

# **Annual Assessment Report**

**2009-2010**

**School of Mathematical and Natural Sciences**

**July 27, 2010**

The assessment report is available through the School homepage at [http://www.uamont.edu/Math\\_and\\_Sciences/annualreports.htm](http://www.uamont.edu/Math_and_Sciences/annualreports.htm).

## **I. Learning Outcomes**

A student who graduates from UAM with a major administered by the School of Mathematical and Natural Sciences should:

1. Be able to clearly express mathematical and/or scientific ideas in oral and written communication;
2. Be able to demonstrate the ability to apply scientific and/or mathematical concepts to real world situations;
3. Have a core knowledge of the major discipline;
4. Be prepared for immediate employment in a scientific, technical, medical, or educational environment;
5. Be prepared to enter graduate or professional school in the appropriate area.

## II. Linkage of Learning Outcomes to the Mission of UAM

UAM MISSION STATEMENT	Unit Learning Outcomes
<p>The mission the University of Arkansas at Monticello shares with all universities is the commitment to search for truth, understanding through scholastic endeavor.</p>	
<p>The University seeks to enhance and share knowledge, to preserve and promote the intellectual content of society, and to educate people for critical thought.</p>	2, 3
<p>The University provides learning experiences that enable students to synthesize knowledge, communicate effectively, use knowledge and technology with intelligence and responsibility, and act creatively within their own and other cultures.</p>	1, 2
<p>The University strives for excellence in all its endeavors. Educational opportunities encompass the liberal arts, basic and applied sciences, selected professions, and vocational/technical preparation. These opportunities are founded in a strong program of general education and are fulfilled through contemporary disciplinary curricula, certification programs, and vocational/technical education or workforce training. The University assures opportunities in higher education for both traditional and non-traditional students and strives to provide an environment that fosters individual achievement and personal development.</p>	4, 5

### **III. Communication of Learning Outcomes to Prospective and Current Students**

The assessment report is available through the School homepage at [http://www.uamont.edu/Math\\_and\\_Sciences/annualreports.htm](http://www.uamont.edu/Math_and_Sciences/annualreports.htm).

One section of all School course syllabi is course objectives. These include the learning objectives as they relate to the specific course. Copies of three typical courses syllabi are included in Appendix I

The mission of the School as it appears in the Catalog is:

The mission of the School of Mathematical and Natural Sciences is to offer specialization in biology, chemistry, mathematics, and natural science and to provide opportunities for all students to enhance their understanding of science and mathematics. Curricula offered in the School prepare graduates for careers in industry and teaching, for graduate studies, and for admission to professional programs including allied health, dentistry, medicine, optometry, and pharmacy. This mission is fulfilled through the following goals:

1. To provide academic programs which promote the development of professional scientists and mathematicians and provide opportunities for all students to enhance their understanding of the natural sciences and mathematics.
2. To prepare individuals for successful careers in industry and teaching, and for graduate studies in science and mathematics.
3. To provide curricula for pre-professional studies in dentistry, medicine, optometry, pharmacy, and allied health (physical therapy, radiological technology, respiratory therapy, medical technology, occupational therapy, and dental hygiene).
4. To provide technical and analytical courses to support studies in agriculture, forestry, nursing, physical education, pre-veterinary medicine, psychology, and wildlife management.
5. To serve the General Education program through courses in astronomy, biology, chemistry, earth science, mathematics, physics, and physical science that provide a basic background for a baccalaureate degree.

### **IV. Evidence of How Students Have Achieved Learning Outcomes Goals.**

Provide specific evidence of how your unit assesses whether students have achieved your unit's student learning outcomes. (Examples: pre/post tests, post tests, capstone courses, surveys, graduate rates, etc.) Address historical patterns or trends.

Biology, chemistry, and mathematics all have capstone courses. The courses all have a writing

component as well as seminar. The students must gather information, produce an original review of literature and discussion. An oral presentation is then based on this paper. Some students use their work in undergraduate research as the basis for their paper and seminar. Some also present their work at state, regional, and even national meetings. In the past year, nine students presented their work at state, local, or national meetings. This is a three-fold increase over last year. The following table indicates where the talks were given:

<u>Student Identifier</u>	<u>Major</u>	<u>Where Presented</u>
A	Chemistry	Arkansas Academy of Sciences
B	Biochem/Biology	Alpha Chi National Meeting
C	Biochem/Biology	Alpha Chi National Meeting
D	Biochem/Biology	Alpha Chi National Meeting
E	Biology	NASA-Arkansas Space Grant Annual Symposium
F	Mathematics	ARK-LSAMP Spring Symposium
G	Mathematics/CIS	ARK-LSAMP Spring Symposium
H	Biology	ARK-LSAMP Spring Symposium
I	Biology	ARK-LSAMP Spring Symposium

Graduates planning to attend professional or graduate school must take a national test, MCAT, OAT PCAT, or GRE. This provides information on the subject knowledge of the student compared to that of graduates of other schools. It is requested that students provide a copy of test scores in order to receive committee recommendations. Students that do not apply to these programs are not likely to take one of the exams listed above. Two pre-pharmacy students had scores reported back to UAM. Both scored above 50<sup>th</sup> percentile nationally in Chemistry, Biology, Verbal Reasoning, and Quantitative. Both were accepted to UAMS, and also other schools. Several others took the PCAT exam, but since their scores were not reported back to UAM, no subscores are known. Composite scores of 80, 77, 64, 53, 45, and 43 were provided verbally. The two students with 45 and 43 were not accepted based on these scores; however, the student with the 45 retook the exam in January and scored high enough to be accepted into UAMS. All of the others were accepted into at least one program; however, one student elected to defer acceptance at University of Mississippi and re-apply for the 2011 class at UAMS. As a whole, UAM students have a trend of doing very well in the Chemistry portion of the exam. These trends are likely due to the fact that the General Chemistry courses across the nation are all very similar in what is taught, and the test follows that material very closely. It does in fact indicate that our General Chemistry courses are doing a good job preparing students for this exam. For the students accepted to the 2010 classes at the various pharmacy schools, Biology seems to be much stronger than in the past, with 5 students self reported scoring highest in Biology. The addition of the Principles of Biology sequence has caused an improvement in the scores in this area over the past few years. Before the Principles sequence was implemented, scores typically ran 40-60 percentile in biology, but since the implementation of the Principles sequence, scores have been in the 50-94 percentile range. This year, one student scored above 94<sup>th</sup> percentile in Biology, with the other scoring 60<sup>th</sup> percentile nationally. The Verbal portion of the exam continues to vary greatly, depending on whether the student is a life-long reader. One student scored exceptionally high on that portion of the exam (89<sup>th</sup> percentile).

