Chemistry Program Review

University of Arkansas at Monticello

School of Mathematical and Natural Sciences

Fall 2015

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GOALS, OBJECTIVES, AND ACTIVITIES

Describe specific educational goals, objectives, and activities of the program.

The mission the University of Arkansas at Monticello (UAM) shares with all universities is 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. This serves as the basis for the goals of the programs housed in the School of Mathematical and Natural Sciences (School). The specific goals for the School are:

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 sciences and mathematics

3. To provide curricula for pre-professional studies in dentistry, medicine, optometry, pharmacy, veterinary science, 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, education, pre-veterinary medicine, psychology, and wildlife management.

5. To serve the general education program through courses in biology, chemistry, earth science, mathematics, physics, and physical science that provide a basic background for a baccalaureate or associate degree.

These goals are important to the Chemistry program, whose main objective is to offer Bachelor of Science degrees with a major or minor in Chemistry, or to contribute to a double major in Biology and Biochemistry. The program prepares graduates to continue their education in a variety of pre-professional and graduate programs, or for immediate employment in a number of industrial, business, or educational situations. Students are encouraged to consider graduate education. In fact, we begin pushing students to think about their post-baccalaureate education during their first freshman semester. Our most important objective is to help our students achieve their educational and career goals; we truly feel that their success is our success.

Faculty members have high expectations in the classroom in all chemistry courses, and they willingly work with students outside the classroom to help them rise to the level of expertise needed to be successful in their course work. They also work closely with students in activities outside the classroom to enhance their overall experience at UAM, and to help them mature into well-rounded students who are involved with their community. Some of these specific activities are:

A. Sigma Zeta Math and Science Honor Society is an active student organization which fosters group camaraderie and allows students to network with others in the School. The students in the Sigma Zeta chapter participate in various service projects throughout the year,

including working with the Southeast Arkansas Regional Science Fair and the ACTM Regional Mathematics Contest. They host a biannual Science Center cleanup day in which classrooms and laboratories are deeply cleaned, and unused or obsolete materials and equipment are removed. Members often work with high school students on various events on campus, such as Advanced Placement test preparation events, to promote interest in the sciences and mathematics.

B. The Southeast Arkansas Regional Science Fair (SEARSF) has been hosted by UAM School of Mathematical and Natural Sciences for fifty-nine years. The fair is open to all high school and junior high school students from schools located in the southeastern region of the state. Students present research projects in a wide variety of categories, including Animal Sciences, Biochemistry, Biology, Chemistry, Computer Science, Engineering, Environmental Sciences, Mathematics, Plant Sciences, Space Sciences, and an all-encompassing classification for team projects. Chemistry faculty members and students often assist participants in setting up displays properly, serve as judges of the projects, or work with teachers during the research phase of project preparation.

C. The University of Arkansas at Monticello is a member of the Arkansas Space Grant Consortium (ASGC), which is funded by NASA. The UAM School of Mathematical and Natural Sciences receives funding from this program yearly through Research Infrastructure Development awards of about $10,000 to $20,000 per year. These awards have provided stipends for students to work with UAM Chemistry faculty members. Some of these students have also visited NASA research facilities. The ASGC also has an annual meeting where UAM students and faculty have presented their research results.

D. The UAM Medical Science Club is a group consisting of pre-professional students. This group has several chemistry majors as members. This group promotes pre-professional studies and also provides a social outlet for the students. The Medical Sciences Club sponsors visits by recruiters from various medical, pharmacy, and veterinary schools, and promotes talks from UAM graduates who can share their experiences with current students. The club sponsors visits by groups of UAM students to medical schools, dental schools, pharmacy schools, and graduate schools.

E. The UAM Tutoring Center employs many of our majors as work-study students to tutor lower-level chemistry students. Not only is this a benefit to the lower-level students, but it gives the tutors a much deeper understanding of the material, and also allows them to hone their teaching skills prior to going into the MAT or other graduate programs.

F. The UAM Research Program for Minority Students (UAM-RPMS) is a Science, Technology, Engineering and Mathematics (STEM) program which promotes research skills for students who are members of underrepresented minorities. The program provides a stipend to the students, involves the students in STEM research, and provides funds for the students to travel and present their research results at state, regional, and national meetings. The program began with a substantial grant from the Arkansas Lewis Stokes Alliance for Minority Participation (ARK-LSAMP, funded by the National Science Foundation), and has since transitioned to being funded completely by UAM. This program has been very successful;

many students who have participated in UAM-RPMS have been accepted to graduate schools, medical schools, and other post-graduate programs.

G. Although UAM is primarily a teaching university, all tenure-track faculty members in the Chemistry department conduct scientific research. In most cases, this research includes participation of students. In addition, many chemistry students conduct research with faculty members in the Chemistry department. Students who participate in research are allowed to enroll in CHEM 4691 Senior Research to receive class credit for their research work. Many UAM student researchers have presented their work at state, regional, and national meetings; some have won awards for their research presentations. Students who have conducted research are often accepted into graduate and pre-professional programs.

H. Chemistry majors have the option of CHEM 4742 Advanced Laboratory Techniques, CHEM 4691 Senior Research, or CHEM 4611 Chemistry Seminar as the capstone course. Typically, the course is taken during the student's senior year after completing the bulk of required and elective course work. Students that participate in undergraduate research that leads to a presentation at a state, regional, or national meeting are not required to take Advanced Lab Techniques or Chemistry Seminar. In Advanced Laboratory Techniques, the goal is to expose students to techniques that are not normally seen in undergraduate curriculums at small universities. Some of the topics covered are basic glassblowing, advanced UV-Vis spectroscopic techniques, advanced NMR techniques, and sometimes a special topic segment that the students will use as the subject area for their paper and seminar that is given at the end of the term. Recent special topics include food chemistry, pollutants associated with agricultural chemicals, 2-D NMR, and organic analysis. Each student will select a topic related to the special topics portion of the course, gather research data, and prepare for an end of term seminar. At the end of the term, the student conducts a public presentation to other students and faculty. The student is evaluated on content, organization, clarity, accuracy, completeness, quality of visual aids, and ability to answer questions and discuss the material in depth. This course is critical in the overall development of the student, and in the preparation of the student for professional school, graduate school, or a career in teaching. This course has essentially replaced Chemistry Seminar that hasn't been offered in the last ten year period.

I. The University of Arkansas at Monticello is a member school of the Arkansas Academy of Science. Faculty members and students attend the annual meeting of the Academy and are eligible to present research talks and posters and to compete for student awards. Faculty and student research is often published in the Journal of the Arkansas Academy of Science.

J. The University of Arkansas at Monticello is an affiliate of the Arkansas Idea Network for Biomedical Research and Education (AR-INBRE), a program funded by the National Institutes of Health (NIH). The Arkansas INBRE program provides support for biomedical research and education through several types of grant programs. Chemists and biologists at UAM have received several instrumentation awards and a faculty summer internship award over the last several years. UAM received $190,000 renovation grant which will be used for portions of the UAM Botanical Research Center and Herbarium.

Explain how the program serves the general education program and other disciplinary programs on campus, if applicable.

An important goal in the Chemistry program is to provide support courses for other majors and for the General Education program. All majors are required to pass eight hours of science (including laboratories) at the 1000 level or higher, and all of our freshman-level courses are acceptable options for this requirement. CHEM 1023, Introductory Chemistry, and CHEM 1031, Introductory Chemistry Lab, are most often used to help fulfill this requirement. Some students choose CHEM 1103 General Chemistry I and CHEM 1121 General Chemistry I Lab to fulfill one of the lab science requirements. In addition, there are several majors and minors at UAM that require specific Chemistry courses beyond the general education requirement. Table 1 (below) indicates which courses are required for specific majors and minors.

Table 1—Chemistry Classes Required for Other Majors and Minors at UAM

Agriculture (General Agriculture Option, Agri-Business Option, and Plant & Soil Science Option)

CHEM 1103 General Chemistry I and CHEM 1121 General Chemistry I Lab
CHEM 1113 General Chemistry II and CHEM 1131 General Chemistry II Lab

Agriculture (Animal Science Option)

CHEM 1103 General Chemistry I and CHEM 1121 General Chemistry I Lab
CHEM 1113 General Chemistry II and CHEM 1131 General Chemistry II Lab
CHEM 2203 Introduction to Organic and Biochemistry

Biology

CHEM 1103 General Chemistry I and CHEM 1121 General Chemistry I Lab
CHEM 1113 General Chemistry II and CHEM 1131 General Chemistry II Lab
CHEM 3404 Organic Chemistry I
CHEM 3404 Organic Chemistry II

Biology (Organismal Option)

CHEM 1103 General Chemistry I and CHEM 1121 General Chemistry I Lab
CHEM 1113 General Chemistry II and CHEM 1131 General Chemistry II Lab
CHEM 2203 Introduction to Organic and Biochemistry
CHEM 2211 Introduction to Organic and Biochemistry Lab

Education (Middle Childhood, Science Concentration)

CHEM 1103 General Chemistry I

Education (B.S. Health and PE, Non-Licensure)

CHEM 1023 Introductory Chemistry and CHEM 1031 Introductory Chemistry Lab

Education (Exercise Science Option)

CHEM 1023 Introductory Chemistry and CHEM 1031 Introductory Chemistry Lab
OR CHEM 1103 General Chemistry I and CHEM 1121 General Chemistry I Lab

Forestry and Natural Resources

CHEM 1103 General Chemistry I and CHEM 1121 General Chemistry I Lab

General Studies (Chemistry Emphasis Area)

CHEM 1103 General Chemistry I and CHEM 1121 General Chemistry I Lab
CHEM 1113 General Chemistry II and CHEM 1131 General Chemistry II Lab
10 hours 3000-4000 level CHEM electives

Land Surveying (Associate of Science or Bachelor of Science)

CHEM 1023 Introductory Chemistry and CHEM 1031 Introductory Chemistry Lab
OR CHEM 1103 General Chemistry I and CHEM 1121General Chemistry I Lab

Natural Science Major (All options)

CHEM 1103 General Chemistry I and CHEM 1121 General Chemistry I Lab
CHEM 1113 General Chemistry II and CHEM 1131 General Chemistry II Lab

Natural Science Major (Physical Science Option, with Chemistry emphasis)

CHEM 1103 General Chemistry I and CHEM 1121 General Chemistry I Lab
CHEM 1113 General Chemistry II and CHEM 1131 General Chemistry II Lab
CHEM 3314 Quantitative Analysis
CHEM 3404 Organic Chemistry I
CHEM 3414 Organic Chemistry II

Natural Science Minor (with Chemistry option)

CHEM 1103 General Chemistry I and CHEM 1121 General Chemistry I Lab
CHEM 1113 General Chemistry II and CHEM 1131 General Chemistry II Lab
9 hours 3000-4000 level CHEM electives

Nursing

CHEM 1023 Introductory Chemistry and CHEM 1031 Introductory Chemistry Lab

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Document market demand and/or state/industry need for careers stemming from the program.

Graduates of the Chemistry program may advance to professional schools such as medical school, dental school, pharmacy school, and to other health-related programs. Some graduates enter graduate school, teaching programs, or positions in industry.

The Association of American Medical Colleges has estimated that the United States could face a shortage of physicians that may number over 90,000 by the year 2020. The same organization lists Arkansas as the second-most underserved state in terms of number of doctors per resident, with many

of the other underserved areas being in neighboring states. In rural areas such as southeastern Arkansas, the problem is exacerbated. The State of Arkansas has acknowledged these shortages and is working to solve them by implementing the Rural Medical Practice Program. Applicants to the University of Arkansas for Medical Sciences who come from rural areas (including all of southeastern Arkansas) are given extra consideration for acceptance to the medical school, and may receive partial or complete tuition relief. The only medical school in the state, the University of Arkansas for Medical Sciences, has slightly increased its class size over the last few years, and more increases are being considered. More importantly, two schools of osteopathic medicine will open in Arkansas in the next few years (one at Arkansas State University in Jonesboro and another at Fort Smith). Graduates of the UAM Chemistry program are in demand by medical schools; 22 of the last 24 med-school applicants have been accepted during the last 10 years. The two new D.O. schools will only increase this demand.

Similarly, while the demand for pharmacists is strong nationwide, it is strongest in Arkansas. According to the Aggregate Demand Index(ADI) computed by the Pharmacy Workforce Center, Arkansas has the highest demand for pharmacists of any state. The ADI rates the demand for the state as 4.6 out of 5.0, meaning that there is difficulty in filling many open pharmacy positions. Demand for UAM pre-pharmacy students is very high. There are two pharmacy schools in Arkansas (at UAMS and Harding), and many UAM graduates are accepted at both. As with pre-medicine students, the vast majority of UAM pre-pharmacy students are accepted to pharmacy school upon application. Over the past ten years, 33 out of 34 applicants from UAM have been accepted in pharmacy programs.

Arkansas has experienced steady population growth, and this growth has led to continued demand for secondary school teachers. Secondary science teachers (life, physical, and earth sciences) are usually on the annual list of subject shortage areas compiled by the Arkansas Department of Education. Although the population of southeastern Arkansas has not grown as much as the rest of the state, demand for science teachers remains high here. In fact, virtually every school district in the southeastern part of the state qualifies as a High-Needs District based on criteria established by the National Science Foundation. School districts throughout the region regularly solicit the UAM School of Education and the Dean of Math and Sciences for possible applicants. Many graduates of the UAM Biology program have entered M.A.T. programs (including the one at UAM), and almost without exception have a job waiting upon completion of the program.

Document student demand for the program.

Demand for the Chemistry program has generally remained strong through the last ten years, with some fluctuation from year to year. Table 2 (below) lists the number of Chemistry majors by class level over the last ten years. Since 2009, most of the pre-medicine and pre-pharmacy students have chosen a double major in Biology and Biochemistry. The table gives an overall picture of demand for the program which is steady and strong.

Table 2.—Number of Majors per Class Level Per Year

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Chemistry										
Freshman	5	6	3	1	3	5	3	6	10	13
Sophomore	5	3	2	1	0	2	3	4	4	5
Junior	1	5	7	2	2	2	3	4	7	4
Senior	3	2	2	8	5	9	5	4	4	6
Total	14	16	14	12	11	18	14	18	25	28

Since some students are listed as pre-medicine or pre-pharmacy majors until they complete their degree in chemistry, it is a better measure to show the number graduating with a chemistry degree. Table 3 (below) includes the number of chemistry graduates for the last 10 years. The Biochemistry Option of the B.S. Chemistry degree was started in 2009. Since that time, the program has grown tremendously.

Table 3.—Number of Chemistry Graduates by Year

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	10 Yr Ave	3 Yr Ave
2	1	2	4	4	6	5	6	11	12	5.3	9.7

In terms of the number of graduates, the most recent three-year average is near double the ten-year average. This is largely due to the popularity of the Biochemistry Option added in 2009. Course enrollments have paralleled that trend. Since 2005, when there was a large Introductory Chemistry class, total enrollment remained pretty level for the next several years. In the past few years there has been a clear trend of enrollment growth. Majors courses, such as Quantitative Analysis and Biochemistry, have grown during that period. Table 4, below, indicates the number of students enrolled in Fall term offerings in Chemistry over the last ten years.

Table 4.--Enrollment in Chemistry Lecture Courses Offered Each Fall Semester

	F05	F06	F07	F08	F09	F10	F11	F12	F13	F14
Intro Chemistry	127	104	96	95	100	100	82	91	94	119
Gen Chem I	86	69	92	81	62	84	76	94	80	95
Intro. Org & Bio	18	8	13	11	20	14	15	11	19	14
Quant. Analysis	5	8	10	9	14	7	8	14	18	12
Organic Chem I	35	34	20	32	23	20	32	29	28	40
Biochemistry I	8	7	11	7	17	14	15	18	20	17
Totals	279	230	242	235	237	239	228	257	269	297

CURRICULUM

Describe how program content parallels current thinking and trends in the field (best practices, advisory committee recommendations, etc.).

Even though the UAM Chemistry department is not an American Chemical Society approved program, the curriculum is modeled after the ACS recommended program. UAM is one of few universities in Arkansas that uses ACS standardized final exams for many of its courses as a standard for assessment.

Chemistry faculty members continually review the curriculum in an effort to meet the needs of Chemistry majors and pre-professional students. This goal is achieved in a number of different ways. All Chemistry faculty members are encouraged and expected to participate in regular professional development to stay current in their respective fields of expertise. Faculty members are given time to attend professional meetings and workshops, and the School of Mathematical and Natural Sciences maintains a budget to pay the cost of attending these meetings. Besides the obvious benefit of professional renewal to individual faculty, meeting attendance allows faculty members to be exposed to the newest trends within the field, and allows them to network with instructors from other universities and to be exposed to new ideas for curriculum development.

The Chemistry Department at UAM is relatively small. Although there are disadvantages associated with small size, the Chemistry Department uses its size to the advantage of students. With the small number of faculty, all faculty are involved with curriculum changes and planning at all levels.

In addition, faculty members in Chemistry constantly monitor requirements for various post-graduate programs to ensure that the curriculum contains all required courses and all necessary

material within those courses. For example, the Dean attends annual meetings of Pre-Pharmacy and Pre-Medical advisors at UAMS to stay abreast of current admission requirements and changes to the entrance exams. When changes occur, the faculty make in-course adjustments where appropriate in order to better prepare our students for the upcoming changes. In 2009, the Biochemistry Option of the B.S. Chemistry degree was added. It has been hugely successful. Since its addition, acceptance rates of the Biochemistry Option graduates into professional and graduate programs is near 100%. In 2012, a Pre-Veterinary curriculum was established by determining the requirements for every vet school in the region. Many UAM pre-vet students now opt for the Biology/Biochemistry double major.

Provide an outline for each program curriculum, including the sequences of courses.

As with all universities in the state of Arkansas, UAM is required by law to provide a curriculum which makes it possible for a student to enroll in a reasonable number of courses each semester and to fulfill all the requirements for a degree within four academic years. Although pre-professional programs are excluded from these requirements, we have arranged our schedule so that students can receive a traditional Chemistry degree with a minor, a Biochemistry Option Chemistry degree with a minor, or a Biology/Biochemistry double major in four academic years. The so-called 8-Semester Course Sequences for Chemistry, Biochemistry, and Biology/Biochemistry are included in APPENDIX A.

Students who arrive at UAM with a sufficient background in chemistry and mathematics are advised to take General Chemistry I and lab. Students that require remediation in mathematics or have not had a sufficient high school chemistry course are encouraged to take Introductory Chemistry lecture. Currently, this is done through academic advising; however, there has been some thought of setting a minimum ACT requirement for entry into General Chemistry. For the students that need to start in Introductory Chemistry, it is more difficult to complete either Chemistry degree within four academic years unless the student attends summer school. Likewise, students who transfer from other universities, or those who declare Chemistry or Biochemistry as a major after their first semester, may have difficulty completing a degree within four years. However, every effort is made to help these students catch up through aggressive advising, and enrollment in summer courses.

The Chemistry schedule operates on a two-year cycle. Most courses are offered at least once per academic year; however, the two semester physical chemistry sequence (CHEM 4704 Thermodynamics and CHEM 4714 Kinetics and Quantum Mechanics), Instrumental Analysis and some upper-level electives are available every other year. A schedule of class offerings is depicted in Table 5, below.

Table 5.—Schedule of Class Offerings in the UAM Chemistry Department

Class	Every Fall & Spring	Every Fall	Every Spring	Fall Odd Year	Fall Even Year	Spring Odd Year	Spring Even Year	Sum	As Needed	Last Term Taught
Intro Chemistry	X							X		Su15
Intro Chemistry Lab	X							X		Su15
Gen Chemistry I	X							X		Su15
Gen Chemistry I Lab	X							X		Su15
Gen Chemistry II			X					X		Su15
Gen Chemistry II Lab			X					X		Su15
Intro Org & Biochem		X								F14
Intro Org & Biochem Lab		X								F14
Quantitative Analysis		X								F14
Organic Chemistry I		X						X		F14
Organic Chemistry II			X					X		Sp15
Elements of Phys Chem			X							Sp15
Instrumental Analysis						X				Sp15
*Organic Analysis									X	F02
Sp. Topics in Chemistry				X					X	F13
*Sp. Topics in Chem Lab									X	No record
*Structure & Mechanism									X	No record
Adv. Inorganic Chem					X					F14
Biochemistry I		X								F14
Biochemistry II			X							Sp15
Biochemistry Lab			X							Sp15
P-Chem: Thermodyn.						X				Sp15
P-Chem: Quan. & Kin							X			Sp14
Senior Research									X	Sp15
Adv Lab Techniques			X							Sp14
*Chemistry Seminar									X	Sp05
*Independent Study									X	Sp00
*Not offered in past ten years; however, still in the catalog										

State the degree requirements, including general education requirements, institutional, college, or school requirements, and major requirements.

The Bachelor of Science degree in Chemistry requires 120 hours, which includes 35 hours of General Education program, the Bachelor of Science identity requirement, 36-37 hours of major requirements and 21 hours of supportive requirements. A minor is also required for the Chemistry

degree. Electives may be needed to reach 120 hours, depending upon the minor; most Chemistry majors who do not double major in Biochemistry minor in Mathematics or Physics, which can be completed in 9 or 10 additional hours, respectively above the required supportive requirements.

