHYS 2014	College Physics	
PHYS 1021	Lab I)	1		(College Physics Lab included)	
PSCI 2213	American National Government	3	PLSC 2003	American National Government	HIST 2003/2013 US History I or II
SIS 3923	Remote Sensing	3			
	Free Electives	3			
Junior Year, Spring Semester					
GEOG 2223	General Geography II Principles of Management & Organizational	3			
MGMT 3473	Behavior	3			
SIS 3843	Advanced GIS I	3			
SIS 4633	Digital Photogrammetry	3			
COMM xxx3	Any General Education Speech Class	3	SPCH 1313	Fundamentals of Oral Communication	
Senior Year, Fall Semester					
SIS 4183	Law & Professionalism in Geomatics	3			
SIS 4193	Advanced GPS	3			
SIS 4713	Advanced GIS II	3			
	Free Electives	6			
Senior Year, Spring Semester					
SIS 4886	SIS Practicum	6			
	Free Electives	8			
Total Hours		124			

School of Forest Resources
University of Arkansas - Monticello
Equivalent Courses

Spatial Information Systems
Surveying Option

UAM Courses				North Arkansas College Courses		
Freshman Year, Fall Semester						
ART 1053	Art Appreciation (or Music Appreciation)	3	ART 1003	Art Appreciation	or	MUS 1003 Music Appreciation
CIS 2223	Microcomputer Applications	3	CIS 1103	Introduction to Information Technology		
ENGL 1013	Composition I	3	ENGL 1013	English Composition I		HIST 1013 History of Western Civilization II
HIST 1013	Survey of Civilization I or II (Same period as Lit.)	3	HIST 1003	History of Western Civilization I	or	
MATH 1043	College Algebra	3	MAT 1223	College Algebra		
SIS 1001	Introduction to Spatial Information Systems (SIS)	1				
Freshman Year, Spring Semester						
CIS 2203	Programming Logic and Design	3				
ENGL 1023	Composition II	3	ENGL 1023	English Composition II		
MATH 1033	Trigonometry	3	MAT 1233	Trigonometry		SOC 2013 Introduction to Sociology
PSY 1013	Intro to Psychology (or Intro to Sociology)	3	PSYC 2003	General Psychology	or	
SIS 2023	Geographic Coordinate Systems & Cartography	3	GEOG 2103	Cartography	and	CAD 1003 Blueprint Reading
Sophomore Year, Fall Semester						
ENGL 2283	Survey of World Literature I or II (Same period as Civ.)	3	ENGL 2213	World Literature I	or	ENGL 2223 World Literature II
ENGL 3253	Technical Writing	3	ENGL 1033	Technical Report Writing		
GEOG 2213	General Geography I or II	3	GEOG 1003	Elements of Physical Geography		
MATH 1073	Compact Calculus (or Calculus I)	3	MAT 2123	Survey of Calculus		
SIS 2114	Plane Surveying	4				
Sophomore Year, Spring Semester						
ESCI 1073	Earth and Atmosphere (or Elements of Geology)	3	GEOL 1014	General Geology		
ESCI 1081	Earth & Atmosphere Lab (or Elements of Geology Lab)	1		(General Geology Lab included)		
FOR 3353	Biometrics in Natural Resources	3				

PHIL 3523	Logic (or Ethics or US Congress or Public Admin)	3				HIST 2003/2013	US History I
PSCI 2213	American National Government	3	PLSC 2003	American National Government	or		or II
SIS 3814	Introduction to GIS, GPS, and Remote Sensing	4	CIS 1123	Introduction to GIS and GPS	and	CIS 1133	Intermediate GIS
Junior Year, Fall Semester							
FOR 2231	Dendrology Laboratory I	1					
PHYS 1003	Elements of Physics (or General Physics) Elements of Physics Lab (or Gen & Univ. Physics Lab	3	PHYS 2014	College Physics			
PHYS 1021	I)	1		(College Physics Lab included)			
SIS 2014	Boundary Surveying	4					
SIS 3923	Remote Sensing	3					
	Free Electives	3					
Junior Year, Spring Semester							
FOR 2291	Dendrology Laboratory II	1					
SIS 3153	Survey Plats and Deeds	3					
SIS 3264	Route and Construction Surveying	4					
SIS 3843	Advanced GIS I	3					
COMM							
xxx3	Any General Education Speech Class	3	SPCH 1313	Fundamentals of Oral Communication			
Senior Year, Fall Semester							
MGMT							
3473	Principles of Management & Organizational Behavior	3					
SIS 4183	Law & Professionalism in Geomatics	3					
SIS 4193	Advanced GPS	3					
SIS 4454	Advanced Surveying	4					
	Free Electives	3					
Senior Year, Spring Semester							
SIS 4886	SIS Practicum	6					
	Free Electives	7					
Total Hours		122					