Three students took the Medical College Admissions Test (MCAT); however, scores have not been received at this time. All three students have taken the MCAT prep course offered through UAMS during the month of June. One student had taken the exam last year, so we will be able to see the effect

of the prep course on the exam performance. Only one student reported scores from the GRE exam over the past year, and that student was actually a 2008 graduate. A 29<sup>th</sup> percentile in verbal and 48<sup>th</sup> percentile in quantitative was scored on that exam. Without prior exams to compare with, it is impossible to say how test performance was affected due to waiting two years after graduation.

Some consideration is being given to requiring ALL graduates to take the GRE, or other nationally compared examination. See Appendix II for scoring reports with names removed..

Several disciplines use a common final examination to evaluate the overall success of a course. Chemistry uses American Chemical Society developed tests in General Chemistry and Organic Chemistry. Last year, the scores on the ACS Organic Chemistry final exam are exceptional. UAM students have an average score well above the national average, with a class average of 59<sup>th</sup> percentile, nationally. This year, the scores were somewhat lower, scoring only 51<sup>st</sup> percentile as a class average. Since 1993, the organic chemistry class has scored equivalent or above national average 13 of the 17 years. On the ACS General Chemistry final exam, the students have not done as well. For the third consecutive year, the UAM students taking the final have fallen below the national average. This year, the students averaged 42<sup>nd</sup> percentile, down from 45<sup>th</sup> and 49<sup>th</sup> percentile for the two previous years. The faculty have discussed the falling scores but see no apparent reason for the decline. The text is essentially identical to that used in the past. The exam format has not changed in many years. Topics covered are similar.

Mathematics uses a locally developed common examinations for all sections of Introduction to Algebra, Intermediate Algebra, College Algebra, Survey of Mathematics, and Trigonometry. Item analysis of the final exams in the Mathematics courses are reviewed at the end of each semester, and recommendations are made for future semesters. With ACT 971 requiring a nationally normalized test to be given at the end of Intermediate Algebra, we have made plans to use the ASSET test as an end of course assessment. In the spring and summer terms this year, we gave the ASSET test in order to gather some preliminary data. In order to meet the standard to qualify for College Algebra, a raw score of 11 questions correct is needed on the ASSET. Sixty-seven students took the ASSET exam during the spring and summer I terms. Forty-two (63%) of the students passed with a score of 11 or higher. Thirteen students that failed the ASSET exam did pass the course; however, 15 students that passed the ASSET exam did not pass the course. Twenty-seven students passed both the ASSET and the course, with a C or better. In the preliminary tests, no re-tests were given. Also, the test counted only a small portion of the homework/quiz grade in the courses, so very little or no outside effort was put into preparing for the test by most students. In the fall when ADHE requires us to collect data, the ASSET exam will be a significant portion of the overall grade, and one re-test will be allowed.

## **V. Measures of Student Performance**

Provide evidence of the measures of student performance that your unit collects and analyzes regularly (Examples: retention rates/pass rate for classes, teacher made tests, research papers, recitals, field experiences, etc.). Give specific examples of how analyses of student performance have been used to improve unit decisions.

Each of the multi-section mathematics courses has a course committee. The committee consists of the instructors for the course, with one designated as the course coordinator. The committee is in charge of the course. This consists of developing/revising the syllabus, reviewing and revising procedures for the course, exploring alternate delivery systems, developing the tests and final examination, and reviewing results to begin the process again for the next semester. Students in all sections of Introduction to Algebra, Intermediate Algebra, Survey of Mathematics, College Algebra, and Trigonometry all take the same final examination for each course. This does not provide data for comparison to other schools but does provide an internal measure which assists the faculty in modifying the courses to improve student performance. The course committee analyzes the results and then strives to make changes which will improve student performance in the course. Normally these changes are at the “micro” level i.e. they involve small changes of emphasis within the specific course but the changes may impact the entire sequence of courses. This is an on-going process but the most major changes occur during the planning period prior to the start of fall classes. This offers an opportunity for the faculty to reflect upon the interrelationships of these courses. At this point it is not unusual for topics to be shifted from one course to another.

With the preliminary data from the ASSET exam under review, changes are being made in the Intermediate Algebra course. The ACT Corporation, which writes the ASSET exam, publishes a list of topics appropriate for Intro, Intermediate, and College Algebra courses. Since we have gone to an in-house written text for Intermediate Algebra, it has been very easy to change the amount of time spent on each topic. We are covering essentially the same material, but we are certainly changing the amount of time spent on certain topics. Realistically, we were probably too heavy on the functions and factoring portion of the course. Plans are to reduce the time spent on those topics and cover other topics more in depth.