The Bachelor of Science degree in Chemistry, Biochemistry Option requires 120 hours, which includes 35 hours of General Education program, the Bachelor of Science identity requirement, 35-36 hours of major requirements, and 38 hours of supportive requirements. A minor is required; however, with so many biology hours included in the supportive requirements a biology minor can be completed by taking either Botany and lab or Zoology and lab. A Natural Science minor can be completed by taking both Botany and Zoology with labs.

The Chemistry minor includes 20 hours of required courses, plus 4 hours of upper-level Chemistry electives, for a total of 24 hours. General Education requirements are listed in APPENDIX B. Chemistry major and minor requirements are found in APPENDIX C.

Indicate the semester/year the major/program courses were last offered. Exclude general education courses.

All Chemistry classes and the most recent semester each was offered are listed in Table 6 below.

Table 6.—Most Recent Offering of All Listed CHEM Classes

Gen Chemistry I	Su15
Gen Chemistry I Lab	Su15
Gen Chemistry II	Su15
Gen Chemistry II Lab	Su15
Quantitative Analysis	F14
Organic Chemistry I	F14
Organic Chemistry II	Sp15
Elements of Phys Chem	Sp15
Instrumental Analysis	Sp15
*Organic Analysis	F02
Sp. Topics in Chemistry	F13
*Sp. Topics in Chem Lab	No record
*Structure & Mechanism	No record
Adv. Inorganic Chem	F14
Biochemistry I	F14
Biochemistry II	Sp15
Biochemistry Lab	Sp15
P-Chem: Thermodyn.	Sp15
P-Chem: Quan. & Kin	Sp14
Senior Research	Sp15
Adv Lab Techniques	Sp14
*Chemistry Seminar	Sp05
*Independent Study	Sp00

Provide syllabi for discipline-specific courses and departmental objectives for each course.

Syllabi for all CHEM classes are assembled in APPENDIX D.

Outline the process for the introduction of new courses, including all internal curriculum review processes and the findings.

Chemistry faculty members continually review the curriculum and make appropriate adjustments. Whenever a curriculum change is needed, Chemistry faculty members discuss the changes and construct a proposal. Individual faculty members who wish to assemble new classes may also construct a proposal. Such proposals are reviewed by the entire Chemistry faculty before further submission. The proposal is reviewed by the Dean of Math and Sciences. When approved, the Dean submits the proposal to Academic Council, which is a group that includes the Deans of all units, the Registrar, and the Vice Chancellor of Academic Affairs. A review period of ten days begins at this point. This procedure ensures that all academic deans are aware of the consequences to their own programs before the new course is reviewed by the Curriculum and Standards (C&S) Committee of the Faculty Assembly. This ten-day review process usually affords sufficient time for minor issues to be resolved. The proposal is reviewed at an Academic Council, which meets approximately 7 times per semester. With Academic Council approval, the proposal is forwarded to the C&S Committee. The School of Mathematics and Natural Sciences representative then presents the proposal to the C&S Committee. Occasionally, the Dean or a faculty member will attend the meeting to answer any questions that may arise. With approval of the C&S Committee, the proposal is forwarded to the Faculty Assembly where it is brought to a vote. Once it has received the approval of the Assembly, the proposal is reviewed by the Chancellor, the Board of Trustees, and then the Arkansas Department of Higher Education. Once all approvals have been made, the proposal is sent back to the Registrar's Office for final operation and inclusion into the official catalog. If the proposal does not meet the approval of any of the required committees, it may be returned to the Department for review and revision. Note that the procedure for graduate-level courses is identical, except that such proposals are submitted to the Graduate Council rather than the C&S Committee.

List courses in the degree program currently offered by distance delivery.

No courses within the Department of Chemistry have been offered by distance delivery in the past ten years. The entire Chemistry faculty and the Dean of Math and Sciences are strongly opposed to online offerings, especially for laboratory courses. More than ten years ago, Introductory Chemistry lecture was offered to the UAM Colleges of Technology at Crossett and McGehee by compressed interactive video (CIV). Since that time, an adjunct instructor was found to teach the course face-to-face at the Crossett campus when needed.

Describe the instructor-to-student and student-to-student interaction for distance courses (prerequisite courses, lab requirements, examination procedures-online/proctored, and instructor to student assignments).

Not applicable

PROGRAM FACULTY (FULLTIME/ADJUNCT/PART-TIME)

Provide curriculum vitae or program faculty information form for all fulltime program faculty. The vita or form should include the following: all degrees and institutions granting the degrees; field or specialty of degrees; number of years employed as program faculty at the institution; current academic rank, if applicable; professional certifications/licenses; evidence of quality and quantity of creative and scholarly/research activity; evidence of quality and quantity of service activities; evidence of professional activities and non-teaching work experiences related to courses taught; list of course numbers/course titles of credit courses taught over the past two academic years; and other evidence of quality teaching.

Please see APPENDIX E for faculty vitae.

Indicate the academic credentials required for adjunct/part-time faculty teaching major/program courses.

No lecture courses within the Department of Chemistry are currently taught by adjunct / part-time faculty, and none have been taught on the main campus for at least 25 years. Occasionally an Introductory Chemistry section or has been taught by part-time adjuncts at the UAM Colleges of Technology. This served as a general education course and is not accepted as part of the Chemistry major. UAM and the School of Math and Natural Sciences strongly follows the requirements set forth by the Arkansas Department of Higher Education. The requirements are: A masters degree, with at least 18 graduate hours in chemistry are required to be hired as an adjunct to teach lecture courses. No more than six hours can be chemistry education courses that focus on pedagogy.

A Bachelor's degree is required to serve as a laboratory instructor. An adjunct lab instructor was used one summer for General Chemistry I laboratory. The adjunct used has a Master of Arts in Teaching degree and teaches chemistry at the local high school.

Describe the orientation and evaluation processes for faculty, including adjunct and part-time faculty.

During the Faculty Development Week that occurs just prior to the beginning of the Fall semester, there is an official orientation program for new full-time faculty members which imparts information and documentation on advising, regulations, available resources, and teaching facilities. Throughout the meetings there are a number of workshops that provides training on academic advising, software, and accessible technology.

Each faculty member is evaluated annually. Faculty members are required to submit a self-evaluation to the Dean of the School of Mathematical and Natural Sciences. Those with less than six years service are evaluated by a minimum of three peer faculty members, and observed in a classroom setting by the peer evaluators. In addition, each class is subjected to student evaluation. Tenured faculty and non-tenure-track faculty who have completed six years of service are required to undergo the full evaluation process at least once every five years. A full evaluation requires that three colleagues be chosen as peer evaluators with the individual being evaluated choosing two and the dean one. Peer reviewers of faculty members having a full evaluation must make at least one classroom observation. Also at least one section of each course the faculty member teaches during the spring and the fall semesters must complete a student evaluation. Those faculty members not required to undergo the full evaluation process (those with over six years of service) have one peer evaluator chosen by the Dean. If an instructor is not having a full evaluation, one peer evaluator will be chosen by the dean. Faculty members in the first six years of service undergo student evaluation in every class. After the sixth year, faculty members are required to have only one section of their classes complete a student evaluation per calendar year; however, most faculty members in Chemistry choose to have all classes evaluated. Faculty members submitting abbreviated evaluations include only new accomplishments in their self-evaluations.

Once this process is complete, the Dean reviews all of the combined evaluations to assess performance of the faculty member. The Dean uses the totality of peer evaluations, student evaluations, self-evaluation, and classroom observation data to complete a review of the faculty member's performance. The Dean schedules a meeting with the faculty member to discuss his or her accomplishments and make suggestions for possible improvements. After this review, the evaluation and all supporting material are sent to the Vice Chancellor for Academic Affairs (Provost) for review and comments. If a faculty member disagrees with the Dean's evaluation, the faculty may send additional information to the Vice Chancellor for consideration. After this process is completed, the Vice Chancellor for Academic Affairs sends his recommendation to each faculty member and to the Dean.

Provide average number of courses and number of credit hours taught for full time program faculty for the current academic year.

The expected course load is 12 credit hours per term for a full-time faculty member who holds an academic rank of Assistant Professor or higher. For these purposes, labs are credited at two-thirds of actual contact hours. The course load for those holding the rank of Instructor is 15 credit hours per term. Lab instructors are given credit for three hours of stockroom management as part of their teaching load. Occasionally, there are opportunities for extra courses to be taught as an overload for additional pay. Summer teaching opportunities are available for courses that meet the minimum enrollment of 10 students. The Department of Chemistry has one Professor which serves as the Dean of Mathematical and Natural Sciences, and therefore is on a quarter-time Chemistry appointment. The full-time Chemistry faculty members are three full-time Associate Professors, and one full-time Lab Instructor. See Table 7, below, for faculty workload for the past academic year.

Table 7—Chemistry Faculty Workload for 2014-2015 Academic Year

Full Time Faculty

		Summ II 2014(2145)			Fall 2014 (2146)			Spring 2015 (2152)			Summ I 2015 (2154)			
Faculty Member	Department	credit hrs	contact hrs	SSCH	credit hrs	contact hrs	SSCH	credit hrs	contact hrs	SSCH	credit hrs	contact hrs	SSCH	Annual SSCH
Bramlett, J.M.	Chem/Dean				3	3	228	3	3	129				357
Huang, Jinming	Chemistry				11	17	334	13	20	74	3	6	39	447
Sayyar, Kelley	Chem/ESCI	4	5	52	13	24	310	11	24	179				589
Taylor, Jeff	Chemistry				8	12	211	12	18	283	4	6	36	497
Williams, A	Chemistry	4	6	53	10	12	208	12	12	438	4	5	60	759
Total SSCH for Chemistry faculty														2649

Jeff Taylor taught one lecture course in Spring 2015 for Biology (Pharmacology)
Kelley Sayyar's summer courses and one lecture and lab each term were in Earth Science (ESCI)

PROGRAM RESOURCES

Describe the institutional support available for faculty development in teaching, research, and service.

The University offers a variety of support in these areas. In the area of teaching, faculty members are encouraged to seek areas of special interest and, when possible, teach in those specific areas. Faculty members are encouraged to develop special topics courses, which may later become part of the regular curriculum if demand is great enough. Faculty members who wish to develop on-line or hybrid courses are supported with institutional training and financial incentives.

The University also provides technical support for those who wish to use instructional software such as Blackboard™ in their courses. The campus webmaster will provide assistance to faculty on their faculty webpages. All of the classrooms in the Science Center are equipped with a computer, a document camera, and a projector. Some Chemistry faculty members utilize this technology in their classroom instruction to a large extent, others use it very little.

Faculty members are encouraged to attend professional meetings to enhance their teaching skills or their work in other scholarly activities. The School of Mathematical and Natural Sciences may support faculty research and scholarly activity by granting course relief or off-campus assignment leave; No Chemistry faculty member has applied for an off-campus duty assignment (sabbatical) since 2000; however, one faculty member is scheduled for an off-campus assignment in Fall 2015. Dr. Huang will be doing research at Wake Forest University. Faculty members are encouraged to write textbooks and generate new methods of teaching using technology.

Competitive faculty research grants are available through the University to fund basic research. These grants can even pay student stipends for their work on projects with faculty members. Almost every tenured faculty member in Chemistry has received one of these grants; several have won multiple grants. In addition, the University administration is extremely supportive to Chemistry faculty who pursue research. UAM is primarily a teaching university, but the administration recognizes the importance of research for faculty renewal, and more importantly, for the advancement of students. The administration helps by facilitating and publicizing Chemistry research.

The UAM administration has also directly supported student and faculty research by providing matching funds for grants awarded by Arkansas INBRE. Over the last several years, an Infrared Spectrometry, a UV-Vis Spectrometer, a workstation for molecular modeling, and miscellaneous laboratory supplies for teaching labs and undergraduate research have been purchased with these AR-INBRE awards.

The UAM administration has initiated a campaign to raise approximately $25 million to construct a new science and mathematics center on campus. Although the new building is likely several years away, this campaign indicates the sincere commitment of the UAM administration to STEM education and research.

Chemistry faculty members are leaders on the UAM campus. Faculty members are encouraged to serve on university committees and Chemistry faculty members are very active in this regard. Faculty members use their experience and specific skills while serving on committees. This provides a growth opportunity for faculty members and the university appreciates the services.

Chemistry faculty members are also active in service to the community, providing their expertise in a variety of areas. For instance, one faculty member provides planetarium shows to educational groups in the Pomeroy Planetarium, and also works closely with the public school chemistry teachers in Southeast Arkansas. Another has worked with Boy Scout troops, and has aided those young men in receiving their chemistry badges. One faculty member works closely with the Department of Education on the implementation of the Next Generation Science Standards. All the faculty play important roles as judges or as head of the scientific review committee for the Southeast Arkansas Regional Science Fair.

Describe the professional development of full time program faculty over the past two years including the institutional financial support provided to faculty for the activities.

The School of Mathematical and Natural Sciences is provided a $6,600 budget for faculty development. A portion of the money is used by Chemistry faculty members each year to attend professional meetings. Additional departmental funds are also sometimes used for faculty development. The development funds spent in Chemistry during the last two academic years are shown in Table 8 below.

Table 8.—Faculty Development Funds Spent 2013-2015

Date	Faculty Member	Location	Meeting or Conference	Cost
9/11/2012	Morris Bramlett	Star City, AR	Project Lead the Way Community Partnership Luncheon	19.32
9/14/2012	Morris Bramlett	Little Rock, AR	Arkansas STEM Coalition Meeting	59.73
10/4/2012	Jeff Taylor	Fayetteville, AR	INBRE Conference	48.70
10/4/2012	Morris Bramlett	Fayetteville, AR	INBRE Conference	43.54
10/4/2012	Andrew Williams	Fayetteville, AR	INBRE Conference	53.93
10/19/2012	Andrew Williams	Memphis, TN	MICA Meeting at University of Memphis	239.51
12/3/2012	Morris Bramlett	Little Rock, AR	Arkansas STEM Coalition Meeting	59.73
1/3/2013	Andrew Williams	Kennedy Space Center, FL	NASA/ASGC Grant visit to Kennedy Space Center	718.29
1/18/2013	Morris Bramlett	Little Rock, AR	NASA/ASGC Meeting	59.79
1/30/2013	Morris Bramlett	Conway, AR	Arkansas STEM Coalition Meeting	65.80
3/4/2013	Morris Bramlett	Little Rock, AR	Arkansas STEM Coalition Meeting	61.39
4/7/2013	Jinming Huang	New Orleans, LA	ACS National Meeting	1996.70
4/13/2013	Morris Bramlett	Little Rock, AR	Pre-Med Advisors Meeting at UAMS	61.25
4/18/2013	Andrew Williams	Morrilton, AR	Arkansas Space Grant Consortium Meeting	302.69
4/18/2013	Jinming Huang	Morrilton, AR	Arkansas Space Grant Consortium Meeting	214.04
8/14/2013	Andrew Williams	Indianapolis, IN	Gen Con Conference	114.20
10/5/2013	Andrew Williams	Little Rock, AR	Mid-South Inorganic Chemists Assoc. (MICA)	59.90
10/17/2013	Andrew Williams	Fayetteville, AR	IDEA Network for Biomedical Research Excellence (INBRE)	31.43
11/22/2013	Morris Bramlett	Conway, AR	Arkansas STEM Coalition	65.13
12/20/2013	Morris Bramlett	Little Rock, AR	NASA ASGC Meeting	58.99
1/17/2014	Morris Bramlett	Conway, AR	Arkansas STEM Board Meeting	75.61
2/13/2014	Morris Bramlett	Conway, AR	Arkansas STEM Board Meeting	76.19
3/7/2014	Andrew Williams	Jonesboro, AR	Mid-South Inorganic Chemists Assoc.	191.84
3/6/2014	Morris Bramlett	Little Rock, AR	Posters at the Capitol	20.50
3/11/2014	Morris Bramlett	Conway, AR	Arkansas STEM Board Meeting	77.63
4/6/2014	Jinming Huang	Hot Springs, AR	NASA/ASGC Symposium and Arkansas Academy of Sciences	210.34
4/6/2014	Andrew Williams	Hot Springs, AR	NASA/ASGC Symposium and Arkansas Academy of Sciences	577.79
4/6/2014	Jeff Taylor	Hot Springs, AR	NASA/ASGC Symposium and Arkansas Academy of Sciences	124.18
4/12/2014	Morris Bramlett	Little Rock, AR	UAMS Pre-Medical Advisors Meetings	72.76
5/2/2014	Morris Bramlett	Conway, AR	Science Educators of Arkansas	73.39
8/13/2014	Andrew Williams	Indianapolis, IN	Gen Con Conference	202.58
8/8/2014	Morris Bramlett	Little Rock, AR	Arkansas STEM Coalition Meeting	79.31
9/5/2014	Morris Bramlett	Little Rock, AR	Arkansas STEM Coalition Meeting	60.94
9/9/2014	Morris Bramlett	Dumas, AR	AP Chem Teacher Workshop	25.20

9/19/2014	Morris Bramlett	Little Rock, AR	NASA/ASGC Meeting	65.67
11/6/2014	Andrew Williams	Fayetteville, AR	INBRE Conference	56.85
Date	Faculty Member	Location	Meeting or Conference	Cost
11/6/2014	Jeff Taylor	Fayetteville, AR	INBRE Conference	76.21
11/6/2014	Jinming Huang	Fayetteville, AR	INBRE Conference	76.83
12/5/2014	Morris Bramlett	Conway, AR	Arkansas STEM Coalition Meeting	78.73
12/11/2014	Jinming Huang	Winston-Salem, NC	Instrument training workshop at Wake Forrest University	217.83
3/13/2015	Morris Bramlett	Little Rock, AR	Arkansas STEM Coalition Meeting	61.64
4/9/2015	Jinming Huang	Hot Springs, AR	NASA/ASGC Conference	210.34
4/9/2015	Andrew Williams	Hot Springs, AR	NASA/ASGC Conference	399.29
4/9/2015	Jeff Taylor	Hot Springs, AR	NASA/ASGC Conference	127.74
5/15/2015	Morris Bramlett	Little Rock, AR	Arkansas STEM Coalition Meeting	56.39
6/5/2015	Morris Bramlett	Little Rock, AR	Arkansas STEM Coalition Meeting	66.69

Provide the annual library budget for the program or describe how library resources are provided for the program.

Each academic unit along with library liaisons recommends library purchases of materials. The budget is spent on books, e-books, journals, e-journals, and databases. The total budget for the entire School of Mathematics and Natural Sciences is $15,000; however, the budget is not split into amounts spent for each department. Periodically, library liaisons contact the School of Mathematical and Natural Sciences and seek guidance on new materials for the library. They also ask for advice concerning removal of obsolete material, old editions of books, or physically damaged material. Electronic databases are upgraded regularly giving the faculty excellent access to new publications. The library also offers a very liberal interlibrary loan policy, allowing each faculty free library loan requests.

Describe the availability, adequacy, and accessibility of campus resources (research, library, instructional support, instructional technology, etc).

The School of Mathematical and Natural Sciences provides the latest technology for instruction. Every classroom in the Science Center is equipped with a computer, a document camera, and a digital projector. All ten classrooms are connected to the internet. The Science Center Computer Lab and Tutor Center was upgraded in 2011 with computers that Information Technology (IT) indicates should provide excellent service for a minimum of seven years; five more computers were added in 2013. IT provides Microsoft™ software packages, SAS™ Statistical Software, and other needed software on request. IT also provides support for Blackboard™, which is available for every course offered on our campus or on-line.

The UAM Library features a large amount of content for faculty research and development, and can also be used in instructional technology. Library resources in the area of chemistry are extensive and include:

1. Periodical and Book Titles

   399 on-line periodical titles, 5 bound periodicals, and approximately 1000 books in various areas of chemistry are present in the library, in addition to extensive holdings in related areas general science, science education, physics, and biology.

2. Electronic Resources by Subject
   a. Specialized Databases
      i. SciFinder
      ii. Science Direct
      iii. JSTOR: Life Sciences Collection
      iv. SpringerLink
   b. General Databases
      i. Academic Search Complete
      ii. ArticleFirst
      iii. Credo Reference Online
      iv. FirstSearch Databases
      v. LexisNexis Academic
      vi. MasterFILE Premier 20
      vii. ProQuest Research Library
3. Bibliographic Instruction

   A faculty member may contact the library liaison to schedule a class period in which the librarian teaches students about resources that will be most helpful in their classes. Students can also request individual research consultations with a librarian.

Provide a list of program equipment purchases for the last three years.

Recent major purchases for the Chemistry program are listed in Table 9 below. Note that this list does not include computers or audio-visual equipment for use in faculty offices, laboratories, or classrooms. Such equipment is generally replaced every 3-4 years, and is purchased with School of Mathematical and Natural Sciences funds. Some equipment is shared with other disciplines in Math and Sciences.