During the 2009-10 academic year the pass rates of remedial math students declined from the already low numbers in the previous year. In the spring 2010 Intro Algebra courses, 65 of 342 ( 19%) students were successful with a C or better. The fast-track sections had 12 of 61 (19.7%) success, so essentially no improvement in success was seen in the fast track courses for Intro Algebra. The on-campus sections had 25 of 184 (13.6%) students successful. The Colleges of Technology at Crossett and McGehee had 28 of 97 (28.9%) successful students in the course. The different success rates may be explained by several factors, such as smaller class sizes, and the fact that adjuncts often put less rigor into the course compared to a full-time faculty member.

Intermediate Algebra success rates were very similar to those in Intro Algebra. In the spring 2010 Intermediate Algebra courses, 60 of 319 (18.8%) of the students were successful with a C or better. The on-campus normal term courses had 36 of 209 (17.2%) of the students pass, while the fast-track courses had 12 of 44(27.3%) passing. The off-campus courses had 16 of 66 (24.2%) passing.

While it appears that the fast track courses performed better than the traditional term on-campus courses in Intermediate Algebra, it is very likely the split term courses will be dropped due to the strain on staffing and the resulting increase in course sizes. Both Intro and Intermediate Algebra are moving to in-house written workbook style texts, supplemented with an on-line homework and tutorial system called ALEKS. The system has been used some for the on-campus courses, and some students have commented that they love it, while others are less receptive of the change.

Students completing both General Chemistry and Organic Chemistry are given nationally normed American Chemical Society (ACS) Examinations as final examinations. Scores on these exams indicate that our students are continuing to perform near the national average in General Chemistry, and well above that in Organic Chemistry. The item analysis from the final exams are reviewed periodically to identify trends on the most commonly missed questions. The individual faculty member uses this information to improve coverage in certain areas. In recent years, the laboratory exercises have been changed slightly to provide additional coverage for areas that were identified as a problem area on the ACS Final Exam. The Spring 2006 Organic Chem II ACS final examination item analysis was reviewed. Many of the questions missed were at the end of the text in sections that were not covered adequately due to lack of time. During the 2008-2009 academic year, the Organic Chemistry I and II courses had their lab content significantly changed in order to include even more of the topics that was normally covered on the ACS Organic Chemistry final exam. A large emphasis was placed on changing the labs to more environmentally friendly exercises.

Biology, chemistry, and mathematics all have a capstone course requirement. Respectively these courses are BIOL 4741, Biology Seminar; CHEM 4611, Chemistry Seminar, or CHEM 4691, Senior Research, or CHEM 4742, Advanced Laboratory Techniques; and MATH 4711, Mathematics Seminar. Students research a topic, synthesizing information from both the library and their own class and laboratory experiences. They then present their findings orally to their peers and the faculty. Students also submit a written paper. The Biology Seminar requirements are constantly being tweaked to improve the course. With much of the information coming from the internet, changes have been made in how the material is properly referenced and judged for validity. In 2008, Chemistry added Advanced Laboratory Techniques, a course specifically designed to expose the graduates to specific topics that will be seen in industry and in graduate school. This course also has a seminar component. This course was added because many of the students were not being exposed to specialized techniques on equipment not found at UAM. Also, many of the students were by-passing the seminar by doing senior research and then presenting a poster at a regional meeting. The performance on the research paper and seminar portions of the course has improved dramatically over the past two offerings.

Upper-level science courses frequently require extensive laboratory reports which demand that the students generate and organize data. They must then synthesize their results to form a reasonable conclusion and present these results in writing and/or verbally. This provides an excellent opportunity for the faculty to observe the students development and, if needed, suggest steps which will address any deficiencies.

Many students from the School of Mathematics and Natural Sciences make presentations at state, regional, or national meetings. Although this is common to the sciences, mathematics students have become more involved over the past few years, especially those planning to enter the teaching profession. This year, efforts were made to get students more involved with undergraduate research and also to get those that participate in research activities to present at a meeting. This year, nine students presented research findings at state, local, regional, or national meetings.

Several biology courses are very oriented to field experiences, two examples are BIOL 3434, Regional Flora, and BIOL 3524, Ornithology. In addition to learning field procedures and techniques, these trips

make the same demands of the student with the additional burden of functioning in a natural environment which displays a level of variability not found in a textbook. This spring, the Ornithology class took a field trip to southern Louisiana to visit a wildlife area and to see birds not normally found in this region. The ornithology field trip provides students with hands on research experience. On this trip students have the opportunity to observe a working field study site in action. Here they are able to observe how ornithologists study and collect data on birds during the annual spring migration. The capture and release techniques used on these study sites also provide a unique opportunity for students to see birds in the hand rather than flying or in a tree. The research aspects along with an outstanding opportunity to identify numerous species that students would normally not see make this trip a highlight of the semester. For the third straight year, the number and length of field trips was increased. One summer course even involved an extended stay in Yellowstone National Park and the Great Salt Lake area to study the plants, animals and geological features of that region. Other field trips include trips to the Mississippi Gulf Coast region, the Florida Keys, the Ouachita Research Station, the Seven Devils Swamp area, the Five Oaks Game Area, and the Warren Prairie.

## **VI. Utilization of Information**

Provide specific evidence of how your unit utilizes information, other than student performance, to determine necessary unit decisions. Describe how your unit analyzes and selects a course of action. Attach documentation that supports your determination. (Examples: senior surveys, alumni surveys, professional meetings, minutes from faculty or committee meetings, etc.)

The School attempts to gather the comments of students, graduates, alumni, employers, professional & graduate schools, and the general public. This is done through a variety of means which include interviews, surveys, comments, and conversations. In addition, the School attempts to be introspective and consider ways in which a student's total experience may be improved. A few specific examples of actions which were the result of these reviews are:

Several years ago, an option was added to the Biology major called Organismal Biology option which is designed to better prepare the students interested in field biology. Upon reviewing the curriculum, it was discovered that one area in which students were not being trained was the laboratory skills involved with water testing. The Introduction to Organic and Biochemistry laboratory, which is required for those majors was selected as a course in which that material can be introduced. In the fall 2010 course, that material will be included.