Table 9—Chemistry Department Major Equipment Purchases From 1-1-2012 to 7-1-2015

Date	Cost $	Item
Spring 2012	10,000	Molecular Modeling workstation and software
Spring 2012	3,500	Furnace
Spring 2102	700	Oakton pH Meter
Spring 2012	1,100	UV-Vis tabletop spectrophotometer
Spring 2012	14,340	Water Distillation Unit (shared with Biology)
Spring 2013	700	Oakton pH Meter
Spring 2013	1,200	UV-Vis tabletop spectrophotometer
Spring 2014	4000	Nitric Oxide Analyzer (used)

INSTRUCTION VIA DISTANCE TECHNOLOGY

The School of Math and Sciences strongly feels that face-to-face course instruction is far superior to on-line or even Compressed Interactive Video (CIV) courses. We have purposely avoided offering chemistry courses using this medium. It is our opinion that we cannot be everything to everyone; therefore we have focused our attention on providing top-notch face-to-face courses for our students. Faculty members are not discouraged from developing on-line or hybrid courses; however, very little has been done in this area. No courses within the Department of Chemistry are currently offered by distance delivery. The following questions are answered based on University policies, but are not applicable to this program.

Summarize institutional policies on the establishment, organization, funding, and management of distance courses/degrees.

The UAM campus governance and academic approval processes are followed for any new course added to the curriculum. Any new degree program, regardless of the method of delivery (distance technology or not) must be reviewed by the faculty, approved by the academic unit dean, the Academic Council, Assembly, Chancellor, the University of Arkansas Board of Trustees, and the Arkansas Department of Higher Education Coordinating Board prior to implementation.

For an existing course to be offered via distance delivery, a Course Shell Authorization form must be completed and signed by the faculty member and approved by the academic unit dean and the Provost. Each faculty member who teaches an online course must participate in Blackboard, the campus learning management system, and in training offered by the UAM Office of Academic Computing prior to each fall semester or as the need arises. Technical assistance is provided by the Office of Academic Computing as needed throughout the academic year.

The UAM Office of Academic Computing is responsible for the management and maintenance of the learning management system server and must communicate with the Office of Academic Affairs regarding available space in classes and other administrative concerns. Additionally, the Office of

Academic Computing is responsible for providing technical assistance to the faculty who teach online courses.

Summarize the policies and procedures to keep the technology infrastructure current.

University of Arkansas at Monticello faculty and students have access to infrastructure and technology that includes intranet, Blackboard, Compressed Interactive Video, broadband Internet, and access to the online catalog, electronic books, and journals available in the Fred J. Taylor Library and Technology Center, as well as web-based mediums. Regular funding is part of an ongoing process that includes technology upgrades, software licensing, and technical support. UAM recently completed an eight-year plan to provide a technology infrastructure that increased the University's academic competitiveness. This plan included Level One technology certification for all buildings on all three campuses.

In the summer of 2010, UAM, a founding member of the Arkansas Research and Education Optical Network (ARE-ON), connected to the ARE-ON Network allowing access to two high-speed national networks, the Internet2 and National Lambda Rail. Completion of this project allowed UAM to collaborate with all universities and colleges that share the network as well as access to the Internet at a much faster rate.

UAM has also purchased a financial and student information software system, PeopleSoft, updating the institution's 25-year old software system, which will make secure access to campus educational and planning resources available to students via the Internet. UAM began offering distance education courses in 1999 with WebCT, and utilized various versions of WebCT until summer 2010, when UAM changed over to Blackboard as its distance learning course management product of choice.

Summarize the procedures that assure the security of personal information.

The UAM Information Technology Department sets forth guidelines for the protection of personal information following information security policies regulated by the State of Arkansas security recommendations. These guidelines state that UAM can only collect personal information through a secure link and with prior approval from the individual involved. Personal information cannot be stored on the course management system by the students or faculty. The Office of Academic Computing regularly scans web sites for the presence of personal information. The removal of any personal information found on the course management system is immediate. The Learning Management system (Blackboard in this case) is subject to the same security measures as all other Information Systems on the UAM campus and meets State of Arkansas security guidelines for protecting personal information.

Describe the support services that will be provided to students enrolled in distance technology courses/programs by the institution and/or other entities.

Support services provided to students enrolled in distance technology include advising, course registration, financial aid services, course withdrawal, e-mail services, access to library resources, and a help desk.

Online students receive the same advising support as students taking courses on-campus. Advisors are available via published contact phone numbers and e-mail and are always ready to help students with preparation for registration. In regard to course registration, students who are registering for only online courses are directed to contact the UAM Office of Academic Affairs for support and assistance. For financial aid for distance education students, students may complete the Free Application for Federal Student Aid (FAFSA) online and can view their financial status via WeevilNet. UAM does not currently allow students to accept aid via WeevilNet; however, that is planned for the near future. Requested verification documents, loan requests, and award acceptance letters can be submitted via mail, e-mail or fax rather than through a personal visit. In regard to course withdrawal, students are directed to contact the institution's director of Academic Advising for support and assistance.

Student e-mail accounts are governed by the University Information Technology department. The UAM webpage contains links to connect to e-mail, tutorials on using the e-mail system, instructions for initial login, and support phone numbers to contact in the event students are unable to log in to their e-mail. Information Technology is open 8 am-4:30 pm Monday-Friday for student e-mail account problems.

Online students may access library resources in the same fashion as other students. The Library website is linked on the main UAM homepage, and provides distance education students access to Subject Guides, Library Guides, the Library catalog, an extensive list of databases, and a tool for searching magazines, newspapers, and journals for information. The Library webpage also provides contact information should students need specific services that are not linked to the main page.

The Office of Academic Computing features a Support Center, also linked on the main UAM Webpage (Blackboard link). This link allows students to access tutorials on "How to Use Blackboard" and "Problems with Blackboard" for students to reference for quick resolutions. The support page also features contact phone numbers for the Support Center, a form to complete to request assistance via e-mail, and a "Live Chat" option in which the student can be directly connected to an individual in the support center for live assistance. The Office of Academic Computing also periodically offers workshops on Blackboard usage; these workshops are now required for all students utilizing any form of distance education.

Describe technology support services that will be provided to students enrolled in distance technology courses or programs by the institution or other entities.

Support services are provided to students enrolled in distance technology courses primarily by the Office of Academic Computing. Faculty members also assist with issues with which they are familiar to help share resolutions. The Office of Academic Computing supports distance technology courses with training workshops on how to use Blackboard, online tutorials, e-mail forms for support, and by providing contact phone numbers for the Support Center, and a web option for Live Chat with support personnel. Blackboard training workshops are now required for all students using any form of distance education. The e-mail form, the chat option, and direct phone calls put users in contact with support personnel who gather information about the user's computer, internet connection, and the specific

problem. Using this information, support personnel attempt to diagnose the issue and provide a timely resolution to the problem.

Describe the orientation for students enrolled in distance technology courses or programs.

Institutional policy in regard to orientation for distance technology courses is as follows (from UAM Faculty Distance Education Handbook):

"Conduct an orientation (online) in each course at the beginning of each term to ensure each student understands the requirements of the course and can access the course. Advise students of the time and energy demands of the course as well as establishing clear limits on what the course is and is not."

Each faculty member interprets this orientation process in a slightly different manner, but all complete the requirements to ensure students understand how to use the software, view the syllabus, utilize the calendar and discussion boards, and how to access other software features. For the Advanced Microcomputer Applications course, there is an on-campus orientation session where the instructor covers the basics of Blackboard, discusses homework requirements, and presents testing dates in person. Each style of orientation session presents the instructors contact information, office hours, and expectations for student performance in the course.

In addition, all students utilizing any form of distance education are required to undergo training through a mandatory e-mentoring course. UAM has developed a fully electronic version of the E-Mentoring program that is accessible at the students' convenience. Students learn the fundamental computer-related skills needed to succeed at UAM, including how to log on to WeevilNet (the student management system), how to access their UAM e-mail accounts, how to use Blackboard, and how to use electronic library resources. Students are also taught how to connect their personal and UAM technologies. Beginning with the Spring 2015 semester, students who wish to take an on-line class are required to take either the electronic version or face-to-face instruction and must be successful in an on-line assessment demonstrating mastery of the information. Students who fail to complete the course in a timely manner are dropped from on-line course registration.

Summarize the institutional policy for faculty course load and number of credit hours taught, compensation, and ownership of intellectual property.

In regard to faculty course load, again referring to the UAM Faculty Handbook: "The course load for fulltime faculty holding the rank of instructor is 15 semester credit hours. The course load for fulltime faculty holding the rank of Assistant Professor or above is 12 semester credit hours."

Distance education courses are treated as part of faculty's standard workload. Thus, distance technology courses are viewed the same as classroom courses in the area of workload, credit hours taught, and compensation. Faculty members are given a special one-time incentive payment for development of each new on-line course that they teach.

In regard to ownership of intellectual property in the area of previously copyrighted materials, the UAM Distance Education faculty handbook sets forth the following guidelines for the use that all faculty must abide by: "Under Section 107 of the copyright law (www.lcweb.loc.gov/copyright) passed in

1976, educators are given special exemptions from the law under the Fair Use Doctrine (http://fairuse.stanford.edu). Educators may use copyrighted works without first obtaining permission of the copyright holder, within limits. There are four criteria for determining whether copyrighted materials have been used legally under this doctrine: (1) Purpose and character of the use; (2) Nature of the materials used; (3) Amount and importance of the part used; and (4) Effect on the market of the use. This site (www.cetus.org/fairindex.html) shows illustrations of the amounts of copyrighted work that may be used under the Fair Use Doctrine.

The Technology, Education and Copyright Harmonization Act (TEACH Act) passed in 2002 expands the Fair Use Doctrine to cover distance education. Generally, exemptions given for face-to-face instruction will apply to online instruction. Please visit the American Library Association website for more information.

The Fair Use Doctrine currently enables educators to use copyrighted materials without first seeking permission. An educator can also use any materials where copyright permission has been obtained. The following sites offer more information.

- The Copyright Clearance Center (www.copyright.com) will obtain permission for educators; a fee is attached to this service.
- The Copyright Management Center at Indiana University/Purdue University site has information on how to seek copyright permissions. (http://www.iupui.edu/~webtrain/web_samples/cmc.html)
- The US Copyright Office (www.lcweb.loc.gov/copyright) allows one to search a database for copyright ownership."

In regard to course ownership of intellectual property developed by University faculty, please refer to attached APPENDIX F – University of Arkansas Board of Trustees Policy 210.2 regarding course ownership. In summary, this policy states that in most instances, faculty will own the copyright to material they have created, and retain the right to update, edit, or revise their work. Faculty also will receive all revenues of commercialization of content they create of their own initiative. For materials developed in regard to faculty contract employment pursuits, the University will retain the right for all revenues, but may decide to share such revenues with the developer at the discretion of the University.

MAJORS/DECLARED STUDENTS

State the number of undergraduate and graduate majors/declared students in each degree program under review for the past three years.

Number of students in the Chemistry program has grown by approximately 50% over the last three years. This is largely due to growth in the Biochemistry Option of the Chemistry major. A large percentage of students that are seeking admission into medicine, pharmacy, or other professional programs are majoring in that option. Many are double majoring in Biology/Biochemistry. The students that have chosen this path have been extremely successful in gaining admission into professional and graduate programs. Table 10, below, lists the number of Chemistry majors by class level during this period. There are no graduate Chemistry majors, as there is no graduate program in Chemistry at UAM.

Table 10—Number of Chemistry Majors per Class Level per Year, 2012-2015

	2012-2013	2013-2014	2014-2015
Freshman	6	10	13
Sophomore	4	4	5
Junior	4	7	4
Senior	4	4	6
Total	18	25	28

Describe strategies to recruit, retain, and graduate students.

As part of recruiting, the School of Mathematical and Natural Sciences has developed relationships with area high school chemistry teachers. Chemistry faculty members occasionally make trips to local middle schools and high schools to present chemistry topics to Chemistry or other science classes. One faculty member, Dr. Morris Bramlett, is very involved with the Advanced Placement Chemistry courses, and has worked with the Arkansas Advanced Initiative in Math and Sciences (AAIMS). He has provided training to over 1000 AP Chem students and their teachers over the last 5 years. These activities give faculty members an opportunity to market the University, and the Chemistry program in particular. Some of these students have chosen UAM, and have majored in chemistry.

The School of Mathematical and Natural Sciences also recruits potential students during their visits to events such as Scholar's Day, Weevil Welcome Days, and Parent/Family Appreciation Day. The Office of Admissions does an outstanding job of identifying top-notch students with skills in biology, chemistry, and mathematics and forwarding their information to our office. Prospective students receive a contact letter describing the Chemistry and pre-professional programs and an invitation to visit the school for further information concerning the Bachelors of Science degree in Chemistry.

The State of Arkansas has changed the formula for state funding to emphasize the importance of retention, progression, and graduation, so that UAM has become even more focused than before on these important issues. The School of Mathematical and Natural Sciences has been heavily involved in a campus-wide initiative to promote retention and graduation. This initiative has resulted in a five-pronged attack on low retention and graduation rates:

1. E-Mentoring. This portion of the initiative seeks to teach students the fundamental computer related skills needed to succeed in both the traditional classroom setting and the on-line environment. This will be accomplished through the establishment of a Technology Fair, the introduction of a required On-line Learning Skills Course, and improvement and expansion of faculty use of Blackboard.

2. First Four Weeks program. This program seeks to improve student engagement, interest, and success during the first four weeks of each semester through a variety of techniques involving faculty-student interactions in the classroom. Faculty members will become more focused on raising expectations for student success, on communicating what those expectations are, on providing rapid, regular, complete feedback to students, and promoting active, engaged

learning. Faculty members will also increase the integration of Student Support services into the learning experience.

3. First-Year Experience program. This initiative seeks to expand efforts to improve student success during the first year. Efforts will be made to aid students in improving their study skill set, and to provide assistance to faculty members in integrating study-skills components into freshmen level classes.

4. Student Services. This program seeks to increase the effectiveness of Student Services programs by achievement of synergies between academic advising, admissions, athletics, counseling/testing, instructional technology, library services, academic faculty, and the recruited student.

5. Remediation. Revision of scheduling and course load for students who require remediation has occurred, and adjustments will be continued as needed.

Several faculty members in the School of Mathematical and Natural Sciences served on the various committees involved in construction of this initiative, and many of the proposed strategies are already used by the Chemistry faculty, but more are being incorporated into the program.

To retain and graduate students, a large amount of emphasis is placed on academic advising. Every semester, each Chemistry major must meet with his academic advisor prior to enrollment in classes. The advisors carefully plan the sequence of courses so that the student can graduate at the desired date. After the student reaches 70 hours, the advisor and student must submit an Advisement Report and a degree completion plan to the Registrar's Office.

Free chemistry tutoring is available on campus for students who are struggling, even in upper level courses. Many Chemistry upper level majors earn work-study wages by working in the tutoring lab. This helps the tutors handle the financial burden of college, while improving their chemistry and teaching skills. Other students work as lab TA's, or grade homework for the Chemistry faculty members. The Chemistry faculty members spend an enormous amount of time providing help sessions or working one-on-one with students during office hours.

During the student's last year of undergraduate work, faculty members help students with placement into a job in their field, or acceptance into a program where they can continue their education, such as medical school, dental school, pharmacy school, veterinary school, graduate school, or a masters of teaching (MAT) program. Even after graduation, faculty members often act as mentors for former students in various post-baccalaureate programs.

Provide the number of program graduates over the past three years.

There were 6 graduates of the UAM Chemistry program in 2013, 11 in 2014, and 12 in 2015, or an average of 9.7 per year. This is up considerably from the 10-year average of 5.3. Eight of these graduates from the past three years are students that received early admission into medical school or pharmacy school and were allowed to transfer courses back to UAM in order to complete their chemistry degree.

Program Assessment

Describe the program assessment process and provide outcomes data (standardized entrance or placement test results, exit test results, etc.).

The School of Mathematics and Natural Sciences uses four primary means for assessment of students as they work through the program and as an annual assessment of the program itself. Firstly, students are evaluated by course examinations and projects to measure their learning. Exams cover material from the textbooks, instructor lecture, or activities completed during the course. In some classes, projects or homework are opportunities for students to display their understanding of concepts taught in the course as part of the grading component.

Secondly, several chemistry courses use the American Chemical Society standardized final exams. While we are not an ACS approved program, we closely follow their recommendations for maintaining a quality program. Even though many of the universities that utilize this exam are private, and highly exclusive in nature, UAM students have achieved an average score at or above national average on many of these exams. Currently, the ACS exams are being used in General Chemistry, Organic Chemistry, and Biochemistry.

Thirdly, junior and senior students often take a standardized exam involving chemistry, including the MCAT pre-medical examination, the PCAT pre-pharmacy exam, the DAT pre-dental exam, or the OAT pre-optometry exam. Each exam has one or more sections that are specific to chemistry, or include chemistry as a major component. Others may take the GRE, as a prelude to application to graduate school or veterinary school (rarely does anyone take the Chemistry subject exam, because most graduate programs require only the general GRE exam). Students are strongly encouraged to report results of these exams to the School of Math and Science, specifically so that the scores can be used to assess program effectiveness. Recent pre-professional exam scores are shown in the table below. Note that not all students report results of such tests, and that some students take more than one test, or take one test more than once.

Table 11—Results of Standardized Pre-Professional Test Scores for Chemistry Majors

OAT (Optometry Admission Test) Chemistry Majors - self reported

Student	Year	Gen Chem	%ile	Org Chem	%ile	Total Science	%ile
Scott	2009	310	61	400	100	350	88

GRE (Graduate Record Evaluation) Chemistry Majors - self reported

Student	Year	Verbal	%ile	Quantitative	%ile	Analyt	%ile	Chem subject	%ile
Henley	2007	580	81	660	63	4	33	560	16
Lowe	2008	410	35	610	51	3	08		
Ramsey	2008	400	33	620	52	2	01	560	13
New Scoring System									
Rose	2012	158	79	160	84	4.5	72	750	72
Stephens	2012	162	90	160	84	4	NA		

MCAT (Medical College Admission Test) Chemistry Majors-self reported

Student	Year	Physical Sciences	Total Score
Renfroe	2010	10	29
Scott	2010	10	28
Ellington	2011	8	24
Hathcox	2011	7	22
Lockwood	2011	10	32
Probst	2012	9	28
Rose	2012	11	34
Wallace	2012	7	25
Whipple	2012	14	39
Beatty	2013	8	23
Brown	2014	7	26
Holland	2014	6	16
Reyes	2014	10	29
Snider	2014	8	22

DAT (Dental Admission Test) Chemistry Majors - self reported

Student	Year	Gen	%ile	Org	%ile	Total Science	%ile
Ellington	2009	18	61	17	53	17	51
Wallace	2010	17	47	21	86	18	63
White	2011	12	4	15	30	14	14
Pope	2011	18	62	18	60	17	49
Roberts	2012	18	62	16	38	17	49
Roberts	2014	21	89	19	75	20	88
Cason	2014	20	82	21	85	21	91

PCAT (Pharmacy College Admission Test) Chemistry Majors - self reported

Student	Year	Chem	%ile	Composite	%ile
Dickey	2010	400	48	396	39
Huddleston	2012	412	68	410	68
Livingston	2012	422	77	402	50
Norrell	2012	392	34	401	47
Rice	2012	405	56	390	25
Smith	2012	395	39	400	45
Stevens	2012	408	61	417	81
White	2012	418	76	409	66
Cash	2013	439	93	414	76
Emberton	2013	415	72	406	59
Hill	2013	426	85	412	72
Ashcraft	2014	422	81	414	76
Emanuele	2014	415	72	412	76
Haire	2014	418	76	419	84
Raney	2014	405	56	388	20
Thomasson	2014	411	65	405	57
Wall	2015	415	72	399	43
Berryman	2015	396	45	382	16
St. John	2015	418	76	410	68

Fourthly, Chemistry Advanced Lab Techniques, CHEM 4742, has evolved into the capstone course required of all Chemistry majors that have not done undergraduate research and presented their findings at a professional meeting. The course covers materials that are not part of a typical chemistry curriculum but might be helpful if they enter a graduate program. Students in the course must write a research paper and give an oral presentation, demonstrating knowledge and understanding in a specific area of chemistry. Students may use original research if they are participating in such research with faculty. Some of these students also present their work at a state, regional, or national meeting. While the level of expertise varies from year to year, most students perform at the level expected for a senior chemistry major. Over the last three years, two students have been required to redo their presentations.

Finally, the program is assessed by placement of the graduates. Most graduates are successful in finding positions. A large percentage of UAM Chemistry students who have applied to medical schools and pharmacy schools over the last 10 years have been accepted (although not all made it on the first try). Every student who has applied for graduate school in the last ten years has been accepted. Some students have applied to MAT programs; again, the acceptance rate is very high. A few have gone into private business or industrial positions. A graduate placement list is shown in APPENDIX G.

In addition to these methods of assessment, the Chemistry program undergoes an annual assessment reporting process whereby faculty assess the program on the basis of student learning outcomes and how they relate to the mission of the University, student performance and evaluation, and program efforts in the area of student retention. This report is submitted to the Provost each August.

Describe program/major exit or capstone requirements.

Senior Chemistry majors have the option of taking CHEM 4742 Advanced Lab Techniques, CHEM 4611 Chemistry Seminar, or CHEM 4691 Senior Research. Chemistry Seminar is rarely offered. Advanced Lab Techniques has evolved into the capstone course for the chemistry majors. Topics that are fairly modern and specialized are covered in different segments of the course. Each year, a different focus is chosen and some of the segments are tied to the overall topic. The student must also review literature related to that topic, write a research paper, and do a 10-15 presentation to their peers and faculty. Since this course is team taught with each faculty member teaching a different segment, the students will study a wide variety of topics and learn skills that will help them in a graduate program. Some of the specialized topics covered in the past have been: glassblowing, multi-dimensional NMR, topics in UV-Vis spectroscopy, food analysis, molecular modeling, and organometallic chemistry.

The course requires that each student conduct library research on a specific topic in chemistry. The instructor must approve the chosen topic. The student should search through the chemical literature and gain detailed knowledge of the topic. The student is required to submit a word-processed report in a pre-selected journal format, with references, and to give a fifteen-minute oral presentation on the topic. By going through this process, experiences are obtained that better enable the student to enter the job force or professional school with confidence. The student also learns to demonstrate

higher level communication skills and chemical knowledge. The grade awarded is based on performance in the individual segments and the student's ability to organize important information, provide adequate coverage of a topic, and to complete a written report and an oral presentation while meeting pre-set deadlines. The most recent syllabus for this course is included with all other syllabi in APPENDIX D.

Provide information on how teaching is evaluated, the use of student evaluations, and how results have affected the curriculum.

Teaching evaluation is one of the main components of the faculty evaluation process. Courses are evaluated through classroom observation by the Dean of the School of Mathematical and Natural Sciences and peer faculty, and by student evaluations. The classroom observation portion of the evaluation process focuses on a faculty member's preparation and organization in the classroom, knowledge and presentation of the content, and communication and interpersonal relationship skills. This evaluation gives the reviewer a chance to provide constructive criticism on teaching performance and to suggest possible improvements. Please refer to APPENDIX H for the Classroom Visitation Form.

Student evaluations are an important means of feedback on the instructor's performance, the course content, and an opportunity to provide valuable comments and feedback for possible improvements in the course. Students are first asked to evaluate themselves as a student, thus providing some context for their input in regard to their classification, effort level, attendance, projected grade, and academic history. Students also evaluate the instructor on material presentation, teaching performance, and effectiveness. After evaluating the instructor, the student evaluates the course itself in the areas of content, testing, assignments, and textbooks. Student input is valuable in both the faculty evaluation process and feedback on the courses themselves. Student evaluation of courses is an important part of the process whereby the faculty reviews our curriculum. Student written comments in particular can provide valuable insight that faculty can consider for changes in course content or curriculum, or the possible creation of new courses.

Student evaluation of teaching is accomplished through a secure online survey operated by CoursEval. (The evaluation is being transitioned to Blackboard during the 2015-2016 academic year, but the evaluation process will be the same.) Students complete the survey outside of class. The survey consists of 6-8 specific questions, with opportunities to include written comments on some of the questions. In the survey, statements are made and the student has the opportunity to Strongly Agree, Agree, Neither Agree nor Disagree, Disagree, or Strongly Disagree. The survey statements used on the Spring 2015 evaluations are:

1. The instructor is willing to help the students learn.
2. The instructor shows interest in and knowledge of the subject.
3. The instructor demonstrates effective oral and written communication skills.
4. I would recommend this instructor to other students.
5. I have more knowledge and a deeper understanding of the subject matter as a result of this course.
6. (A written response question) What did you like and dislike most about this course?

Faculty members use the written response question to make minor changes in their policies and course content. In addition, faculty members have the option to add questions to the normally used questions when specific circumstances dictate.

Provide transfer information for major/declared students including the receiving institutions for transfer and programs of study.

Incoming transfer students are welcomed to the program. Their transcripts are analyzed by one or more faculty members, and determinations are made as to which major requirements have been adequately fulfilled. There have been very few transfer students entering the program, and most of those have had very few courses in Chemistry above the general education core. Faculty members are familiar with the other in-state programs and can efficiently evaluate the transcripts for students from those institutions. For other universities, the Registrar often supplies catalog information to the Chemistry faculty to help in placement. Course substitutions are allowed when appropriate.

The Chemistry program does not serve as a feeder for specific programs at other institutions, so we rarely have a program student transfer to another university, other than for early acceptance into pharmacy and medical school. However, all eligible courses follow the requirements of the Arkansas Course Transfer System, which sets standards for transfer of coursework in general education and some other courses between public universities in Arkansas. UAM Chemistry courses which meet these requirements include Introductory Chemistry and lab, General Chemistry and labs, and Introduction to Organic and Biochemistry and lab. Students or faculty at UAM or other universities may determine transfer eligibility at the Arkansas Department of Higher Education website (http://acts.adhe.edu/studenttransfer.aspx).

Provide information for program graduates continuing their education by entering graduate school or by performing volunteer service.

Chemistry faculty members at UAM feel that the program is successful when graduates are able to move on to the next level of their educational journey. It is the goal of the department to provide a program that is sufficiently broad to allow students to enter graduate programs, pre-professional programs, or to directly enter the workforce. The faculty works closely with: (1) all Chemistry majors to make sure they are advised into the proper courses for the pathway they have chosen, and (2) with juniors and seniors to help them make choices that best fit their skills and goals and to assist them through the various application processes. One Chemistry faculty member is designated as the pre-med advisor, and acts as the primary advisor for most Chemistry majors who wish to enter medical school. Another faculty member, and the dean, works with those wishing to enter pharmacy school. Over the past three years, 8 chemistry majors have been accepted into medical school, 12 have been accepted into pharmacy school, one has been accepted into dental school, one has been accepted into veterinary school, 5 have been accepted into graduate school for chemistry or other sciences. Note that these numbers do not include several students who were accepted into pharmacy school unless the student met the requirements of graduating as a professional school student, which is 93 hours, all

general education completed, and a minimum of 12 hours of upper level credit from UAM. Placement information for all Chemistry graduates for the last ten years is provided in APPENDIX G.

Provide aggregate results of student/alumni/employer satisfaction surveys.

Each year, graduating seniors are invited to an exit interview with the Dean of the School of Mathematical and Natural Sciences. Many students take advantage of this opportunity. This year, 7 graduating Chemistry students participated in the exit interview. Their responses were very similar to those from previous years. The usual questions asked during the interview and typical responses are found below:

1) Background information: Name, Hometown, Major, Mailing Address, E-mail.
2) What brought you to UAM?
3) How do you rate your time at UAM, 1-5 with 5 being best?
4) What were your favorite parts of your educational experience at UAM?
5) What were your least favorite parts of your educational experience at UAM?
6) If you could do it over again, would you come to UAM? If no, why not?
7) Do you feel that you have received a quality education at UAM? If no, why not?
8) Is there anything you would change in your major curriculum?
9) Is there anything you would change in your minor (if in Math and Sciences)?
10) Was your academic advising adequate?
11) What about UAM would you change if you were chancellor for the day?
12) What are your plans after graduation?
13) What are your long term plans?
14) Is there anything else you would like to tell us?

Most Common Responses:

2) Grew up locally, didn't want to go far away. Have family that work in this area. Came because of athletics.

3) Most rank either 4 or 5. Occasionally someone ranks a 3. No student gave ranking of 1 or 2.

4) Small classes. Get to know professors and other students very well. Cheap. Lots of work study opportunities. Lots of friends here. I learned a lot.

5) Upper level courses not offered often enough. Not big enough to avoid course conflicts with multiple sections of some courses. Nothing to do here socially.

6) Most answer yes. Those that answer no usually indicate it is for non-academic reasons (lack of social life is most common explanation).

7) Most answer yes. The only negative response came from someone with no interest in graduate school or professional program, and couldn't find a job in this region in their area of study.

8) Reduce the number of labs needed for a degree in sciences. Don't have quant lab twice per week. More night class offerings. Offer more electives in chemistry.

9) Most say they have no changes. Don't require minors to take the lab portion of the courses. Increase the number of upper level options in physics.
10) Most say yes. There are a few, especially those that start in general studies, who complain about their first semester advising.
11) This question has a wide variety of replies. Improve buildings. Improve parking lots. Give entire campus wireless access. Build a new entrance to the college that doesn't have to go through Drew Central or Monticello schools. Drop athletic programs. Relax the alcohol rules on campus. Drop the history requirement.
12) Most have jobs or professional programs in place
13) Most have specific plans involving family and employment near hometown. A few plan to leave for bigger city.
14) This is most often unanswered.

The School of Mathematical and Natural Sciences has not conducted any sort of employer satisfaction survey concerning our graduates. However, constant contact with administrators and recruiters at professional schools indicates that UAM students are usually successful upon matriculation. Graduates of UAM are recruited strongly by medical schools such as UAMS and William Carey, and by pharmacy schools including UAMS, Harding, and UT-Memphis. The School of Math and Science works closely with school districts in the area, and its students are often hired as teachers of chemistry or other sciences. UAM students are widely praised by school administrators for their content knowledge.

Every effort is made by the Dean of Math and Sciences and by faculty members to remain in contact with Chemistry alumni. Very few of these students have indicated that they have experienced any problems because of weaknesses in the program. Instead, most report that they have been exceptionally well-prepared for professional school or graduate programs. Many have been highly complementary of the Biology-Biochemistry double major.

Describe how the program is aligned with the current job market needs of the state or local communities.

Arkansas has an extremely strong demand for health-care professionals, including doctors and pharmacists. This area of the state has a an exceptional high need for those professionals. The Chemistry faculty constantly monitors the requirements for medical and pharmacy schools (as well as dental, veterinary, graduate, and other post-baccalaureate programs) to ensure that the curriculum is properly aligned with these schools. The Dean and Chemistry faculty remain in constant contact with school districts in the area to ensure that demand for teachers is met. Various industries in southeastern Arkansas call and inquire about graduates anytime a position is open. The curriculum is broad enough, with two different degree tracks that graduates are well-prepared for entrance into a professional program in health care, an industrial laboratory, or education.

Provide job placement information for program graduates including the number of graduates placed in jobs related to the field of study.

A list of program graduates for the last 10 years and their initial placement is provided in APPENDIX G.

Program Effectiveness (strengths, opportunities)

List the strengths of the program.

The major strength in the program is the devotion of the faculty. The School of Mathematics and Natural Sciences has a very experienced and caring Chemistry faculty who are continually searching for better methods to serve the students. All tenure-track faculty members have received tenure and promotion, and have been at UAM since at least 2009. The faculty members are extremely student-focused. Virtually every activity of each faculty member is conducted with students in mind; this student focus extends to faculty research programs and service activities. This attitude extends not just to Chemistry majors, but to all students of the School of Math and Science, and indeed to all students who take classes in the department. Every member of the faculty, from the most experienced professor to the newest lab instructor, understands that the only true measure of the success of the Department is the success of our students, so that every effort is made to ensure that success.

In 2009, the Biochemistry Option of the Chemistry degree was started. Since its inception, it has been hugely successful. This option requires a one-semester Physical Chemistry, the two-semester Biochemistry and lab sequence, and does not require Instrumental Analysis. It also requires several hours of Biology courses as supportive requirements which makes it a perfect fit for those interested in attending medical school or pharmacy school. Because supportive requirements can be used in a second major, the Biology-Biochemistry double major is hugely popular, and the graduates from that group have near a 100% acceptance rate into professional programs and graduate school. The addition of this major has greatly increased our number of majors and graduates, despite the fact that the number of traditional chemistry graduates is small.

A strength of the Chemistry program is the strong relationship with other science faculty. The Biology department at UAM is very strong, especially when size of the University is considered. Establishment of the Biology-Biochemistry track has required the two departments to work closely together on scheduling and curriculum. Fortunately, this has never been a problem, as the faculties of the two departments have been close colleagues for decades. Rivalries and hard feelings between these departments that are sometimes seen at other universities are non-existent at UAM; instead, biologists and chemists often work together on research projects and consult with each other about matters of curriculum, science, and student affairs. This collegiality extends to Math, Physics, and Earth Science faculty.

Another strength of the Chemistry program is the support received by the program from administrators and staff across the University. The Dean of Math and Science is a chemistry faculty member that very much enjoys teaching. He remains involved in the day-to-day operation of the Chemistry program. He constantly fights for funding and is always willing to try any suggestion by the

faculty that will help students to succeed. The Admissions Office and Chemistry work closely to recruit top-notch students and to find scholarships or other financial aid for deserving students. The director of admissions is a strong supporter of the sciences at UAM. Upper administration recognizes the quality and success of the program and has moved to support it, especially within the last 5 years. The previous chancellor and the provost both openly praise Chemistry and the other sciences at every possible opportunity.

A major strength of the Chemistry program is the students. As a whole, UAM is known as an open-admissions university; however, very few students with low ACT scores enter the School of Mathematics and Natural Sciences. Data from a few years ago indicated that the average ACT for an entering freshman class was 17.4. The average ACT for the math and science majors was 24.3. The successful students are willing to work hard and put in endless hours studying or working in the research labs. For the last several years, the upper level students have been instrumental in educating the freshmen in terms of what is expected of them. The students are quite proud of our record of success of acceptances into professional and graduate programs. As a whole, the School of Math and Sciences students are very involved with other aspects of university life. Some are athletes, several are members of the Ambassadors, which is an elite group in the Office of Admissions that serve UAM. Several are in honor societies, such as Alpha Chi and Sigma Zeta. Many of our students are office holders in clubs and social organizations.

List the areas of the program most in need of improvement.

The annual budget to support the sciences is less than is needed to maintain and replace aging equipment and supplies. A separate account of $10,000 is set aside each year for the School of Math and Sciences to purchase equipment. While this is greatly appreciated, it is not nearly enough to support Math, Physics, Geology, Biology and Chemistry. Even the full amount is not enough to purchase larger equipment needed in chemistry. The last few years, a large portion of the money has gone to upgrade physics, which was in dire need of replacing aged equipment. Two years ago, a plan was implemented where part of the $10,000 budget would be set aside in order to make larger purchases in the future. Although this will be a slow process, we hope that this will help improve the equipment holdings, which is the greatest improvement needed in the Chemistry program.

The physical facilities are in great need of replacement. The Science Center continues to break down. There are several roof leaks that have not been repaired, despite multiple attempts. The cement steps are breaking apart in several locations around the building. Mold grows very well in the shady overhangs and shaded sides of the building. There is no return air in the labs which have hoods, so a great deal of air from underneath the building is pulled into the rooms. This has caused major problems with mold growing behind hoods, underneath lab benches, and under the heating and cooling units. Several faculty offices have mold deposits. Windows are original to the building. Most do not fit well and allow air and rain to enter the building. None offer any insulation. Since some of the windows are on the walls adjacent to raised sidewalks, security is non-existent. Many of the locking mechanisms are rusted to the point of not working at all. One digital projector system was stolen from the Science Center; others have been vandalized. Exterior doors offer little security. Frequently rain is blown under

the doors. During weather changes more than one door sticks allowing air conditioning to be lost and creating very distracting noises. At times during the past year, certain doors were blocked off due to problems with the doors dragging. Even with its problems, many students think of the Science Center as their second home and hang out in the building between classes, despite the fact that there are no real student lounges or study areas. On top of the dilapidated state of the Science Center, it is too small to cope with growth in size and number of classes, and storage space is nearly non-existent. Great efforts have been made to make the Science Center a comfortable learning environment, but despite the best efforts of the Maintenance Department and the Dean of Math and Sciences, the building is unsafe, unhealthy, lacking in security, ugly, and a barrier to recruitment. Fortunately, the upper Administration and Board of Trustees have recognized the situation and have made replacement of the Science Center a top priority of the University.

The number of Chemistry faculty has been the same for the past several decades. Enrollment today is twice as much as it was 30-40 years ago. This has led to much larger sections, and even more sections being taught. Not only does this diminish the quality of instruction, but this leaves little time for research or other scholarly activities. Faculty are not given full credit toward their teaching load when teaching a laboratory, even though every faculty member will tell you that they had rather teach an additional lecture instead of a lab if given the choice.

Chemistry faculty members are underpaid compared to faculty at similar institutions in the state and across the region. This disparity is especially egregious considering the experience and abilities of the faculty and the success of the students. Nowhere is this more evident than in the salaries of the lab instructors. Because laboratories traditionally have counted less toward the teaching load of faculty members, those who teach only labs have some of the heaviest workloads. Science laboratories are extremely important to students, as is reflected in the comments of graduates. However, lab instructors in the department have salaries which are even lower and more stagnant than other faculty members. When recently hiring a lab instructor, several qualified high school teachers turned down the opportunity to apply due to the fact it would been a pay cut from their current position. There is some indication that the upper administration of the University has recognized this problem and will begin moving to solve it, but until this happens, faculty salaries will remain a drag on the morale of the Department.

There is an ever-increasing need for research experiences for Chemistry students. Many graduate schools and professional programs want students to have research experiences, which requires that our faculty members be able to provide research opportunities. However, as teaching loads are presently calculated, faculty members receive no credit for one-on-one research training with students. This policy needs to be modified to encourage and reward faculty members for mentoring undergraduate research. We have essentially reached a point where most of the faculty are unable to take additional students because they lack research space, equipment, and time. Some students have been put on hold simply because another student cannot be properly mentored at that time.

List program improvements accomplished over the past two years.

The Department of Chemistry, its faculty, and its students have been consistently successful for many years. Faculty members continue to receive nominations and awards for teaching, student research results in awards and publication of results, and students continue to be accepted into post-graduate programs at an extremely high rate. To continue this success, the faculty is always striving to improve and upgrade the program. The largest improvement over the last two years is the increase in the number of undergraduates performing research and making presentations at professional meetings.

There have been no changes to the Chemistry curriculum in the last two years. The last change was three years ago, when Differential Equations was removed as a requirement for the traditional chemistry degree. This was done to make the program more in line with the American Chemical Society recommended curriculum and to lower the number of required courses in the major and supportive requirements.

For those seeking the Biochemistry Option of the Chemistry degree, there have been several additions of Biology upper level courses that serve as popular electives. Molecular Biology, Immunology, and Pharmacology are very popular electives for the Biochemistry Option students.

Describe planned program improvements, including a timetable and the estimated costs. Identify program improvement priorities.

The most important improvement planned is a new Science Center. During 2014, a Building Committee was established to work with an architect to submit a proposal for a new Science Center. The Committee and the architect submitted a plan for a three-story building with ample classroom and laboratory space. Estimated cost of the new building is 25 million dollars. The UAM Office of Advancement has begun preliminary efforts to secure funding for the building, and the Administration has declared that the new Science Center is the top priority of the University. A timetable for building the new Science Center is contingent upon funding, but the architect estimated that construction would require about two years once the appropriate funds have been raised to start the building. The goal is have approximately one-third of the funds raised through private donations, one-third through a bond issue, and one-third from the state. Proposed plans for the new Science Center are included in APPENDIX I.

Improvements will be made in equipment holdings. Recently, an equipment grant was received from the Arkansas IDEA Network for Biomedical Research Excellence (INBRE). A new HPLC system will be purchased along with several smaller items with that grant money. This purchase will be made within the next few months. For the next round of funding on this grant, it is likely that we will seek a GC-MS. This would be used in several upper level courses, as well as in research. It is hoped that this piece of equipment would be purchased in the next five years. Another piece of equipment that will likely be considered for the next major purchase in chemistry is an NMR. Because of our size and limited resources, we cannot afford the cryogens necessary for a super conducting instrument. We are strongly considering the injected sample NMR by Thermo-Fisher because of its reasonable price and durability. We currently have a 60 MHz Hitachi instrument that is broken. Some work has been done on that

instrument; however, it is not known whether it can be repaired to satisfactory condition. Other small items, such as Spec-20 type spectrophotometers, pH meters, etc... are needed for the teaching labs.