Last year, attempts were made to add a course in medical terminology to aid the nursing and allied health students on our campus. An error in Curriculum and Standards prevented the approved proposal from going the proper procedure of getting signatures. The course was re-approved in spring 2010, and will likely be taught in spring 2011 for the first time. This course should be very helpful for those hoping to enter a health related field.

Student course/faculty evaluations are administered every semester. Following the submission of grades, the results of these evaluations are given to the faculty. To insure student anonymity, all written comments are typed and these are reviewed by the dean and then sent to the faculty. These comments are frequently the most revealing and useful to the instructor. Inherently these comments do not lend themselves to an

analytical summary. In addition to the written comments, students complete a 34 question multiple-choice form. Faculty receive a statistical summary of their students' responses. For some questions this is quite adequate but for others the lack of comparable data from other courses limits the instructor's ability to interpret this information. A specific example is question 34, "Overall rating of this course: (1) Excellent, (2) Very Good, (3) Good, (4) Fair, or (5) Poor."

The past two years, a comparison was done between question 24, which is overall rating of the instructor to question 34, which is the overall rating of the course. In almost every class, the students perception of the overall rating of the instructor was better than the overall rating for the course.

As in the past, student responses from each course were imported into a spreadsheet so that comparisons could be made between courses and also between faculty. It is very apparent that students are likely to give an instructor an identical rating on each question, regardless of the question. Based on these results, simplification of the evaluation process needs to occur.

## **VII. Future courses of action**

Based on your answers to Questions V and VI regarding student learning outcomes, prioritize your unit's future course of action. Include plans for what will be done, by whom, to what extent, and how often.

Intro and Intermediate Algebra texts will be written in-house by math faculty and use a supplemental on-line homework and drill package (ALEKS) for homework, practice and self evaluation. The student will be provided instant feedback of their performance on practice problems and can point out areas that need additional attention.

As an added incentive to entering freshmen, free texts, free tuition, and possibly even free rooms are being provided in the summer to those students requiring remediation in math and English, provided they pass the course in the summer prior to their first full-time term. This is an attempt to improve success rates in the remedial courses and get the beginning college students on a successful path.

The ASSET test will be given to all students completing the Intermediate Algebra course in order to assess readiness for College Algebra. Even though this change came legislatively after recommendation from Arkansas Department of Higher Education, we plan on using this information to improve our remedial instruction in mathematics and improve our success rates in that area.

The Chemistry faculty are planning on changing the amount of material covered between Chem I and Chem II. There appears to be a huge jump in difficulty in progressing from Chem I to Chem II. In order to lessen the problem, we are considering moving a chapter from Chem II to Chem I. This will likely increase the pace of the Chem I material, but will also decrease the pace in Chem II, and allow more time to be spent on the more difficult topics. Hopefully this will alleviate "the shock" of moving from Chem I to Chem II, and ultimately improve ACS Final Exam scores.

The Biology faculty continue to work on fine tuning the Principles of Biology course. While several questions exist on the course make-up, the course appears to be serving its purpose. The faculty are continuing to examine student success rates. A specific concern is the current prerequisite of a minimum

composite ACT score of 20. This may need to be increased. Even though preliminary studies indicate that the typical successful student has at least a composite 22 on the ACT, further studies are needed before making this change. The Biology faculty are also looking for unique ways of providing laboratory experiences for this course in order to alleviate the problem of overcrowding due to high enrollment.

As in any catalog year, the faculty in Math and Sciences will review all curricula and make changes that will better prepare our students for employment, continued education, or even future courses.

We are moving the mathematics tutoring center back to the Science Center. Many students complained about the inconvenience of going to Harris Hall for tutoring, when in many cases, there was not a qualified tutor for math in place. Statistics from the past few years show very little low use of math tutors as compared to when the tutors were previously housed in the Science Center.

**VIII. Specifically describe how your unit is making student learning accessible, including, if applicable, alternative modes of instruction (CIV, WebCT, weekend, Early College High School, etc). Address historical patterns and trends.**

The School of Math and Sciences continues to offer CIV offerings as needed to the Colleges of Technology campuses in Crossett and McGehee; however, the need for those courses are declining as those campuses are now able to support full time faculty members in those areas. Additional CIV courses are now being supplied to SouthArk Community College and SEACBEC.

We currently offer one science course on-line. This is an Earth Science course, ESCI 1123/1131, Meteorology. The course includes a laboratory and is designed for the General Education student. This course has been very popular over the past two years, even to the point of having to add another section of the lecture and lab. Other hybrid lectures are being considered, such as Introduction to Chemistry, but at this time, we see no efficient way that laboratory skills can be taught other than face-to-face.

A group of Math faculty members are planning to create an on-line or hybrid course in College Algebra, and if successful, even Intro and Intermediate Algebra. It will be approximately one year before this course is available. Other faculty are mildly considering other offerings, but firm plans aren't in place at this time.

The Early College High School continues to have high enrollments and high success rates with over 98% of the 116 students enrolled passing the course with a D or higher. Those faculty have been more receptive to working with University faculty during the past year, making the courses more equivalent to those offered on our campus. The AECHS faculty will be even more involved during the upcoming year as more meetings are planned to discuss course content, exams, and grading standards.

A chemistry faculty member is considering the use of video to store instructional tidbits that normally make up a lecture for students to watch on their own time, either from a website or other medium. This would allow the course to be more hybrid in nature. Class time would be used more for problem solving activities, supplemental instruction, testing, quizzes, etc...