APPENDIX A—CHEMISTRY EIGHT-SEMESTER PLANS

CHEMISTRY MAJOR -Traditional

CHEMISTRY MAJOR – Biochemistry Option

BIOCHEMISTRY/BIOLOGY DOUBLE MAJOR

Chemistry Major

(120 hours required, with 40 hours 3000-4000 level courses)

	Fall Semester, Year 1	Hours		Spring Semester, Year 1	Hours
ENGL 1013 ACTS ENGL 1013	Composition I	3	ENGL 1023 ACTS ENGL 1023	Composition II	3
MATH 1043 ACTS MATH 1103	College Algebra	3	MATH 2255 ACTS MATH 2405	Calculus I	5
MATH 1033 ACTS MATH 1203	Trigonometry	3	CHEM 1113 ACTS CHEM 1424	General Chemistry II	3
CHEM 1121 ACTS CHEM 1414	General Chemistry I Lab	1	CHEM 1131 ACTS CHEM 1424	General Chemistry II Lab	1
CHEM 1103 ACTS CHEM 1414	General Chemistry I	3	*(2)	Social Sciences Gen Ed Req.#2	3
*(2)	Social Sciences Gen Ed Req. # 1	3			
		16	Total		15
	Fall Semester, Year 2	**Hours**		**Spring Semester, Year 2**	**Hours**
CHEM 3404	Organic Chemistry I	4	CHEM 3414	Organic Chemistry II	4
*(6) BIOL	Freshman Biology	3	*(4)	Humanities Gen Ed Req	3
*(6) BIOL	Freshman Biology Lab	1	MATH 3543	Calculus III	3
MATH 3495	Calculus II	5			
*(3)	Speech General Ed Req	3			
			*(5)	History or Gov. General Ed Req	3
				Minor Requirement	3
Total		16	Total		16
	Fall Semester, Year 3	**Hours**		**Spring Semester, Year 3**	**Hours**
*(1)	Fine Arts Apprec. General Ed Req	3	CHEM 4704	Physical Chemistry Thermodynamics	4
CHEM 3314	Quantitative Analysis	4	or	or	or
PHYS 2313 ACTS PHYS 2034	University Physics I	3	CHEM 4714	Physical Chemistry Kin and Qua. Mech	4
PHYS 2231 ACTS PHYS 2034	College & Univ. Physics I Lab	1	PHYS 2323 ACTS PHYS 2044	University Physics II	3
	Minor Requirement	3	PHYS 2241 ACTS PHYS 2044	College & Univ. Physics II Lab	1
			CHEM 3444	Instrumental Analysis	4
			or	or	or
			CHEM 4742	Adv. Lab Techniques *(7)	2
				Minor Requirement or General Elective	3
Total		14	Total		13-15
	Fall Semester, Year 4	**Hours**		**Spring Semester, Year 4**	
CHEM 3-4xxx	Chemistry upper level elective	3	CHEM 4704	Physical Chemistry Thermodynamics	4
	Minor Requirement	3	or	or	or
	Minor Requirement	3	CHEM 4714	Physical Chemistry Kin and Qua. Mech	4
	Elective	3	CHEM 3444	Instrumental Analysis	4
	Elective	3	or	or	or
			CHEM 4742	Adv. Lab Techniques *(7)	2
				Minor Requirement	3
				Minor Requirement	3
				Elective as needed to reach 120 hrs	1-3
Total		15	Total		13-17

A student with a good math background may elect to take Calculus I as the first college math course. If this is the case, College Algebra and Trigonometry may be waived; however, additional hours must be taken to reach the 120 hours needed for graduation.

Students required to enroll in remedial courses will need to take additional hours per term, or attend summer school.

A minor is required for this major. Any minor may be chosen; however, the most common minors selected for this major are mathematics, physics, or biology. Some minors may require more than 18 hours. Some minors may be completed with fewer hours since some courses are listed as supportive requirements. See the current catalog and your advisor for specific minor requirements.

*(1) Fine Arts Appreciation can be either ART 1053 Art Appreciation (ACTS ARTA 1003) or MUS 1113 Music Appreciation (ACTS MUSC 1003)

*(2) Social Sciences Gen Ed Requirements can be filled with two courses of the following **from two different disciplines:** ANTH 2203 (ACTS ANTH 2013) Cultural Anthropology, CJ 1013(ACTS CRJU 1023) Introduction to Criminal Justice, ECON 2203 (ACTS ECON 2103) Principles of Macroeconomics, ECON 2213 (ACTS ECON 2203) Principles of Microeconomics, GEOG 2213 (ACTS GEOG 1103) Geography I , GEOG 2223 Geography II, HIST 1013 (HIST 1113) Surv of Civ I, HIST 1023 (ACTS HIST 1123) Survey of Civ II, PSY 1013 (ACTS PSYC 1103) Introduction to Psychology, SOC 2213 (ACTS SOCI 1013) Introduction to Sociology, SWK 1013 Introduction to Social Work. If you are applying to medical school at UAMS and other colleges of medicine, you should take PSY 1013 (ACTS PSYC 1103) Introduction to Psychology, SOC 2213 (ACTS SOCI 1013) Introduction to Sociology to complete your social science electives. These courses will be required courses at most colleges of medicine and material from these courses will be on the MCAT exam. It may be a good idea to take PSY 2203 Statistical Methods as a general elective to help prepare you for material that will be on the new MCAT exams.

*(3) Speech General Ed Requirement can be: COMM 1023(ACTS SPCH 1003) Public Speaking, COMM 2283 Business and Prof. Speech, or COMM 2203 Interpersonal Communication

*(4) Humanities General Ed. Requirement can be: ENGL 2283(ACTS ENGL 2113) World Lit I or ENGL 2293(ACTS ENGL 2123) World Lit II

*(5) History or Government General Ed. Requirement can be: HIST 2213(ACTS HIST 2113) American History I, HIST 2223(ACTS HIST 2123) American History II, or PSCI 2213 (ACTS PLSC 2003) American National Government

*(6) Freshman Level Biology and Freshman Level Biology Lab can be: BIOL 1063 and BIOL 1071, Introduction to Biological Science and Introduction to Biological Science Lab **or** BIOL 2053 and BIOL 2041, Principles of Biology I and Principles of Biology I Lab.

*(7) Advanced Lab Techniques may be replaced with CHEM 4691, Senior Research; or CHEM 4611, Chemistry Seminar; however, an additional hour must be taken to reach the 120 hours needed for graduation.

Biochemistry Major

Common course work for Pre-Med, Pre-Dentistry, Pre-Pharmacy, and other professional programs. A minor is required. This course plan exceeds most professional school's entrance requirements; however it gives you the best chance of being accepted and also being successful in the professional program. It is a good idea to keep in contact with the schools to which you plan on applying. If you would like a different major, see your pre-professional advisor.

Fall Semester, Year 1		Hours	Spring Semester, Year 1		Hours
ENGL 1013 ACTS ENGL 1013	Composition I	3	ENGL 1023 ACTS ENGL 1023	Composition II	3
MATH 1043 ACTS MATH 1103	College Algebra	3	MATH 1033 ACTS MATH 1203	Trigonometry	3
CHEM 1121 ACTS CHEM 1414	General Chemistry I Lab	1	CHEM 1113 ACTS CHEM 1424	General Chemistry II	3
CHEM 1103 ACTS CHEM 1414	General Chemistry I	3	CHEM 1131 ACTS CHEM 1424	General Chemistry II Lab	1
BIOL 2041	Principles of Biology I Lab	1	BIOL 2083 ACTS BIOL 1014	Principles of Biology II	3
BIOL 2053	Principles of Biology I *(6)	3	BIOL 2091 ACTS BIOL 1014	Principles of Biology II Lab	1
			*(2)	Social Sciences General Ed Req #1	3
		14	Total		17

Fall Semester, Year 2		Hours		Spring Semester, Year 2	Hours
CHEM 3404	Organic Chemistry I	4		Minor or General Elective	3
	Minor Elective	3	BIOL 3553	Microbiology	3
MATH 2255 ACTS MATH 2405	Calculus I	5	BIIOL 3561	Microbiology Lab	1
*(3)	Speech General Ed Req	3	CHEM 3414	Organic Chemistry II	4
			*(5)	History or Gov. General Ed Req	3
Total		15	Total		14

Fall Semester, Year 3		Hours	Spring Semester, Year 3		Hours
PHYS 2203 ACTS PHYS 2014 or PHYS 2313 ACTS PHYS 2034	College Physics I or University Physics I	3 or 3	PHYS 2213 ACTS PHYS 2024 or PHYS 2323 ACTS PHYS 2044	College Physics II or University Physics II	3 or 3
PHYS 2231 ACTS PHYS 2014/2034	Gen & Univ. Physics I Lab	1	PHYS 2241 ACTS PHYS 2024/2044	Gen. & Univ. Physics II Lab	1
BIOL 3354	Genetics	4	BIOL 3363	Cell Biology	3
CHEM 3314	Quantitative Analysis	4	BIOL 3763	Evolution	3
*(2)	Social Sciences General Ed Req #2	3	CHEM 3424	Elements of Physical Chemistry	4
Total		15	Total		14

Fall Semester, Year 4		Hours		Spring Semester, Year 4	
BIOL/CHEM	Biology or Chem Upper Level Elective	3-4		Minor	3
	Minor	3		Minor	3
CHEM 4633	Biochemistry I	3	CHEM 4643	Biochemistry II	3
*(4)	Humanities Gen Ed Req	3	CHEM 4731	Biochemistry Lab	1
*(1)	Fine Arts Apprec. General Ed Req	3	CHEM 4724	Advanced Lab Techniques *(7)	2
				Electives as needed to reach 120 hours	2-6
Total		15-16	Total		14-18

A student with a good math background may elect to take Calculus I as the first college math course. If this is the case, College Algebra and Trigonometry may be waived; however, additional hours may be needed to reach the 120 hours needed for graduation.

Students required to enroll in remedial courses will need to take additional hours per term, or attend summer school.

A minor is required for this major. Any minor may be chosen; however, the most common minors selected for this major are chemistry, natural science, or physics. Some minors may require more than 18 hours. Some minors may be completed with fewer hours since some courses are listed as biology supportive requirements. See the current catalog and your advisor for specific minor requirements.

*(1) Fine Arts Appreciation can be either ART 1053 Art Appreciation (ACTS ARTA 1003) or MUS 1113 Music Appreciation (ACTS MUSC 1003)

*(2) Social Sciences Gen Ed Requirements can be filled with two courses of the following **from two different disciplines:** ANTH 2203 (ACTS ANTH 2013) Cultural Anthropology, CJ 1013(ACTS CRJU 1023) Introduction to Criminal Justice, ECON 2203 (ACTS ECON 2103) Principles of Macroeconomics, ECON 2213 (ACTS ECON 2203) Principles of Microeconomics, GEOG 2213 (ACTS GEOG 1103) Geography I , GEOG 2223 Geography II, HIST 1013 (HIST 1113) Surv of Civ I, HIST 1023 (ACTS HIST 1123) Survey of Civ II, PSY 1013 (ACTS PSYC 1103) Introduction to Psychology, SOC 2213 (ACTS SOCI 1013) Introduction to Sociology, SWK 1013 Introduction to Social Work. If you are applying to medical school at UAMS and other colleges of medicine, you should take PSY 1013 (ACTS PSYC 1103) Introduction to Psychology, SOC 2213 (ACTS SOCI 1013) Introduction to Sociology to complete your social science electives. These courses will be required courses at most colleges of medicine and material from these courses will be on the MCAT exam. It may be a good idea to take PSY 2203 Statistical Methods as a general elective to help prepare you for material that will be on the new MCAT exams.

*(3) Speech General Ed Requirement can be: COMM 1023(ACTS SPCH 1003) Public Speaking, COMM 2283 Business and Prof. Speech, or COMM 2203 Interpersonal Communication

*(4) Humanities General Ed. Requirement can be: ENGL 2283(ACTS ENGL 2113) World Lit I or ENGL 2293(ACTS ENGL 2123) World Lit II

*(5) History or Government General Ed. Requirement can be: HIST 2213(ACTS HIST 2113) American History I, HIST 2223(ACTS HIST 2123) American History II, or PSCI 2213 (ACTS PLSC 2003) American National Government

*(6) The prerequisite to enter Principles of Biology I is a composite ACT = 22 or greater, or completion of BIOL 1063, Introduction to Biological Sciences with a grade of C or higher.

*(7) Advanced Lab Techniques may be replaced with CHEM 4611, Chemistry Seminar; or CHEM 4691, Senior Research; however, additional hours may be needed to reach the 120 minimum.

Biochemistry/Biology double Major

Common course work for Pre-Med, Pre-Dentistry, Pre-Pharmacy, and other professional programs. No minor is required. This course plan exceeds most professional school's entrance requirements; however it gives you the best chance of being accepted and also being successful in the professional program. It is a good idea to keep in contact with the schools to which you plan on applying. If you would like a different major, see your pre-professional advisor.

	Fall Semester, Year 1	**Hours**		**Spring Semester, Year 1**	**Hours**
ENGL 1013	Composition I	3	ENGL 1023	Composition II	3
MATH 1043	College Algebra	3	MATH 1033	Trigonometry	3
CHEM 1121	General Chemistry I Lab	1	CHEM 1113	General Chemistry II	3
CHEM 1103	General Chemistry I	3	CHEM 1131	General Chemistry II Lab	1
BIOL 2041	Principles of Biology I Lab	1	BIOL 2083	Principles of Biology II	3
BIOL 2053	Principles of Biology I *(6)	3	BIOL 2091	Principles of Biology II Lab	1
			*(2)	Social Sciences General Ed Req #1	3
		14	Total		17
	Fall Semester, Year 2	**Hours**		**Spring Semester, Year 2**	**Hours**
CHEM 3404	Organic Chemistry I	4	BIOL 2143	General Botany	3
BIOL 2153	General Zoology	3	BIOL 2171	General Botany Lab	1
BIOL 2161	General Zoology Lab	1	BIOL 3553	Microbiology	3
MATH 2255	Calculus I	5	BIIOL 3561	Microbiology Lab	1
*(3)	Speech General Ed Req	3	CHEM 3414	Organic Chemistry II	4
			*(5)	History or Gov. General Ed Req	3
Total		16	Total		15
	Fall Semester, Year 3	**Hours**		**Spring Semester, Year 3**	**Hours**
PHYS 2203 or PHYS 2313	General Physics I or University Physics I	3 or 3	PHYS 2213 or PHYS 2323	General Physics II or University Physics II	3 or 3
PHYS 2231	Gen & Univ. Physics I Lab	1	PHYS 2241	Gen. & Univ. Physics II Lab	1
BIOL 3354	Genetics	4	BIOL 3363	Cell Biology	3
CHEM 3314	Quantitative Analysis	4	BIOL 3763	Evolution	3
*(2)	Social Sciences General Ed Req #2	3	CHEM 3424	Elements of Physical Chemistry	4
Total		15	Total		14
	Fall Semester, Year 4	**Hours**		**Spring Semester, Year 4**	
BIOL/CHEM	Biology or Chem Upper Level Elective *cannot count toward both majors	3-4	BIOL 4634	Vertebrate Physiology	4
BIOL 3484	General Ecology	4	BIOL 4741	Seminar in Biology	1
CHEM 4633	Biochemistry I	3	CHEM 4643	Biochemistry II	3
*(4)	Humanities Gen Ed Req	3	CHEM 4731	Biochemistry Lab	1
*(1)	Fine Arts Apprec. General Ed Req	3	CHEM 4724	Advanced Lab Techniques *(7)	2
				Electives as needed to reach 120 hours	2-6
Total		16-17	Total		13-17

A student with a good math background may elect to take Calculus I as the first college math course. If this is the case, College Algebra and Trigonometry may be waived; however, additional hours may be needed to reach the 120 hours needed for graduation.

Students required to enroll in remedial courses will need to take additional hours per term, or attend summer school.

A minor is not required for this major.

*See the reverse page for courses that are marked with an asterisk and a number for possible course selections.

*(1) Fine Arts Appreciation can be either ART 1053 Art Appreciation or MUS 1113 Music Appreciation

*(2) Social Sciences Gen Ed Requirements can be filled with two courses of the following **from two different disciplines:**

ANTH 2203 Cultural Anthropology, CJ 1013 Introduction to Criminal Justice, ECON 2203 Principles of Macroeconomics, ECON 2213 Principles of Microeconomics, GEOG 2213 Geography I, GEOG 2223 Geography II, HIST 1013 Surv of Civ I, HIST 1023 Survey of Civ II, PSY 1013 Introduction to Psychology, SOC 2213 Introduction to Sociology, SWK Introduction to Social Work. If you are applying to medical school at UAMS and other colleges of medicine, you should take PSY 1013 Introduction to Psychology, and SOC 2213 Introduction to Sociology to complete your social science electives. These courses will be required courses at most colleges of medicine and material from these courses will be on the MCAT exam. It may be a good idea to take PSY 2203 Statistical Methods as a general elective to help prepare you for material that will be on the new MCAT exams.

*(3) Speech General Ed Requirement can be: COMM 1023 Public Speaking, COMM 2283 Business and Prof. Speech, or COMM 2203 Interpersonal Communication

*(4) Humanities General Ed. Requirement can be: ENGL 2283 World Lit I or ENGL 2293 World Lit II

*(5) History or Government General Ed. Requirement can be: HIST 2213 American History I, HIST 2223 American History II, or PSCI 2213 American National Government

*(6) The prerequisite to enter Principles of Biology I is a composite ACT = 22 or greater, or completion of BIOL 1063, Introduction to Biological Sciences with a grade of C or higher.

*(7) Advanced Lab Techniques may be replaced with CHEM 4611, Chemistry Seminar; or CHEM 4691, Senior Research; however, additional hours may be needed to reach the 120 minimum.

APPENDIX B—UAM GENERAL EDUCATION REQUIREMENTS

Composition (6 Credit Hours)

ENGL 1013 Composition I

ENGL 1023 Composition II

Mathematics (3 Credit Hours)

Mathematics Course, 1000-level or above

Speech (3 Credit Hours) Choose <u>one</u> of the following:

COMM 1023 Public Speaking

COMM 2283 Business & Prof. Speech

COMM 2203 Interpersonal Communication

Fine Arts Appreciation (3 Credit Hours) Choose <u>one</u> of the following:

ART 1053 Art Appreciation

MUS 1113 Music Appreciation

Humanities (3 Credit Hours) Choose <u>one</u> of the following:

ENGL 2283 World Literature I

ENGL 2293 World Literature II

U.S. History or Government (3 Credit Hours) Choose <u>one</u> of the following:

HIST 2213 American History I

HIST 2223 American History II

PSCI 2213 American National Government

Social Sciences (6 Credit Hours) Choose <u>two courses from two different disciplines</u> from the following:

ANTH 2203 Cultural Anthropology

CJ 1013 Introduction to Criminal Justice

ECON 2203 Principles of Macroeconomics

ECON 2213 Principles of Microeconomics

GEOG 2213 Geography I

GEOG 2223 Geography II

HIST 1013 Survey of Civilization I

HIST 1023 Survey of Civilization II

PSY 1013 Introduction to Psychology

SOC 2213 Introduction to Sociology

SWK 1013 Introduction to Social Work

Basic Sciences (8 Credit Hours) Choose eight hours from two 3-hour lecture courses with associated 1-hour labs or two 4-hour courses with integrated labs chosen from the following course groups:

Earth Science/Lab

Biology/Lab

Chemistry/Lab

Physics/Lab

TOTAL: 35 General Education Credits Required

APPENDIX C—CHEMISTRY MAJOR AND MINOR REQUIREMENTS

CHEMISTRY MAJOR-Traditional

CHEMISTRY MAJOR - Biochemistry Option

BIOLOGY/BIOCHEMISTRY DOUBLE MAJOR

CHEMISTRY MINOR

Chemistry Major (traditional)
Major Requirements: 36-37 hours
CHEM 1103 General Chemistry I
CHEM 1113 General Chemistry II
CHEM 1121 General Chemistry I Laboratory
CHEM 1131 General Chemistry II Laboratory
CHEM 3314 Quantitative Analysis
CHEM 3404 Organic Chemistry I
CHEM 3414 Organic Chemistry II
CHEM 3444 Instrumental Analysis
CHEM 4704 Physical Chemistry: Thermodynamics
CHEM 4714 Physical Chemistry: Kinetics & Quantum Mech.
One of the following courses:
CHEM 4742 Adv Laboratory Techniques
CHEM 4611 Chemistry Seminar
CHEM 4691 Senior Research
Electives: Three hours of 3000-4000 level chemistry courses
Supportive Requirements: 21 hours
MATH 2255 Calculus I
MATH 3495 Calculus II
MATH 3543 Calculus III
PHYS 2231 College and University Physics I Lab
PHYS 2241 College and University Physics II Lab
One of the following pairs of courses:
PHYS 2203 College Physics I and
PHYS 2213 College Physics II
or
PHYS 2313 University Physics I and
PHYS 2323 University Physics II
A minor is required for this degree
This major requires 120 hours with a minimum of 40 hours of 3000-4000 level credit

A student with insufficient background may need to take one or more mathematics courses prior to Calculus I.

Chemistry (Biochemistry Option)
Major Requirements: 36-37 hours
CHEM 1103 General Chemistry I
CHEM 1113 General Chemistry II
CHEM 1121 General Chemistry I Laboratory
CHEM 1131 General Chemistry II Laboratory
CHEM 3314 Quantitative Analysis
CHEM 3404 Organic Chemistry I
CHEM 3414 Organic Chemistry II
CHEM 3424 Elements of Physical Chemistry
CHEM 4633 Biochemistry I
CHEM 4643 Biochemistry II
CHEM 4731 Biochemistry Laboratory
CHEM or BIOL 3000-4000 elec (3 hrs)
One of the following courses:
CHEM 4742 Adv Laboratory Techniques
CHEM 4611 Chemistry Seminar
CHEM 4691 Senior Research
BIOL 4741 Biology Seminar (Cannot count for both Chem and Biology Major)
Supportive Requirements: 38 hours
BIOL 1041 Principles of Biology I Laboratory
BIOL 1053 Principles of Biology I
BIOL 1083 Principles of Biology II
BIOL 1091 Principles of Biology II Laboratory
BIOL 3553 Microbiology
BIOL 3561 Microbiology Laboratory
BIOL 3363 Cell Biology
BIOL 3354 Genetics
MATH 1033 Trigonometry
MATH 1043 College Algebra
MATH 2255 Calculus I
PHYS 2231 College and Univ Physics I Laboratory
PHYS 2241 College and Univ Physics II Laboratory
One of the following pairs of courses:
PHYS 2203 College Physics I and
PHYS 2213 College Physics II
or
PHYS 2313 University Physics I and
PHYS 2323 University Physics II
A minor is required for this degree
This major requires 120 hours with a minimum of 40 hours of 3000-4000 level credit

A student with sufficient background may start in Calculus I and waive College Algebra and Trigonometry; however, additional hours may be needed to reach the 120 hours needed for graduation.