**IX. Specifically describe how your unit involves students directly in the assessment process.**

In addition to the summary of student responses on the student evaluation form, all student comments from

the student evaluations are typed, reviewed by the School Dean, and discussed with the faculty.

The School surveys all graduating Math/Sci. students on their experiences at UAM. This is an open-ended survey essentially asking students to list what they liked and disliked about UAM. The results are fairly predictable. Many students have general complaints such as inadequate parking, lack of extracurricular activities, local laws on alcohol consumption, etc. The comments of direct interest to the School are praise or criticism of specific instructors, the attention given them by particular faculty, and willingness of faculty to help them. The most frequent criticism is the infrequency with which we offer some upper-level courses, particularly in mathematics and chemistry courses. The quality of our classroom and lab facilities are a quickly growing complaint as well.

The School also periodically surveys graduates in a manner similar to the exit interviews of graduating students. The results are quite similar. The graduates are less harsh in the occasional criticisms of particular faculty and are even more enthusiastic in their praise of the general and specific efforts of the faculty. This is especially true of the students who have entered graduate and professional programs. They were happy with the small class sizes but again are critical of the scheduling of upper level courses.

Students are active in several School organizations, such as Sigma Zeta, the Pre-Med Club, and the Biology Club. Even though there is mainly social contact between the faculty and the students in these organizations, this does allow the students to have informal discussions with faculty members on a variety of topics, including program issues. The students in the Pre-Med Club and Biology Club specifically make decisions on which schools are visited and to what locations the summer field courses are taken, respectively.

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

The faculty of the School of Math and Sciences have put more emphasis on advising students into courses based on skill level, as opposed to what are required for their degree. We are also doing more advising based on non-academic issues, such as family, work schedules, etc... We feel this helps retention because it eliminates the early failures which discourage students and cause them to drop out. There are numerous examples, but here are two specific examples:

Students that are working many hours per week are being advised to take a slightly lighter load, and to delay their graduation date by a year or so. Many students that are working many hours and taking large class loads become overwhelmed and allow their effort in courses to decrease. Hopefully, this approach will lead to better student performance, and increased retention.

We are now advising students with a 19 Math ACT and lack confidence in their math abilities to take Intermediate Algebra. Typically, students with a 19 Math ACT have a very low pass rate in College Algebra. Even ACT recommends a 21 Math score for College Algebra.

Letters have been sent and calls have been made to several students that have completed a significant portion of their degree and then dropped out. Options are reviewed to see if prior biology and chemistry majors are closer to a Natural Science or the Bachelor of General Studies degree. Currently there are four former drop outs making plans to complete their degree. Others are strongly considering the possibility. See Appendix III for a copy of a letter sent to a student.

The faculty of the School of Mathematics and Natural Sciences are encouraging our majors to be connected to the University outside the classroom:

The Biology Club, the Pre-Med Club, and the Math and Physics Club are involved with several activities, including tailgating prior to every home football game. Several students are also involved with Alpha Chi and Sigma Zeta honor societies. Many are involved with MBSF, the Wesley Foundation, Baptist Collegiate Ministries and other religious organizations.

The School and its faculty are making efforts to help the students financially:

By supplying positions and encouraging our students to obtain work-study jobs on campus in order to have a stronger tie to the University.

By writing grants to provide opportunities for our students to be involved in research.

By considering more freshmen and sophomore students for departmental scholarships and also taking need into consideration rather than just past academic performance.

Several faculty are now using their first day of freshmen level classes as “orientation day”:

By giving tips on taking notes, studying for exams, test taking tips,

By assigning some sort of a group activity to allow students to network

By stressing the faculty members expectations.

We are trying to modernize the way we teach by using different instructional strategies and by using appropriate technology. Even traditional course content is enhanced by using up-to-date pictures, video clips, and sound clips.

All classrooms are set up as smart rooms with computers, digital projectors with sound capabilities, and document cameras. Carts with similar equipment are available for use in labs.

**Appendices for the  
Annual Assessment Report  
2009-2010  
School of Mathematical and Natural Sciences**

Appendix I      Representative Syllabi  
                         ESCI 1073  
                         CHEM 1113  
                         MATH 3553

Appendix II     Nationally Scored Exam Results  
                         PCAT Scores  
                         GRE Scores  
                         MCAT Scores<sup>\*</sup>  
                         DAT Scores<sup>\*</sup>

<sup>\*</sup> Scores not received at this time. Scores will be included and report updated

Appendix III    Reconnect Letter to Student

# Appendix I

## Representative Syllabi

ESCI 1073

CHEM 1113

MATH 3553

# SYLLABUS

## School of Mathematical and Natural Sciences

I. COURSE: ESCI 1073 - Earth and Atmosphere

*NOTE: This course fulfills specific general education requirements. For more information, see the catalog.*

II. TEXT: Foundations of Earth Science, 5th edition - Lutgens & Tarbuck

Textbook website: <http://www.prenhall.com/lutgens/>

III. INSTRUCTOR: Dr. Jim Edson

Office: Room 109 - Museum – Phone: 460-1966 - email: [edson@uamont.edu](mailto:edson@uamont.edu)

Hours: MWF 8:00 - 11:00, TH 8:00 - 9:00, or by appointment

Website: <http://www.uamont.edu/FacultyWeb/Edson/>

IV. COURSE FORMAT: Lecture: Sec. 01 – 09:40-11:00 TH

Sec. 02 – 11:10-12:30 TH

V. COURSE GOALS: The overall goal of this course is to introduce the vast subject of earth science in a manner, and with a philosophy, that will show that earth science is an integrated discipline involving processes and response to those processes known as products. The course will also bring to the student an understanding of how geological processes relate to decisions that must be made in our daily lives regarding our interaction with the Earth.

VI. OBJECTIVES: By the time the student completes this course he/she should be able to:

1. understand the methodologies of science.
2. describe how earth science relates to the other natural sciences.
3. develop an appreciation for the role that water, wind and ice have in the development of landscapes.
4. have an understanding of the extent and boundaries of the world's oceans.
5. describe the major features of the continental margin, ocean basin floor, and mid-ocean ridges.
6. list the factors that influence ocean currents.
7. explain the difference between weather and climate.
8. discuss the formation and forms of precipitation.
9. describe the idealized global patterns of pressure, wind and atmospheric circulation.

VII. TOPICS TO BE COVERED:

1. **Introduction and Landscape Development**

- A. The nature of science
- B. Environment and resources
- C. The scientific process
- D. Mass wasting

- E. Hydrologic cycle
- F. Surface water and stream flow
- G. Ground water and artesian systems
- H. Glaciers and deserts.

2. **The Global Ocean**

- A. Structure of the ocean basin

- B. Waters of the oceans and shoreline development.

3. **Nature of the Atmosphere**

- A. Weather vs. Climate
- B. Temperature

- C. Seasons
- D. Clouds and precipitation

4. **Motion of the Atmosphere**

- A. Pressure centers
- B. Middle latitude winds

- C. Local winds and air masses
- D. Fronts and severe weather

## VIII. TESTING AND GRADING PRACTICES:

1. There will be (4) 200 point, non-comprehensive tests given during the semester. All of the tests will consist of 50 multiple choice questions worth a total of 200 points. If you miss a test, there will be one comprehensive makeup at the end of the semester. You will need a Scantron and a pencil for each test.
2. You will also have the option to take the comprehensive makeup to replace one of the grades on the 4 regularly scheduled tests.
3. There will be 20 daily assignments worth four (4) points each (80 points total). No make-ups.
4. Eight online quizzes from the textbook website worth 10 points each will be assigned during the semester for a total of 80 points.
5. 40 additional points will come from various outside assignments that will be announced in class.
6. Grades will be determined based on the following scale:
  - 1000 - 895 = A ( 100 - 89.5%)
  - 894 - 795 = B ( 89.4 - 79.5%)
  - 794 - 695 = C ( 79.4 - 69.5%)
  - 694 - 595 = D ( 69.4 - 59.5%)
  - 594 - 0 = F ( 59.4 - 0%)
7. You will be assigned a code number for the purpose of posting grades. You have the right not to have your grades posted. Please tell me if you wish not to have your grades posted.

IX. CLASSROOM POLICIES: Attendance is expected. Students missing lecture notes or assignments because of absences (excused or unexcused) are still responsible for the material. All students are required to have an email account, and to subscribe to the EARTH@ UAMONT.EDU listserv. The following action is prohibited under the UAM 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.

## X. ACADEMIC DISHONESTY:

1. Cheating: Students shall not give, receive, offer, or solicit information on examinations, quizzes, etc. This includes but is not limited to the following classes of dishonesty:
  - a. Copying from another student's paper.
  - b. Use during the examination of prepared materials, notes, or texts other than those specifically permitted by the instructor.
  - c. Collaboration with another student during the examination.
2. Collusion: Collusion is defined as obtaining from another party, with out specific approval in advance by the instructor, assistance in the production of work offered for credit, to the extent that the work reflects the ideas of the party consulted rather than those of the person whose name in on the work submitted.
3. Plagiarism: To adopt and reproduce as one's own, to appropriate to one's use, and to incorporate in one's own work without acknowledgement the ideas or passages from the writings or works of others.

For any instance of academic dishonesty that is discovered by the instructor, whether the dishonesty is found to be cheating, collusion, duplicity, or plagiarism, the result for the student or students involved will be that the instructor will assign a grade or F for the examination or assignment involved. (See page 63 of the UAM catalog 2005-06 for further academic code violations)

XI. POLICY ON 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; or FAX 870-460-1926.

Note: This course is the second part of a two-semester course covering the basic principles and concepts of chemistry

Text: General Chemistry: The Essential Concepts (5th Ed) by Raymond Chang

Prerequisites: Passing grade in Chem 1103 (General Chem I)

**INSTRUCTOR:** Andrew Williams, C-9, 460-1465, williamsa@uamont.edu

Office Hours: by appointment

### COURSE:

Format: Lecture and problem solving sessions

- Goals:
- to provide the student with a general overview of the fundamental concepts of science.
  - provide each student with details of laws and theories applicable to chemistry.
  - to provide practical laboratory experiences to reinforce the natural laws and theories of chemistry.
  - provide each student with general properties of elements and compounds including uses, hazards, and proper handling techniques.
  - to enhance the scientific approach to reasoning and problem solving.

Course Content: Material covered will come from the following topics:

<u>Chap #</u>	<u>Topic</u>	<u>Chap #</u>	<u>Topic</u>
10	Molecular Geometry and Hybridization	17	Acid/Base and Solubility Equilibria
12	Intermolecular Forces & Liquids and Solids	18	Thermodynamics
13	Physical Properties of Solutions	19	Redox and Electrochemistry
14	Chemical Kinetics	21	Nuclear Chemistry *
15	Chemical Equilibrium	11	Organic Chemistry *
16	Acids and Bases		* as time permits

**GRADING:** Four tests of equal value (100 points ea) will be given this semester. The fifth and final exam is the American Chemical Society Standardized Final Exam and is comprehensive, including Chem I material. If the final exam score is higher than the lowest regular exam score, the regular exam score will be replaced with the percentage scored on the final. This applies to a missed exam; however, only a single exam score will be replaced. Quizzes will be given and combined for a score worth a possible 100 points. The 10 highest quiz scores will be used. Homework will also be collected, and will be worth a possible score of 50 points. Work turned in late is not accepted.