BIOLOGY / BIOCHEMISTRY double major
Major Requirements: 35-36 hours Chemistry 39 hours Biology
CHEM 1103 (ACTS CHEM 1414) General Chemistry I
CHEM 1113 (ACTS CHEM 1424) General Chemistry II
CHEM 1121 (ACTS CHEM 1414) General Chemistry I Laboratory
CHEM 1131 (ACTS CHEM 1424) General Chemistry II Laboratory
CHEM 3314 Quantitative Analysis
CHEM 3404 Organic Chemistry I
CHEM 3414 Organic Chemistry II
CHEM 3424 Elements of Physical Chemistry
CHEM 4633 Biochemistry I
CHEM 4643 Biochemistry II
CHEM 4731 Biochemistry Laboratory
One of the following courses:
CHEM 4742 Adv Laboratory Techniques
CHEM 4611 Chemistry Seminar
CHEM 4691 Senior Research
CHEM or BIOL 3000-4000 elec (3 hrs) list below
BIOL 2053 Principles of Biology I
BIOL 2041 Principles of Biology I Laboratory
BIOL 2083 (ACTS BIOL 1014) Principles of Biology II
BIOL 2091 (ACTS BIOL 1014) Principles of Biology II Laboratory
BIOL 2143 (ACTS BIOL 1034) General Botany
BIOL 2153 (ACTS BIOL 1054) General Zoology
BIOL 2161 (ACTS BIOL 1054) General Zoology Laboratory
BIOL 2171 (ACTS BIOL 1034) General Botany Laboratory
BIOL 3354 Genetics
BIOL 3363 Cell Biology
BIOL 3484 General Ecology
BIOL 3763 Evolution
BIOL 4634 Vertebrate Physiology
BIOL 4741 Seminar in Biology
Electives: Four hours of 3000-4000 level biology (BIOL) courses (See catalog)
BIOL 3553 Microbiology (This is a supportive requirement for the Biochemistry degree)
BIOL 3561 Microbiology Lab (This is a supportive requirement for the Biochemistry degree)
Supportive Requirements: 19 hours
MATH 1033 (ACTS MATH 1203) Trigonometry
MATH 1043 (ACTS MATH 1103) College Algebra
MATH 2255 (ACTS MATH 2405) Calculus I
PHYS 2231 (ACTS PHYS 2014/2034) College and Univ Physics I Laboratory
PHYS 2241 (ACTS PHYS 2024/2044) College and Univ Physics II Laboratory
One of the following pairs of courses:
PHYS 2203 (ACTS PHYS 2014) College Physics I and
PHYS 2213 (ACTS PHYS 2024) College Physics II
or
PHYS 2313 (ACTS PHYS 2034) University Physics I and
PHYS 2323 (ACTS PHYS 2044)University Physics II
A minor is not required for this degree
This major requires 120 hours with a minimum of 40 hours of 3000-4000 level credit

Chemistry Minor	
Minor Requirements: 24 hours	
CHEM 1103 (ACTS CHEM 1414)	General Chemistry I
CHEM 1113 (ACTS CHEM 1424)	General Chemistry II
CHEM 1121 (ACTS CHEM 1414)	General Chemistry I Laboratory
CHEM 1131 (ACTS CHEM 1414)	General Chemistry II Laboratory
CHEM 3314	Quantitative Analysis
CHEM 3404	Organic Chemistry I
CHEM 3414	Organic Chemistry II
Electives: Four additional hours of CHEM courses at the 3000-4000 level	

APPENDIX D - Syllabi for Chemistry Courses

Introductory Chemistry
Introductory Chemistry Lab
Intro to Organic and Biochemistry
Intro to Organic and Biochemistry Lab
General Chemistry I
General Chemistry I Lab
General Chemistry II
General Chemistry II Lab
Quantitative Analysis
Organic Chemistry I
Organic Chemistry II
Instrumental Analysis
Biochemistry I
Biochemistry II
Biochemistry Lab
Elements of Physical Chemistry
Physical Chemistry -Kinetics and Quantum Mechanics
Physical Chemistry -Thermodynamics
Advanced Inorganic Chemistry
Organic Analysis
Advanced Lab Techniques

UNIVERSITY OF ARKANSAS AT MONTICELLO
School of Mathematical and Natural Sciences
Introduction to Chemistry
Fall 2015 MW 11:10–12:30, TTh 8:10-9:30 a.m.

Instructor Name: Andrew Williams, Ph.D.

Instructor Location of Office: C-9

Instructor Phone: 870-460-1460

Instructor Email Address: williamsa@uamont.edu

Office Hours: M, W, F 9:00-11:00 or by appointment

Course Title and Credit Hours: Chem 1023 Introduction to Chemistry
ACTS CHEM 1004 Chemistry I for General Education

Prerequisites: NONE

Course Description:

To introduce the chemical nature of the world in which we live; to illustrate basic natural laws of matter; to improve the students mathematical skills and reasoning ability; to use the scientific method of reasoning to build patterns of logical thinking; to show the relationship of basic chemical principles to technology, the environment, the economy, and the general well being of man. We will cover the scientific method, measurements, states of matter, atomic structure and bonding, periodic structure, and reactions-with a particular focus on acid-base and solution chemistry.

Student Learning Outcomes:

By the conclusion of the course you should be able to:

Use necessary mathematical transformations to determine the quantity of substances required in reactions
Read and write using chemical nomenclature
Understand basic principles of the gas laws, acid-base reactions, and nuclear transmutations

Required textbooks, workbooks, supplementary materials:

CHEMISTRY (FROM GENERAL, ORGANIC, & BIOCHEMISTRY) (7th Ed.) Denniston, Topping, Caret

TI-30 or TI-36 Scientific Calculator or equivalent

Technical Support Information

Blackboard Assistance:
Contact Office of Instructional Technology; phone 870-460-1663; open Monday-Friday, 8 a.m. – 4:30 p.m.
Online Help Desk: http://www.uamont.edu/pages/resources/academic-computing/

Email Assistance:
Contact the Office of Information Technology; phone 870-460-1036; open Monday-Friday, 8 a.m. – 4:30 p.m.

Library Services: The computer section in the Library is open during regular Library hours. Go to the Taylor Library website for hours of operation: http://www.uamont.edu/pages/library/

UAM Attendance Policy:

Students are expected to attend all required class sessions during the semester. The University does not allow for unexcused absences. Each faculty member will determine his or her individual policies regarding excused absences, except in the case of a University sponsored event. Students involved in University sponsored events should be considered excused unless the proper notifications were not delivered to the instructor according to Policy XV on page 71 of the UAM Faculty Handbook.

Regardless of the reasons for a student missing, a faculty member may determine that the student cannot complete the course requirements or demonstrate the expected student learning outcomes within the timeframe of the course. The faculty member may recommend that the student withdraw, award the student a failing grade (at end of term) or, if warranted, assign the student an Incomplete.

Course-specific Attendance Policy:

Regular attendance is expected. Total absences greater than 6 hours may result in being dropped from the course with a grade of W or F as appropriate. The student is responsible for ALL material covered in class, whether present or not. University functions requiring absences, such as athletics, debate, band, etc... are excused absences and quizzes and exams may be made up **if prior arrangements are made in advance.**

Academic Alert:

The Academic Alert System is a retention program that puts students in contact with the appropriate campus resources to assist them in meeting their educational goals at UAM. If you are doing poorly in your academic work, are chronically absent from class, are exhibiting disruptive behavior or are having difficulty adjusting to campus life, University faculty, staff or a fellow student may report you to the Office of Academic Affairs through the Academic Alert system.

Academic Resources:

GENERAL EDUCATION TUTORIAL LAB
Harris Hall, (870) 460-1454
Any student who desires to be successful in his/her general education classes can receive assistance through tutoring services available on the 2nd floor of Harris Hall. Please watch for emails from Laura Hughes detailing this semester's tutoring availability.

MATH TUTORIAL LAB
Math and Science Center, 870-460-1016
Free one-on-one tutoring is available for any mathematics class. Help with ALEKS, WebAssign, and MyMathLab is available. Math tutoring is located in the A-Wing of the Science Center.

Students with Disabilities:

It is the policy of the University of Arkansas at Monticello to accommodate individuals 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; email: whitingm@uamont.edu.

For assistance on a College of Technology campus contact:
McGehee: Office of Special Student Services representative; phone 870 222-5360; fax 870 222-1105.
Crossett: Office of Special Student Services representative; phone 870 364-6414; fax 870 364-5707.

Feedback Schedule:

Assignments will be handed back during the next class period. Any assignments not picked up in class will be available in my office.

Assessments:

4 Proctored tests
Weekly quizzes
Regular homework
Comprehensive final

Grading Policy:

Four one-hour exams and a comprehensive final exam of equal weight will be given (100 pts each). If no exams are missed, the lowest test score (of exams 1 - 4) will be dropped and replaced with the percentage scored on the final exam, if the final exam percentage is higher than the lowest exam. A missed exam will be counted as the dropped exam and replaced with the percentage scored on the final exam. Only one exam can be replaced with the final exam score. Quizzes will be given weekly, with the 10 highest being calculated into your grade. A quiz average will be calculated out of 100 points possible. No make-up quizzes will be given, except for those missed for a pre-scheduled university function. Homework will be graded with a total of 50 points being possible. 650 total points are possible for the class.

Grade Assignment:

A= 88—100
B= 76 — 87
C= 64 — 75
D= 50 — 63
F= 49 and below

Student Conduct Statement:

Students at the University of Arkansas at Monticello are expected to conduct themselves appropriately, keeping in mind that they are subject to the laws of the community and standards of society. The student must not conduct him/herself in a manner that disrupts the academic community or breaches the freedom of other students to progress academically.

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;
    d. Buying, selling, stealing, soliciting, or transmitting an examination or any material purported to be the unreleased contents of coming examinations or the use of any such material;
    e. Substituting for another person during an examination or allowing such substitutions for oneself.
2. Collusion: Collusion is defined as obtaining from another party, without specific approval in advance by the instructor, assistance in the production of work offered for credit to the extent that the work reflects the ideas of the party consulted rather than those of the person whose name in on the work submitted.
3. Duplicity: Duplicity is defined as offering for credit identical or substantially unchanged work in two or more courses, without specific advanced approval of the instructors involved.
4. Plagiarism: Plagiarism is defined as adopting and reproducing as one's own, to appropriate to one's use, and to incorporate in one's own work without acknowledgement the ideas or passages from the writings or works of others.

Cheating, helping others cheat, disruptive behavior (including cell phones or pagers), or other improper conduct will not be tolerated and could lead to dismissal from the course with a failing grade. Storing of materials in a graphing calculator for use on exams is not permitted. All graphing calculators will be cleared on exam day, so if there is material you don't want deleted permanently, bring another calculator to use on the exams. All cell phones are to be turned off and put away in class. 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 will result in a failing grade in the course.

Course Outline/Calendar:

August 19 (Wednesday): First day of classes.
August 21 (Friday): Last day to register or add fall classes.
September 7 (Monday): Labor Day Holiday. All offices and classes closed.
October 2 (Friday): Deadline to apply for May graduation.
October 28 (Wednesday): Last day to drop a regular fall class (not applicable to fast-track classes). Grade will be W.
November 2 (Monday): Preregistration for spring begins.
November 13 (Friday): Preregistration for spring ends.
November 25 (Wednesday): Classes closed. University offices open.
November 26-27 (Thursday-Friday): Thanksgiving Holiday. All offices and classes closed.
December 4 (Friday): Last day of classes.
December 7-11 (Monday-Friday): Final exams.

FINAL EXAM Monday, Dec 7th, 10:30-12:30.

NOTE This is not scheduled by course time! Chemistry has its own reserved time slot for all Chem 1023 sections.

University of Arkansas at Monticello
School of Mathematics and Natural Sciences
INTRODUCTORY CHEMISTRY LABORATORY
Fall 2015

Instructor:	Susan Hatfield
Office:	Science Center C-15
Office Hours:	MW 11:30 am – 1:00 pm; TH 8:30 – 9:30 pm Other times by appointment.
Laboratory:	Science Center C-4
Office Phone:	(870) 460-
Lab Phone:	(870) 460-1666
Email:	hatfield@uamont.edu

Course: Introductory Chemistry Lab CHEM 1031 – 1 Credit Hour
(A.C.T.S. Equivalent Course # CHEM 1004 when combined with CHEM 1023 Introductory Chemistry)

Corequisite: CHEM 1023 (CHEM1004) Introductory Chemistry Lecture

Required Text: *Laboratory Experiments, Basic Chemistry* (7th Edition) Corwin, Prentice Hall, ISBN: 9780133785067
For additional textbook information, you may go to the online bookstore: http://www.bkstr.com/uamontstore/home
Do Not Purchase A Used Manual

Required Materials: Scientific calculator (standard, without graph and memory features)
Safety goggles/glasses and closed-toe shoes are required to perform experiments. Aprons/lab coats are optional.

Format: Two hours of laboratory once a week.
M 1:10-3:00 pm, 3:10-5:00 pm
T 9:40-11:30 am

Course Description: Basic studies in chemical experimentation including measurements, properties of elements and compounds, and reactions of matter.

Student Learning Outcomes:

By the conclusion of the course, you should be able to explain, describe, discuss, recognize, and/or apply knowledge of the following:

Scientific method	Chemical bonding
Basic measurement	Chemical reactions
States of matter	Acids and bases
Atomic structure	Solutions
Periodic Table	

Grading:

Two 100 point lab exams will be given. The multiple choice exams will cover material from the lab

manual, post lab assignments, and laboratory work. A SCANTRON will be required for each exam and must be furnished by the student. Calculators may be used for each exam, however, no cell phones or other electronic devices are allowed during exams. **Students will not be allowed to make up exams without prior permission of the lab instructor.** Each lab experiment counts 100 points. A report sheet and post lab assignment will be turned in for each lab experiment and are due at the end of the lab period. The lowest lab grade will be dropped. The overall grade is based on 50% for lab experiments and 50% for exams. The final grade will be based on the following scale:

A= 88-100% B= 77-87% C= 65-76% D= 50-64% F= Below 50%

Attendance:

Attendance is required and a missed experiment must be made up on the designated make up day. **Students will be allowed to make up no more than one experiment.** If the student is unable to make up the lab on the scheduled make up day or misses more than one lab, the student will be given a grade of zero for that lab assignment. Students arriving late to class may not be allowed to perform the experiment at the lab instructor's discretion. The student must sign the roll sheet to receive credit for each experiment. Failure to do so may result in a grade of zero for the experiment.

Withdrawals:

Students who wish to withdraw from the course are responsible for filing the necessary papers with the Registrar's office. Students who fail to file a drop card will receive an F for the course.

Academic Dishonesty:

Cheating (such as copying from or collaborating with another student and use of prepared notes/materials on exams or experiments without specific approval of the instructor), helping others cheat or other improper conduct such as collusion, duplicity and plagiarism will not be tolerated. Confirmed cases of cheating will result in a zero on a given exam or experiment for the first offense and a grade of F for the course on the second. The incident will also be reported to the Vice Chancellor for Academic Affairs.

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 is prohibited under the Student Conduct Code of the UAM Student Handbook.

Safety:

The lab experiments are designed to pose minimal hazardous risks if proper safety procedures are followed. However, this course involves frequent use of chemicals and flames and certain health hazards can be associated with their use. **These health risks are significantly higher for students with chemical allergies, students who have asthma, and students who are pregnant.** Thus, extreme caution and proper safety procedures must be adhered to.

The student must sign a safety agreement and will be held responsible for following the recommended safety practices and precautions. Repeated violations to the safety agreement rules will result in point deductions of the experiment. A **no tolerance** policy will be enforced in this course. That is, any action made by the student that is purposefully or willfully done as to create a hazardous situation will not be tolerated. Such an offense will result in the removal of the student from the laboratory and a grade of zero for the experiment with no possibility for a make-up or to drop it as the lowest lab grade.

The students are expected to practice safe lab procedures and to ***clean up the working lab area and equipment*** before leaving the lab. Failure to clean up your lab area and equipment will result in loss of points (50%). Students are required to wear clothing that covers the skin from the neck to below the

knees (shirts must have sleeves) or lab coat. Closed toe shoes and appropriate safety eyewear must be worn at all times during lab procedures. **Failure to do so will result in expulsion from that laboratory experience.** Students are responsible for purchasing appropriate eye protection and wearing eye protection during lab. Appropriate eye protection will be:

1. Chemical vapor resistant safety goggles (required for contact lenses)
2. OSHA approved safety glasses with side shields

No 'loaners' are available.

Important Dates:

Fall 2015
August 19 (Wed) - First day of classes
August 21 (Fri) - Last day to register or add classes.
September 7 (Mon) - Labor Day Holiday. Offices and classes closed.
October 28 (Wed) – Last day to drop a regular fall class. Grade will be W.
November 2-13 - Preregistration for Spring 2015 begins.
November 25 (Wed) - Classes closed. University offices open.
November 26-27 (Thurs-Fri) - Thanksgiving Holiday. Offices and classes closed.
December 4 (Fri) - Last day of classes.
December 7-11 (Mon-Fri) - Final exam period.

Students with Disabilites:

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Any student with a disability 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.

Technical Support Information:

Blackboard Assistance: Contact Office of Instructional Technology; phone 870-460-1663; open Monday-Friday, 8 am – 4:30 pm. Online Help desk:
http://uamont.edu/pages/resources/academic-computing/
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Academic Resources:

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FALL 2015 SCHEDULE

Week of	Activity	Page	Chapter
Aug 24	Check In, Lab Safety	1	-----
Aug 31	Scientific and Metric System Measurements	15	2
Sep 7	Labor Day Holiday (No Lab M or T)	-----	-----
Sep 14	Density of Liquids and Solids	29	3
Sep 21	Physical and Chemical Properties	49	5
Sep 28	Cation Analysis	91	9
Oct 5	Anion Analysis	101	10
Oct 12	Percent Water in a Hydrate	121	12
Oct 19	**Lab Exam #1**	-----	-----
Oct 26	Chemical Reactions	137	14
Nov 2	Analysis by Precipitation	157	16
Nov 9	Solutions	189	19
Nov 16	Make Up Lab and Check Out	-----	-----
Nov 23	**Lab Exam #2**	-----	-----

*****ALL LOCKS MUST BE RETURNED AT CHECK OUT TIME OR A **$20.00 NON-REFUNDABLE CHARGE** WILL BE MADE TO YOUR ACCOUNT. ONLY LOCKS ISSUED BY LAB INSTRUCTOR MAY BE USED. ALL OTHERS WILL BE REMOVED AND A **$100.00 FINE** WILL BE MADE TO YOUR ACCOUNT.*****

UNIVERSITY OF ARKANSAS AT MONTICELLO
SCHOOL OF MATHEMATICAL AND NATURAL SCIENCES
Introduction to Organic and Biochemistry Course Syllabus
Fall 2015, 9:40 – 11:00 TTh

Instructor Name: J. Morris Bramlett

Instructor Office: Science Center, A-7

Instructor Phone: 870-460-1116 or 870-460-1016

Instructor Email Address: bramlett@uamont.edu

Office Hours: 8:10 – 9:00 MWF, 1:10 – 2:00 MWF; 1:30-2:30 TTH; any other time by appointment

Course Title and Credit Hours: CHEM 2203, Introduction to Organic and Biochemistry, 3 Credit Hours
A.C.T.S Equivalent Course # CHEM 1224 when combined with UAM CHEM 2211, Intro to Organic and Biochemistry Lab

Prerequisites: CHEM 1023 or CHEM 1103

Course Description: Chemical substances from which life is formed. Designed for those who desire a general overview of organic and biochemistry

Student Learning Outcomes: At the end of the course, the successful student will be able to explain, describe, discuss, recognize, and apply knowledge of the following: Major organic functional groups, Organic Nomenclature, Functional group reactions, Carbohydrates, Lipids, Proteins and Nucleic Acids, Enzymes, and Metabolism

Required textbooks, workbooks, supplementary materials:
General, Organic & Biochemistry (Ch 10-23)(CUSTOM), 8th Edition by Denniston, published by McGraw Hill
ISBN: 9780077775889
For additional textbook information, you may go to the online bookstore:
http://www.bkstr.com/uamontstore/shop/textbooks-and-course-materials

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should be considered excused unless the proper notifications were not delivered to the instructor according to Policy XV on page 71 of the UAM Faculty Handbook.

Regardless of the reasons for a student missing, a faculty member may determine that the student cannot complete the course requirements or demonstrate the expected student learning outcomes within the timeframe of the course. The faculty member may recommend that the student withdraw, award the student a failing grade (at end of term) or, if warranted, assign the student an Incomplete.

Course-specific Attendance Policy
Chemistry is a difficult subject. Even a single absence can lead to poor understanding of material and lead to a lower course grade. Homework will be taken up for a grade on a daily basis. There will be several quizzes given during the semester. Homework and quizzes missed due to unexcused absences may not be turned in late or made up.

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For assistance on a College of Technology campus contact:
McGehee: Office of Special Student Services representative; phone 870 222-5360; fax 870 222-1105.
Crossett: Office of Special Student Services representative; phone 870 364-6414; fax 870 364-5707.

Feedback Schedule:
Email is likely the best way to contact the instructor. Most often, a student can expect a response to email within 6 hours during business hours Monday through Friday. After hours emails may not be answered until the following morning. Emails after 5 p.m. on Friday may not be answered until the following Monday.

Assessments: There will be four regular exams (100 points each) and a comprehensive final exam (100 points). There will be 8-10 quizzes given during the term, with the best seven being counted as a percentage of a 100 points possible. All quizzes and exams will be taken in class and proctored. Homework will be taken up daily and scored as a percentage of 50 possible points.

Explanation of Grading Policy:

Assignment	Points Possible
Test 1	100
Test 2	100
Test 3	100
Test 4	100
Final Exam	100
Homework	50
Quizzes	100
Total	650 possible

Grading Scale:

A= 88—100 %	>569 points
B= 77 — 87 %	498 - 568 points
C= 66 — 76 %	426 - 497 points
D= 55 — 65 %	355 - 425 points
F= below 55 %	below 355 points

Student Conduct Statement:
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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;
    d. Buying, selling, stealing, soliciting, or transmitting an examination or any material purported to be the unreleased contents of coming examinations or the use of any such material;
    e. Substituting for another person during an examination or allowing such substitutions for oneself.
2. Collusion: Collusion is defined as obtaining from another party, without specific approval in advance by the instructor, assistance in the production of work offered for credit to the extent that the work reflects the ideas of the party consulted rather than those of the person whose name in on the work submitted.
3. Duplicity: Duplicity is defined as offering for credit identical or substantially unchanged work in two or more courses, without specific advanced approval of the instructors involved.
4. Plagiarism: Plagiarism is defined as adopting and reproducing as one's own, to appropriate to one's use, and to incorporate in one's own work without acknowledgement the ideas or passages from the writings or works of others.

For any instance of academic dishonesty that is discovered by the instructor, whether the dishonesty is found to be cheating, collusion, duplicity, or plagiarism, the result for the student(s) involved will be a score of zero on exam or assignment for the first offense. A second offense will result in removal of the course with a grade of F.

Course Outline/Calendar:

Chapter #	Topic
10	Introduction to Organic Chemistry: The Saturated Hydrocarbon
11	Unsaturated Hydrocarbons; Alkenes, Alkynes, and Aromatics
12	Alcohols, Phenols, Thiols, and Ethers
13	Aldehydes and Ketones
14	Carboxylic Acids and Carboxylic Acid Derivatives
15	Amines and Amides
16	Carbohydrates
17	Lipids and their Functions in Biochemical Systems
18	Protein Structure and Function
19	Enzymes
20	Introduction to Molecular Genetics
21	Carbohydrate Metabolism
22	Aerobic Respiration and Energy Production
23	Fatty Acid Metabolism

Special Dates of Concern:

Aug	19 Wednesday	First day of class
Aug	21 Friday	Last day to change schedule
Sept	7 Monday	Labor Day (no classes)
Oct	28 Wednesday	Last day to withdraw from session class or withdraw for term with W
Nov	5 Monday	Preregistration for Spring 2016 begins
Nov	25 Wednesday	No classes
Nov	26-27 Thur-Fri	Thanksgiving Holidays
Dec	4 Friday	Last day of classes
Dec	7-11 Mon-Fri	Final exam period

Final Exam: Tuesday, December 8, 1:30 – 3:30 p.m.

UNIVERSITY OF ARKANSAS AT MONTICELLO
SCHOOL OF MATHEMATICAL AND NATURAL SCIENCES
Introduction to Organic and Biochemistry Lab Course Syllabus
Fall 2015, 8:10 – 9:40 TTh

Instructor Name: J. Morris Bramlett

Instructor Office: Science Center, A-7

Instructor Phone: 870-460-1116 or 870-460-1016

Instructor Email Address: bramlett@uamont.edu

Office Hours: 8:10 – 9:00 MWF, 1:10 – 2:00 MWF; 1:30-2:30 TTH; any other time by appointment

Course Title and Credit Hours: CHEM 2211, Introduction to Organic and Biochemistry Lab, 1 Credit Hours A.C.T.S Equivalent Course # CHEM 1224 when combined with UAM CHEM 2203, Intro to Organic and Biochemistry

Co/Prerequisites: CHEM 2203

Course Description: Experimentation and theory related to the basic concepts in organic and biochemistry. Topics include: study of physical and chemical properties, separation, purification, identification, chemical reactivity, and synthesis of organic compounds

Student Learning Outcomes: By the end of the course, the successful student will be able to:
use and understand MSDS information associated with organic compounds, use proper laboratory techniques to do basic separation, identification, analysis, and reactions of organic and biochemical compounds, recognize and identify chemical and physical properties of the major functional group families of organic compounds, understand the basics of spectroscopy, and understand the basics of water analysis.

Required textbooks, workbooks, supplementary materials:
None. Handouts will be provided by the instructor. Other materials will be placed on Blackboard.
For additional textbook information, you may go to the online bookstore:
http://www.bkstr.com/uamontstore/shop/textbooks-and-course-materials

Technical Support Information:
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Course-specific Attendance Policy
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Crossett: Office of Special Student Services representative; phone 870 364-6414; fax 870 364-5707.

Feedback Schedule:
Email is likely the best way to contact the instructor. Most often, a student can expect a response to email within 6 hours during business hours Monday through Friday. After hours emails may not be answered until the following morning. Emails after 5 p.m. on Friday may not be answered until the following Monday. Every attempt will be made to return turned in work by the next class period.

Assessments: Each lab will be worth approximately 50 points. Each lab may consist of pre-lab questions, post lab questions, a quiz, and lab worksheet or report. An open notebook lab exam worth 100 points will be the lab final.

Explanation of Grading Policy:

Assignment	Points Possible
Each lab	50
Lab Exam	100

(Points scored / Total Points) x 100 = Overall average

Grading Scale:

A= 88—100 %
B= 77 — 87 %
C= 66 — 76 %
D= 55 — 65 %
F= below 55 %

Student Conduct Statement:
Students at the University of Arkansas at Monticello are expected to conduct themselves appropriately, keeping in mind that they are subject to the laws of the community and standards of society. The student must not conduct him/herself in a manner that disrupts the academic community or breaches the freedom of other students to progress academically.

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;
    d. Buying, selling, stealing, soliciting, or transmitting an examination or any material purported to be the unreleased contents of coming examinations or the use of any such material;
    e. Substituting for another person during an examination or allowing such substitutions for oneself.
2. Collusion: Collusion is defined as obtaining from another party, without specific approval in advance by the instructor, assistance in the production of work offered for credit to the extent that the work reflects the ideas of the party consulted rather than those of the person whose name in on the work submitted.
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For any instance of academic dishonesty that is discovered by the instructor, whether the dishonesty is found to be cheating, collusion, duplicity, or plagiarism, the result for the student(s) involved will be a score of zero on exam or assignment for the first offense. A second offense will result in removal of the course with a grade of F.

Course Outline/Calendar:

Date	Topic
Aug 20	Syllabus discussion, Check-in
Aug 25	MSDS and Lab Safety
Aug 27	Organic structure and models
Sept 1- 3	Physical Properties of Organic Compounds
Sept 8- 10	Reactivity of Hydrocarbons
Sept 15-17	Thin Layer Chromatography
Sept 22-24	Alcohols, & begin fermentation
Sept 29-Oct 1	Aldehydes, Ketones, and Carboxylic Acids
Oct 6-8	Separation by distillation
Oct 13-15	GC Analysis
Oct 20	Synthesis of Aspirin
Oct 22	Distillation of fermented alcohol
Oct 27-29	Oxidation
Nov 3-5	Basic Spectroscopy
Nov 10-12	Ester Synthesis & Fragrances
Nov 17-19	Water Analysis I
Nov 25	Lab Exam

Special Dates of Concern:

Aug	19 Wednesday	First day of class
Aug	21 Friday	Last day to change schedule
Sept	7 Monday	Labor Day (no classes)
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UNIVERSITY OF ARKANSAS AT MONTICELLO
SCHOOL OF MATHEMATICAL AND NATURAL SCIENCES
GENERAL CHEMISTRY I COURSE SYLLABUS
Fall 2015, 9:10 – 10:00 a.m. MWF or 10:10 – 11:00 a.m. MWF

Instructor Name: J. Morris Bramlett

Instructor Office: Science Center, A-7

Instructor Phone: 870-460-1116 or 870-460-1016

Instructor Email Address: bramlett@uamont.edu

Office Hours: 8:10 – 9:00 MWF, 1:10 – 2:00 MWF; 1:30-2:30 TTH; any other time by appointment

Course Title and Credit Hours: CHEM 1103, General Chemistry I, 3 Credit Hours
A.C.T.S Equivalent Course # CHEM 1404 when combined with UAM CHEM 1121, General Chem I Lab

Corequisites: CHEM 1121, ENGL 1013 and MATH 1043

Course Description: The study of measurement systems, significant figures, atomic and molecular structure, gas laws, thermochemistry, solutions, states of matter, chemical bonding, chemical reactions, and stoichiometry.

Student Learning Outcomes: At the end of the course, the successful student will be able to explain, describe, discuss, recognize, and apply knowledge of the following: Chemical reactions, Gases and the kinetic-molecular theory, Nuclear chemistry, Quantum theory and atomic structure, Electron configuration and chemical periodicity, Stoichiometry, Valence bond theory and molecular orbital theory, Inorganic Nomenclature, and Thermochemistry.

Required textbooks, workbooks, supplementary materials:
General Chemistry: Essential Concepts, 7th Edition by Chang, published by McGraw Hill
ISBN: 9780073402758 (hard copy) or ISBN: 9780077623340 (digital)
For additional textbook information, you may go to the online bookstore:
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Assessments: There will be four regular exams (100 points each) and a comprehensive final exam (100 points). There will be 8-10 quizzes given during the term, with the best seven being counted as a percentage of a 100 points possible. All quizzes and exams will be taken in class and proctored. Homework will be taken up daily and scored as a percentage of 50 possible points.

Explanation of Grading Policy:

Assignment	Points Possible
Test 1	100
Test 2	100
Test 3	100
Test 4	100
Final Exam	100
Homework	50
Quizzes	100
Total	650 possible

Grading Scale:

A= 88—100 %	>569 points
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    d. Buying, selling, stealing, soliciting, or transmitting an examination or any material purported to be the unreleased contents of coming examinations or the use of any such material;
    e. Substituting for another person during an examination or allowing such substitutions for oneself.
2. Collusion: Collusion is defined as obtaining from another party, without specific approval in advance by the instructor, assistance in the production of work offered for credit to the extent that the work reflects the ideas of the party consulted rather than those of the person whose name in on the work submitted.
3. Duplicity: Duplicity is defined as offering for credit identical or substantially unchanged work in two or more courses, without specific advanced approval of the instructors involved.
4. Plagiarism: Plagiarism is defined as adopting and reproducing as one's own, to appropriate to one's use, and to incorporate in one's own work without acknowledgement the ideas or passages from the writings or works of others.

For any instance of academic dishonesty that is discovered by the instructor, whether the dishonesty is found to be cheating, collusion, duplicity, or plagiarism, the result for the student(s) involved will be a score of zero on exam or assignment for the first offense. A second offense will result in removal of the course with a grade of F.

Course Outline/Calendar:

Chapter #	Topic	Chapter #	Topic
1	Introduction	6	Energy Relationships in Chemical Reactions
2	Atoms, Molecules, & Ions	7	Electronic Structure of Atoms
3	Stoichiometry	8	The Periodic Table
4	Reactions in Aqueous Solutions	9	Chemical Bonding I: Covalent Bond
5	Gases	21	Nuclear Chemistry (if time permits)

Special Dates of Concern:

Aug	19 Wednesday	First day of class
Aug	21 Friday	Last day to change schedule
Sept	7 Monday	Labor Day (no classes)
Oct	28 Wednesday	Last day to withdraw from session class or withdraw for term with W
Nov	5 Monday	Preregistration for Spring 2016 begins
Nov	25 Wednesday	No classes
Nov	26-27 Thur-Fri	Thanksgiving Holidays
Dec	4 Friday	Last day of classes
Dec	7-11 Mon-Fri	Final exam period

Final Exam: Monday, December 7, 10:30 – 12:30. Please note that this is not based on class time. All sections of CHEM 1103 take their final exam at a dedicated time.

University of Arkansas at Monticello
School of Mathematics and Natural Sciences
GENERAL CHEMISTRY I LABORATORY
Fall 2015

Instructor: Susan Hatfield
Office: Science Center C-15
Office Hours: MW 11:30 am – 1:00 pm; TH 8:30 – 9:30 pm
Other times by appointment.
Laboratory: Science Center C-4
Office Phone: (870) 460-
Lab Phone: (870) 460-1666
Email: hatfield@uamont.edu

Course: General Chemistry I Lab CHEM 1121 – 1 Credit Hour
(A.C.T.S. Equivalent Course # CHEM 1404 when combined with CHEM 1103 General Chemistry I)

Corequisite: CHEM 1103 (CHEM 1404) General Chemistry I Lecture

Required Text: Signature Lab Series in Chemistry (CHEM 1121 and CHEM 1131)
ISBN: 0-534-48193-0
For additional textbook information, you may go to the online bookstore:
http://www.bkstr.com/uamontstore/home
Do Not Purchase A Used Manual

Required Materials: Scientific calculator (standard, without graph and memory features)
Safety goggles/glasses and closed-toe shoes are required to perform experiments. Aprons/lab coats are optional.

Format: Three hours of laboratory once a week.
T 1:40-4:30 pm
W 1:10-4:00 pm
H 9:40 am-12:30 pm

Course Description: Experimentation and theory in the areas of measurement systems, chemical analysis, chemical reactions, stoichiometry, thermochemistry, and molecular structure.

Student Learning Outcomes:

By the conclusion of the course, you should be able to explain, describe, discuss, recognize, and/or apply knowledge of the following:

- Chemical reactions
- Gases and the kinetic-molecular theory
- Nuclear chemistry
- Quantum theory and atomic structure
- Electron configuration and chemical periodicity
- Stoichiometry
- Valence bond theory and molecular orbital theory
- Inorganic Nomenclature
- Thermochemistry

Grading:

Two 100 point lab exams will be given. The multiple choice exams will cover material from the lab modules, pre and post lab assignments, and laboratory work. A SCANTRON will be required for each exam and must be furnished by the student. Calculators may be used for each exam, however, no cell phones or other electronic devices are allowed during exams. **Students will not be allowed to make up exams without prior permission of the lab instructor.** Each lab experiment counts 100 points. A report sheet and post lab assignment will be turned in for each lab experiment and are due at the end of the lab period. The lowest lab grade will be dropped. The overall grade is based on 50% for lab experiments and 50% for exams. The final grade will be based on the following scale:

A= 88-100% B= 77-87% C= 65-76% D= 50-64% F= Below 50%

Attendance:

Attendance is required and a missed experiment must be made up on the designated make up day. **Students will be allowed to make up no more than one experiment.** If the student is unable to make up the lab on the scheduled make up day or misses more than one lab, the student will be given a grade of zero for that lab assignment. Students arriving late to class may not be allowed to perform the experiment at the lab instructor's discretion. The student must sign the roll sheet to receive credit for each experiment. Failure to do so may result in a grade of zero for the experiment.

Withdrawals:

Students who wish to withdraw from the course are responsible for filing the necessary papers with the Registrar's office. Students who fail to file a drop card will receive an F for the course.

Academic Dishonesty:

Cheating (such as copying from or collaborating with another student and use of prepared notes/materials on exams or experiments without specific approval of the instructor), helping others cheat or other improper conduct such as collusion, duplicity and plagiarism will not be tolerated. Confirmed cases of cheating will result in a zero on a given exam or experiment for the first offense and a grade of F for the course on the second. The incident will also be reported to the Vice Chancellor for Academic Affairs.

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 is prohibited under the Student Conduct Code of the UAM Student Handbook.

Safety:

The lab experiments are designed to pose minimal hazardous risks if proper safety procedures are followed. However, this course involves frequent use of chemicals and flames and certain health hazards can be associated with their use. **These health risks are significantly higher for students with chemical allergies, students who have asthma, and students who are pregnant.** Thus, extreme caution and proper safety procedures must be adhered to.

The student must sign a safety agreement and will be held responsible for following the recommended safety practices and precautions. Repeated violations to the safety agreement rules will result in point deductions of the experiment. A **no tolerance** policy will be enforced in this course. That is, any action made by the student that is purposefully or willfully done as to create a hazardous situation will not be tolerated. Such an offense will result in the removal of the student from the laboratory and a grade of zero for the experiment with no possibility for a make-up or to drop it as the lowest lab grade.

The students are expected to practice safe lab procedures and to ***clean up the working lab area and equipment*** before leaving the lab. Failure to clean up your lab area and equipment will result in loss of points (50%). Students are required to wear clothing that covers the skin from the neck to below the knees (shirts must have sleeves) or lab coat. Closed toe shoes and appropriate safety eyewear must be worn at all times during lab procedures. **Failure to do so will result in expulsion from that laboratory experience.** Students are responsible for purchasing appropriate eye protection and wearing eye protection during lab. Appropriate eye protection will be:

1. Chemical vapor resistant safety goggles (required for contact lenses)
2. OSHA approved safety glasses with side shields

No 'loaners' are available.

Important Dates:

Fall 2015
August 19 (Wed) - First day of classes
August 21 (Fri) - Last day to register or add classes.
September 7 (Mon) - Labor Day Holiday. Offices and classes closed.
October 28 (Wed) – Last day to drop a regular fall class. Grade will be W.
November 2-13 - Preregistration for Spring 2015 begins.
November 25 (Wed) - Classes closed. University offices open.
November 26-27 (Thurs-Fri) - Thanksgiving Holiday. Offices and classes closed.
December 4 (Fri) - Last day of classes.
December 7-11 (Mon-Fri) - Final exam period.

Students with Disabilites:

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 with a disability 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.

Technical Support Information:

Blackboard Assistance: Contact Office of Instructional Technology; phone 870-460-1663; open Monday-Friday, 8 am – 4:30 pm. Online Help desk:
http://uamont.edu/pages/resources/academic-computing/
Email Assistance: Contact the Office of Information Technology; phone 870-460-1036; open Monday-Friday, 8 am – 4:30 pm.

Library Services: The computer section in the Library is open during regular Library hours Go to the Taylor Library website for hours of operations: http://www.uamont.edu/pages/library

Academic Alert: The Academic Alert System is a retention program that puts students in contact with the appropriate campus resources to assist them in meeting their educational goals at UAM. If you are doing poorly in your academic work, are chronically absent from class, are exhibiting disruptive behavior, or are having difficulty adjusting to campus life, University faculty, staff, or a fellow student may report you to the Office of Academic Affairs through the Acadmeic Alert system.

Academic Resources:

General Education Tutorial Lab

Harris Hall, (870) 460-1454

Any student who desires to be successful in his/her general education classes can receive assistance through tutoring services available on the 2nd floor of Harris Hall. Please watch for emails from Laura Hughes detailing this semester's tutoring availability.

FALL 2015 SCHEDULE

Week of	Activity	Module #	Page
Aug 24	Check In, Lab Safety	380	1
Aug 31	Lab Techniques and Measurements	485, 511	9,21
Sep 7	Density of Liquids and Solids	383	37
Sep 14	Naming Inorganic Compounds	459	49
Sep 21	Reactivities of Metals	414	73
Sep 28	Percent Water in a Hydrate	387	101
Oct 5	Empirical Formula of an Oxide	388	81
Oct 12	**Lab Exam #1**	-----	-----
Oct 19	Chemical Reactions and Equations	422	57
Oct 26	Molar Volume of Carbon Dioxide	407	109
Nov 2	Heat of Neutralization	368	117
Nov 9	Make Up Lab and Check Out	-----	-----
Nov 16	**Lab Exam #2**	-----	-----

*****ALL LOCKS MUST BE RETURNED AT CHECK OUT TIME OR A **$20.00 NON REFUNDABLE CHARGE** WILL BE MADE TO YOUR ACCOUNT. ONLY LOCKS ISSUED BY LAB INSTRUCTOR MAY BE USED. ALL OTHERS WILL BE REMOVED AND A **$100.00 FINE** WILL BE MADE TO YOUR ACCOUNT*****

UNIVERSITY OF ARKANSAS AT MONTICELLO
SCHOOL OF MATH AND NATURAL SCIENCES
COURSE SYLLABUS
General Chemistry II
Spring 2014, MWF 9:10; 10:10 a.m.