### Grading Scale

90 - 100 A  
 80 - 89 B  
 70 - 79 C  
 60 - 69 D  
 < 59 F

### POINT VALUES AND GRADING SCALE

Test 1.....100 pts  
 Test 2.....100 pts  
 Test 3.....100 pts  
 Test 4.....100 pts  
 Quizzes.....100 pts  
 HW.....50 pts  
 Final Exam, 100 pts  
 650 pts possible

low score from tests 1-4 will be dropped and replaced by final exam % if final is higher

**ATTENDANCE:** Regular attendance is expected. You are responsible for any missed class notes or homework assignments before the next class period.

**READING AND REFERENCE MATERIAL:** Textbook reading of material covered in class is expected. Additional copied material will be distributed in class. Materials for further reading are available in the library or from my office. Student Solutions Manual, and Student Study Guide are available in the bookstore; however, purchase of the supplements are optional.

**ACADEMIC HONESTY:** Cheating, helping others cheat, disruptive behavior, or other improper conduct will not be tolerated, and could lead to dismissal from the course with a failing grade. The minimum penalty for cheating will be a zero score on the assignment or exam, which cannot be dropped as the low score for the semester. The second cheating offense results in removal from the course.

**IMPORTANT DATES:**

July 5<sup>th</sup> (Tuesday): First day of classes.

July 6<sup>th</sup> (Wednesday): Last day to register or add summer classes.

July 25<sup>th</sup> (Friday): Last day to drop with W.

Aug 4<sup>th</sup> (Tuesday): Registration for Summer II.

Aug 5<sup>th</sup> (Wednesday): Last day of classes, Final exams.

**FINAL EXAM**

The General Chemistry II final exam is the American Chemical Society Standardized Final Exam and will include material from General Chem I and General Chem II. A curve is applied to the final exam, typically the final exam percentage equals 2 pts per each correct answer on the exam. The final exam will be given on the last day of class.

**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 120, phone 870-460-1026; TDD 870-460-1626; fax 870-460-1926.

**OTHER IMPORTANT RULES :**

Please turn off all cell phones, pagers, and headphones when in class.

If you feel that someone may need to contact you in case of emergency, they may call 870-460-1016. You will be retrieved from class immediately

Graphing calculators are permitted; however, they will be cleared before each exam.

Small children may not be brought to class

Talking and other disruptive behavior is not permitted and may be grounds for removal from class.

Please help keep the classroom clean by properly disposing of waste.

**School of Mathematical and Natural Sciences**  
**Course Syllabus: Summer I, 2010**  
**MAED 3553: Number Systems**

**Instructor:** Lowell F. Lynde, Jr.  
**Phone:** 460-1816 (Office)  
367-7039 (Home)

**Office:** Science Center Room B-15  
**E-mail:** [lynde@uamont.edu](mailto:lynde@uamont.edu)

**Office Hours:** M-TH: 10:30-12:00

**Prerequisites:** Math 1043: College Algebra and Math 1003: Survey of Mathematics with a minimum grade of C.

**Note:** This course may not be used to satisfy General Education requirements or for credit toward a Mathematics major or minor.

**Text and Materials:**

*Teaching Fractions and Ratios for Understanding*, 2<sup>nd</sup> ed., Lamon, Susan J.  
*Prime Time*, Lappan, Glenda et al  
*Children's Mathematics, Cognitively Guided Instruction*, Carpenter, Thomas P., et al  
A graphing calculator such as a TI-73, TI-83, TI-84.

**Objectives:**

- 1) The students will identify the components of the real number system.
- 2) The students will demonstrate a mastery of the basic arithmetical operations with the various subsets of the real number system.
- 3) The students will demonstrate a conceptual understanding of proportional reasoning.
- 4) The students will be able to identify, characterize, and use cognitively guided instruction.

**Course Content:**

- 1) Fractions and proportional reasoning
- 2) Fractions and rational numbers
- 3) Relative and absolute thinking
- 4) Measurement
- 5) Quantities and covariation
- 6) Reasoning up and down
- 7) Unitizing
- 8) Sharing and comparing
- 9) Proportional reasoning
- 10) Reasoning with fractions
- 11) Part-whole comparisons with unitizing
- 12) Partitioning and quotients
- 13) The components of the real number system
- 14) Divisibility rules
- 15) Cognitively guided instruction

### **Tentative Examination Schedule:**

Test #1, Chapters 1-3	June 10	150 pts
Test #2, Chapters 4-8	June 17	150 pts
Test #3, Chapters 9-11	June 24	150 pts
Final Exam (Comprehensive)	June 24	150 pts

### **Other Components of the Grade for the Course:**

- 1) Special Number Project (See *Prime Time* for special instructions.)
  - \* Oral report to class (approximately 5-7 minutes) June 23 25 pts
  - \* Written report (2-3 pages exclusive of title page and bibliography) 25 pts
- 2) Teaching Standards-based Lesson 50 pts
  - Outstanding (Well-prepared, mastery of content knowledge, followed lesson plan) (50)
  - Good (Well-prepared, only one or two minor errors in content knowledge, followed lesson plan) (43)
  - Satisfactory (Prepared, only one or two minor errors in content knowledge, followed lesson plan) (38)
  - Unsatisfactory (Not prepared or more than two minor errors in content knowledge or a major error in content knowledge or did not follow the lesson plan) (30)
  - Did not do assignment (0)

### **Grading Policy:**

There are 700 possible points for this course. The following grading scale will be used:

90% - 100% = A
80% - 89% = B
70% - 79% = C
60% - 69% = D
00% - 59% = F

### **Make-up Policy for Tests and Projects:**

There are no make-up chapter exams. If you know in advance that you are going to be absent the day that a chapter exam is scheduled, you may make arrangements to take it early. If you miss a chapter exam, the grade you make on the comprehensive final examination will substitute for the missed chapter exam grade. If you do not miss a chapter exam, the final exam can be used to substitute for your lowest chapter exam grade provided it is higher than your lowest chapter exam grade.

### **Cell Phone Policy:**

Cell phone use is not allowed during this class. Make sure that your cell phone is turned off before class begins. Any use of a cell phone during the class period will result in your being withdrawn from the course with a grade of W (possibly an F). Please provide the following contact numbers in the event that someone should need to contact you in the event of an emergency: 870-460-1016 (secretary's office) or 870-460-1083 (UAM Public Safety).

## Attendance:

In order to be successful in this course, you must attend class regularly and on time. You must do the assigned homework problems and study your classnotes carefully everyday. You are educating yourself to become a professional so act that way.

## Other Things You Can Do to Be Successful:

- 1) Get help before it is too late!!! Ask your instructor. That is what office hours are for.
- 2) Find a study partner or form a study group. Make arrangements to meet at a certain time and at a certain place to work problems together.
- 3) Take good class notes. You should come to class each day prepared to ask questions over the previous day's homework assignment or about any concept that was confusing to you. Don't trust your memory!! Each day you should take complete notes of everything that your teacher writes on the board and most of what he says. The problems and examples that your teacher and your fellow students work on the board will serve as a study guide when you attempt to work the homework problems from your text and from the other assigned homework.
- 4) You must make a time commitment to do the work required to be successful in class. The general rule of thumb is that you should spend 2 hours outside of class for every hour inside class. This time is for going over your class notes, doing your homework, reviewing any area of mathematics where you have an obvious weakness, and preparing for the exams.
- 5) Get off to a good start. The most important test you are going to take this semester is Test #1. This test usually sets the tone for the rest of the course and is a powerful indicator of whether you will be successful in this course or not.
- 6) Your classroom behavior is important. Come to class on time and do not leave early. Being consistently late is both disrespectful and disruptive. Don't do it! Get a good night's sleep so that you can listen and be attentive in class. Come prepared to take the class notes and ask questions. Research has shown that students who sit at the back of the class make lower grades than those who sit near the front so unless you have an unusual vision problem do not sit on the last three rows at the back. This is a mathematics class so ALL discussion during the class should relate to that topic. This is neither the time nor the place for social chit chat. Be respectful and expect to be respected. There is no such thing as a "dumb question". All questions have value and offer us the opportunity to learn.

## Important Dates:

June 1 (Tuesday)	Registration and first day of classes
June 2 (Wednesday)	Last day to register or add Summer I
June 7 (Monday)	Registration for 3-week classes
June 21 (Monday)	Last day to drop a 3-week class
June 24 (Thursday)	Last day to drop a regular Summer I class with a W
	Final examinations for 3-week classes
June 30 (Wednesday)	Final Examinations for regular Summer I classes

## 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.

**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. In McGehee, contact the Office of Special Student Services; phone (870)222-5360; fax (870)222-1105. In Crossett, contact the Office of Special Student Services; phone (870)364-6414; fax (870)364-5707.

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.

**Lesson Schedule:**

June 7	Lamon, Ch 1; Carpenter, Ch 1
June 8	Lamon, Ch 2; Carpenter, Ch 2
June 9	Lamon, Ch 3; Carpenter, Ch 3
June 10	Test #1; Lamon, Ch 4; Carpenter, Ch 4
June 14	Lamon, Ch 5; Carpenter, Ch 5
June 15	Lamon, Ch 6; Carpenter, Ch 6
June 16	Lamon, Ch 7
June 17	Test #2; Lamon Ch 8; Carpenter Ch 7
June 21	Lamon, Ch 9; Carpenter, Ch 8
June 22	Lamon, Ch 10 and 11; Reports
June 23	Test #3; Reports (continued, if necessary); Review for final
June 24	Final examination

# Appendix II

## Nationally Scored Exam Results

PCAT Scores

GRE Scores

MCAT Scores<sup>\*</sup>

DAT Scores<sup>\*</sup>

\* Scores not received at this time. Report updated after scores arrive

# PCAT Exam Scores

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Student A	Test Date August 2009	The Psychological Corporation
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Multiple Choice Scores	Scaled Score	Percentile Rank
Verbal Ability	431	89
Biology	440	94
Reading Comprehension	405	53
Quantitative Ability	407	54
Chemistry	411	62
Composite	419	79

Writing Scores	Your Score	Avg Score
Conventional Language	3.0	2.76
Problem Solving	3.0	2.76

Student B	Test Date October 2009	The Psychological Corporation
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Multiple Choice Scores	Scaled Score	Percentile Rank
Verbal Ability	404	55
Biology	409	66
Reading Comprehension	393	40
Quantitative Ability	417	60
Chemistry	397	44
Composite	401	53

Writing Scores	Your Score	Avg Score
Conventional Language	3.0	2.76
Problem Solving	3.0	2.76

## MCAT Test Scores

Three students have taken the exam in July 2010. Their scores will be added as received.

Student

Test Date	07/2010 (Series )	Score	Percentile
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Verbal Reasoning
Physical Sciences
Writing Sample
Biological Sciences
Total Score

Note: Computer Based Test

Student

Test Date	07/2010 (Series )	Score	Percentile
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Verbal Reasoning
Physical Sciences
Writing Sample
Biological Sciences
Total Score

Note: Computer Based Test

Student

Test Date	07/2010 (Series )	Score	Percentile
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Verbal Reasoning
Physical Sciences
Writing Sample
Biological Sciences
Total Score

Note: Computer Based Test

## GRE Test Scores

Student Identifier	Test Date	Verbal		Quantitative		Analytical Writing	
		Score	%Below	Score	% Below	Score	% Below
G	05/10	380	29	600	48	4.0	41