Instructor Name: Dr. Andrew Williams

Instructor Office: Science Center C-9

Instructor Phone: 870-460-1465

Instructor Email Address: williamsa@uamont.edu

Office Hours: MWF 9:10-10:00 or by appointment

Course Title and Credit Hours: CHEM 1113, General Chemistry II, 3 credit hours

ACTS CHEM 1424 General Chemistry II

Course Description: The study of kinetics, equilibrium, thermodynamics, electrochemistry, oxidation-reduction, acid-base chemistry, nuclear chemistry and selected descriptive chemistry. An ACS standardized exam will be given as the final exam.

Prerequisites: CHEM 1103 (ACTS Chem 1414) and CHEM 1121 (ACTS Chem 1414)
Corequisite: Chem 1131 (ACTS Chem 1424)

Required Text and Materials: *General Chemistry, The Essential Concepts*, Chang and Overby, McGraw Hill, 7th Edition ISBN: 978-0-07-337563-2
Scientific Calculator (such as a TI-30 or TI-36)

Student Learning Outcomes:

By the end of the course the successful student should be able to explain, describe, discuss, recognize, perform related calculations and apply knowledge of the following:

- Molecular Geometry
- Intermolecular Forces
- Properties of Solutions
- Thermodynamics
- Chemical Kinetics
- Mechanisms of Chemical Reactions
- Acid/Base Theory
- Equilibrium of chemical reactions, including solubility
- Equilibrium of acid/base reactions, including titration
- Oxidation-Reduction
- Electrochemistry
- Nuclear Chemistry

Specific Course Policies:

Attendance: Regular attendance is expected. You are responsible for any missed class notes, homework assignments made before the next class period. Quizzes and Exams may be made up if the absence is University approved and correct procedures are followed; otherwise, missed quizzes will be considered as zero and can be one of the drop quizzes. If more quizzes are missed than the allowable number dropped, the extra missed quizzes will be counted as a zero. An unexcused

missed exam will be counted as the lowest exam for the term, and replaced by the percentage scored on the final exam. Only one exam can be replaced with the final.

Electronic Equipment: Cell phones, music players, and other accessories are to be turned off and put away during class. They may not be used as calculator. Do not have the cell phone on desk during class. Anyone caught using electronic devices during class will be asked to leave immediately.

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 score of zero 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.

Content Outline:

Chapter 10 Chemical Bonding II: Molecular Geometry and Hybridization of Atomic Orbitals

- Molecular Geometry
- Dipole Moments
- Valence Bond Theory
- Hybridization of Atomic Orbitals
- Hybridization in Molecules Containing Double and Triple Bonds
- Molecular Orbital Theory

Chapter 12 Intermolecular Forces and Liquids and Solids

- Kinetic Molecular Theory of Liquids and Solids
- Intermolecular Forces
- Properties of Liquids
- Crystal Structure
- Bonding in Solids
- Phase Changes
- Phase Diagrams

Chapter 13 Physical Properties of Solutions

- Types of Solutions
- A Molecular View of the Solution Process
- Concentration Units
- Effect of Temperature on Solubility
- Effect of Pressure on Solubility of Gases
- Colligative Properties

Chapter 14 Chemical Kinetics

- The Rate of Reaction
- The Rate Laws
- Relation Between Reactant Concentrations and Time
- Activation Energy and Temperature Dependence of Rate Constants
- Reaction Mechanisms
- Catalysis

Chapter 15 Chemical Equilibrium

- The Concept of Equilibrium
- Ways of Expressing Equilibrium Constants
- What Does the Equilibrium Constant Tell Us?
- Factors that Affect Chemical Equilibrium

Chapter 16 Acids and Bases

- Bronsted Acids and Bases
- Acid-Base Properties of Water
- pH-A Measure of Acidity
- Strengths of Acids and Bases

- Weak Acids and Acid Ionization Constants
- Weak Bases and Base Ionization Constants
- The Relationship Between Conjugate Acid-Base Ionization Constants
- Molecular Structure and the Strength of Acids
- Acid-Base Properties of Salts
- Acidic, Basic, and Amphoteric Oxides
- Lewis Acids and Bases

Chapter 17 Acid-Base Equilbria and Solubility Equilibria

- Homogeneous Versus Heterogeneous Solution Equilibria
- Buffer Solutions
- A Closer Look at Acid-Base Titrations
- Acid Base Indicators
- Solubility Equilibria
- The Common Ion Effect and Solubility
- Complex Ion Equilibria and Solubility
- Application of Solubility Product Principle to Qualitative Analysis

Chapter 18 Thermodynamics

- The Laws of Thermodynamics
- Spontaneous Processes
- Entropy
- Second Law of Thermodynamics
- Gibbs Free Energy
- Free Energy and Chemical Equilbrium
- Thermodynamics in Living Systems

Chapter 19 Redox Reactions and Electrochemistry

- Redox Reactions
- Galvanic Cells
- Standard Reduction Potentials
- Thermodynamics of Redox Reactions
- Effect of Concentration on Cell EMF
- Batteries
- Corrosion
- Electrolysis
- Electrometallurgy

Special Topics in Chemistry (as time permits)

- Nuclear Chemistry
- Organic Chemistry
- Coordination Chemistry

Special Projects and Assignments: None

Provisions for Exams and Evaluations: Exams will be given during class time and will be announced approximately one week prior to the exam. If you have a University excused absence, and proper procedures are followed, you will be allowed to make-up the exam. Calculators will be required for quizzes and exams. If you use a graphing calculator, it will be cleared. If you do not want your calculator cleared, please bring a different calculator.

Grading: Four tests of equal value (100 pts each) will be given. The fifth exam is a comprehensive final exam written by the American Chemical Society. This exam is comprehensive and includes questions from Chem I. 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 exam. This also applies to a missed exam; however, only one exam score can be replaced. Quizzes will be given weekly at the beginning of class over previously covered material. Only the top ten quizzes will be graded, any quizzes over ten will result in the lowest being dropped. Weekly homework will be worth 50 total points. No homework scores will be dropped. Any challenges to the graded tests must be brought to my attention within one week of receiving the graded tests.

Point Values	
Test 1	100 points
Test 2	100 points
Test 3	100 points
Test 4	100 points
Final Exam	100 points
Quizzes	100 points
Homework	50 points

Grading Scale	
88 – 100	A
76 – 87	B
64 – 75	C
50 – 63	D
0-49	F

Special Dates of Concern:

January 7 (Wednesday)	First Day of Classes
January 9 (Friday)	Last Day to Add Classes
January 19 (Monday)	Martin Luther King Holiday. All offices and classes closed.
March 18 (Wednesday)	Last day to drop with W in regular classes
March 23-27 (Monday-Friday)	Spring Break for faculty and students.
April 6 (Monday):	Preregistration for summer and fall begins.
April 17 (Friday)	Preregistration for summer and fall ends
April 28 (Tuesday)	Last day of classes
April 29 - May 5 (Wednesday-Tuesday)	Final exams
May 8 (Friday)	Commencement

April 30 (Thursday) Final Examination **<u>All</u> sections of Chem 1023, 1103, & 1113.**

10:30 - 12:30

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; email: whitingm@uamont.edu.

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.

Student conduct statement:

Students at the University of Arkansas at Monticello are expected to conduct themselves appropriately, keeping in mind that they are subject to the laws of the community and standards of society. The student must not conduct

him/herself in a manner that disrupts the academic community or breaches the freedom of other students to progress academically.

Academic dishonesty:

5. Cheating: Students shall not give, receive, offer, or solicit information on examinations, quizzes, etc. This includes but is not limited to the following classes of dishonesty:
    a. Copying from another student's paper;
    b. Use during the examination of prepared materials, notes, or texts other than those specifically permitted by the instructor;
    c. Collaboration with another student during the examination;
    d. Buying, selling, stealing, soliciting, or transmitting an examination or any material purported to be the unreleased contents of coming examinations or the use of any such material;
    e. Substituting for another person during an examination or allowing such substitutions for oneself.
6. Collusion: Collusion is defined as obtaining from another party, without specific approval in advance by the instructor, assistance in the production of work offered for credit to the extent that the work reflects the ideas of the party consulted rather than those of the person whose name in on the work submitted.
7. Duplicity: Duplicity is defined as offering for credit identical or substantially unchanged work in two or more courses, without specific advanced approval of the instructors involved.
8. Plagiarism: Plagiarism is defined as adopting and reproducing as one's own, to appropriate to one's use, and to incorporate in one's own work without acknowledgement the ideas or passages from the writings or works of others.

For any instance of academic dishonesty that is discovered by the instructor, whether the dishonesty is found to be cheating, collusion, duplicity, or plagiarism, the result for the student(s) involved as a first offense will be minimum of a grade of zero for the assignment, quiz or exam, and that grade is not a droppable grade in the grade calculation. Second offenses will result in automatic expulsion from the course.

University of Arkansas at Monticello
School of Mathematics and Natural Sciences
GENERAL CHEMISTRY II LABORATORY
Spring 2015

INSTRUCTOR:	Kelley Sayyar
Office:	Science Center C-10
Office Phone:	460-1365
Lab Room:	Science Center C-4
Lab Phone:	460-1666
E-Mail:	sayyark@uamont.edu
Office Hours:	MWF 10:00am-12:00pm; T 9:00-9:30am and 11:30am-12:00pm (or by appt.)

COURSE:	**General Chemistry II Lab CHEM 1131** (ACTS-CHEM 1424) **1 Credit Hour**
Pre-requisites:	CHEM 1103 and CHEM 1121 (ACTS-CHEM 1414) (General Chemistry I lecture and lab)
Co-requisite:	CHEM 1113 (CHEM1424) General Chemistry II lecture
Required Text:	Signature Lab Series in Chemistry (CHEM 1121 and 1131) ISBN: 0-534-48193-0 **Do Not Purchase A Used Lab Manual**
Objectives:	This course is designed to give the student practical laboratory experiences that demonstrate many of the laws and theories taught in General Chemistry II.
Format:	Three hours of laboratory once a week. W 2:10-5:00 p H 8:10-11:00 a H 1:40-4:30 p

GRADING:

Two 100 point lab exams will be given. The multiple choice exams will cover material from the lab modules, pre and post lab assignments and laboratory work. A SCANTRON will be needed for each exam and must be furnished by the student. Calculators may be used for each exam, however, no cell phones or other electronic devices are allowed during exams. **Students will not be allowed to make up exams without prior permission of the lab instructor.** Each lab experiment counts 100 points. A data sheet, pre-lab and post-lab assignments will be turned in for most lab experiments and are due at the end of the lab period unless otherwise stated. The lowest lab experiment grade will be dropped. The overall grade is based on 50% for lab experiments and 50% for exams. The final grade will be based on the following scale:

A= 88-100% B= 77-87% C= 65-76% D= 50-64% F= Below 50%

ATTENDANCE:

Attendance is required and a missed experiment must be made up on the designated make up day. **Students will be allowed to make up no more than one experiment.** If the student is unable to make up the lab on the scheduled make up day or misses more than one lab, the student will be given a grade of zero for that lab assignment. Students arriving late to class may not be allowed to perform the experiment at the lab instructor's discretion. The student must sign the roll sheet to receive credit for each experiment. Failure to do so may result in a grade of zero for the experiment.

WITHDRAWALS:
Students who wish to withdraw from the course are responsible for filing the necessary papers with the Registrar's office. Student's who fail to file a "drop" card will receive and "F" for the course.

ACADEMIC DISHONESTY:
Cheating (such as copying from or collaborating with another student and use of prepared notes/materials on exams or experiments without specific approval of the instructor), helping others cheat or other improper conduct such as collusion, duplicity and plagiarism will not be tolerated. Confirmed cases of cheating will result in a zero on a given exam or experiment for the first offense and a grade of F for the course on the second. The incident will also be reported to the Vice Chancellor for Academic Affairs.

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 is prohibited under the Student Conduct Code of the UAM Student Handbook.

A WORD OF CAUTION:
The lab experiments are designed to pose minimal hazardous risks if proper safety procedures are followed. However, this course involves frequent use of chemicals and flames and certain health hazards can be associated with their use. **These health risks are significantly higher for students with chemical allergies, students who have asthma, and students who are pregnant.** Thus, extreme caution and proper safety procedures must be adhered to. The student must sign a safety agreement and will be responsible for following the recommended safety practices and precautions. Repeated violations to the safety agreement rules will result in point deductions from the experiment. A "**no tolerance**" policy will be enforced in this course. That is, any action made by the student that is purposefully or willfully done as to create a hazardous situation will not be tolerated. Such an offense will result in the removal of the student from the laboratory and a grade of zero for the experiment with no possibility for a make-up or to drop it as the lowest lab grade.

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 with a disability requiring accommodations should contact the Office of Special Student Services located in Harris Hall Room 121, phone 870 460-1026 TDD 870 460-1626 Fax 870 460-1926.

IMPORTANT DATES:
January 7 (Wednesday): First day of classes
January 9 (Friday): Last day to register or add spring classes.
January 19 (Monday): Martin Luther King Holiday. All offices and classes closed.
February 27 (Friday): Deadline to apply for August and December graduation.
March 18 (Wednesday): Last day to drop a regular spring class. Grade will be W.
March 23-27 (Monday-Friday): Spring Break for faculty and students.
April 6 (Monday): Preregistration for summer and fall 2015 begins.
April 17 (Friday): Preregistration for summer and fall 2015 ends.
April 28 (Tuesday): Last day of classes.
April 29-May 5 (Wednesday-Tuesday): Final exam period.

GENERAL CHEMISTRY II LAB
CHEM 1131 (CHEM 1424)
Spring 2015 SCHEDULE

Date **(Thursdays)**	Activity	Module #	Page #
Jan 08	Check- In; Molecular Bonding	Handout	-----
Jan 15	Group I Cations	364	191
Jan 22	Group II Cations (Known)	365	207
Jan 29	Group II Cations (Unknown)	365	207
Feb 05	Anions (Known)	367	223
Feb 12	Anions (Unknown)	367	223
Feb 19	Freezing Pt. Depression in t-Butyl Alcohol	344	243
Feb 26	**Lab Exam # 1**	-----	-----
Mar 05	Introducing Equilibrium	392	295
Mar 12	pH, Acids and Bases	397	259
Mar 19	Determining Molar Concentration of a NaOH Solution	394	271
Mar 26	Spring Break (No Labs W or H)	-----	-----
Apr 02	Organic Nomenclature	Handout	-----
Apr 09	Make Up Lab and Check Out	-----	-----
Apr 16	**Lab Exam # 2**	-----	-----
Apr 23	No Labs (W or H)	-----	-----

*****ALL LOCKS MUST BE RETURNED AT CHECK OUT TIME OR A **$20.00 NON-REFUNDABLE** CHARGE WILL BE MADE TO YOUR ACCOUNT. ONLY LOCKS ISSUED BY LAB INSTRUCTOR MAY BE USED. ALL OTHERS WILL BE REMOVED AND A **$100.00 FINE** WILL BE MADE TO YOUR ACCOUNT*****

GENERAL CHEMISTRY II LAB
CHEM 1131 (CHEM 1424)
Spring 2015 SCHEDULE

Date **(Wednesdays)**	Activity	Module #	Page #
Jan 07	Check- In; Molecular Bonding	Handout	-----
Jan 14	Group I Cations	364	191
Jan 21	Group II Cations (Known)	365	207
Jan 28	Group II Cations (Unknown)	365	207
Feb 04	Anions (Known)	367	223
Feb 11	Anions (Unknown)	367	223
Feb 18	Freezing Pt. Depression in t-Butyl Alcohol	344	243
Feb 25	**Lab Exam # 1**	**-----**	**-----**
Mar 04	Introducing Equilibrium	392	295
Mar 11	pH, Acids and Bases	397	259
Mar 18	Determining Molar Concentration of a NaOH Solution	394	271
Mar 25	Spring Break (No Labs W or H)	-----	-----
Apr 01	Organic Nomenclature	Handout	-----
Apr 08	Make Up Lab and Check Out	-----	-----
Apr 15	**Lab Exam # 2**	**-----**	**-----**
Apr 22	No Labs (W or H)	-----	-----

*****ALL LOCKS MUST BE RETURNED AT CHECK OUT TIME OR A **$20.00 NON-REFUNDABLE** CHARGE WILL BE MADE TO YOUR ACCOUNT. ONLY LOCKS ISSUED BY LAB INSTRUCTOR MAY BE USED. ALL OTHERS WILL BE REMOVED AND A **$100.00 FINE** WILL BE MADE TO YOUR ACCOUNT*****

School of Mathematics and Sciences **Fall 2014**
University of Arkansas at Monticello

CHEM 3314 **Quantitative Analysis**

Text: *Quantitative Chemical Analysis, 8*th Ed., 2010 by Daniel Harris
Prerequisites: CHEM 1113 and CHEM 1131, MATH 1043 or MATH 1175

INSTRUCTOR: Dr. Jinming Huang, SC C-14, 460-1866, huang@uamont.edu

Office Hours: MWF 11 – 12, 1:30 –-2:30; TTh 2 – 3, or by appointment

Format: Lecture 2 hours/week and lab 6 hours/week.

Course Objective:
The objectives of the lecture portion of this course are to provide the student with detailed understanding of the nature of chemical equilibrium and calculations involved in it and to show how equilibrium may be applied to analytical measurements. In addition, the student is introduced to error analysis in measurements. The objectives of the laboratory portion are to introduce the student to several common wet analytical procedures, to refine the student's laboratory technique, and to provide the student with an understanding of the degree of precision required in chemical analysis.

Course Content:
The lecture portion of this course covers equilibrium and analytical procedures. The topics covered in lecture include:

The analytical process and measurements
Statistics and treatment of experimental errors
Chemical Equilibrium, Activity, and the Systematic Treatment of Equilibrium
Solubility Equilibria, Precipitation Titrations, and Gravimetric Analysis
Acid-Base Equilibria and Acid-Base Titrations
Complex Formation Equilibria and Titrations (EDTA titrations)
Electrochemistry and Oxidation-Reduction titrations

Grade Scale
86 - 100% = A
76 - 85% = B
66 - 75% = C

The laboratory portion includes a variety of analyses including:

Two acid-base titrations
Two complex ion titrations
One precipitation titration
Two gravimetric analyses
Three oxidation-reduction titrations

These experiments illustrate different techniques, indicators and reactions.

GRADING:
The overall grade in this course consists of 50% for lecture and 50% for lab. The lecture portion includes three hour- exams which count 45% of the overall grade, with the 3rd hour exam being given at the time for final. Make-up exams will not be given on individual exams but will rather be given only once during the semester and will be comprehensive. Only one exam may be made up under any conditions. In addition, homework is required and graded providing the other 5% of the overall grade. The laboratory portion is graded entirely on the accuracy of the analysis of unknown samples. There are 10 unknown samples which each count 5% of the

overall grade for the overall 50% of the course grade based on the laboratory portion. The actual grade on each unknown is based on how close of the student's result from the actual value.

ATTENDANCE:
Regular attendance is required. Roll will be taken daily, and irregular attendance may be reported to the university administration for possible action involving financial aid. The student is responsible for all assignments, announcements, etc. made during class.

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;
   d. Buying, selling, stealing, soliciting, or transmitting an examination or any material purported to be the unreleased contents of coming examinations or the use of any such material;
   e. Substituting for another person during an examination or allowing such substitutions for oneself.
2. Collusion: Collusion is defined as obtaining from another party, without specific approval in advance by the instructor, assistance in the production of work offered for credit to the extent that the work reflects the ideas of the party consulted rather than those of the person whose name in on the work submitted.
3. Duplicity: Duplicity is defined as offering for credit identical or substantially unchanged work in two or more courses, without specific advanced approval of the instructors involved.
4. Plagiarism: Plagiarism is defined as adopting and reproducing as one's own, to appropriate to one's use, and to incorporate in one's own work without acknowledgement the ideas or passages from the writings or works of others.

For any instance of academic dishonesty that is discovered by the instructor, whether the dishonesty is found to be cheating, collusion, duplicity, or plagiarism, the result for the student(s) involved will be given a score of zero for the first offensive and lead to dismissal from the course with a failing grade for the second offensive. The use of graphing and programmable calculators are permitted, however, if your calculator contains information that you do not want erased, (even from another class) you should bring a different calculator on test days

DISRUPTIVE BEHAVIOR:
Any behavior that disrupts the regular or normal functions of the university community is prohibited under the Student Conduct Code, including behavior which breaches the peace or violates the rights of others. Cell phones are disruptive to classroom environment and must be placed on silent if brought to class. Cell phones are not allowed under any circumstances during exams.

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, room120, phone 870–460-1026; TDD 870-460-1626; fax 870-460-1926.

SOME IMPORTANT DATES TO REMEMBER:

Wednesday	Aug 20……	First day of Class
Friday	Aug 22.....	Last day to add classes
Monday	Sep 1……..	Labor Day Holiday
Wednesday	Oct 29.....	Last day to withdraw with a W
Monday	Nov 3.....	Preregistration for spring begins
Friday	Nov 14.....	Preregistration for spring ends
Wednesday	Nov 26……	Class closed
Thursday-Friday	Nov 27 – 28…	Thanksgiving Holiday
Friday	Dec 5……	Last day of Class
FINAL EXAM	**Tuesday,**	**Dec 9, 1:30 - 3:30**

UNIVERSITY OF ARKANSAS AT MONTICELLO
School of Mathematics and Natural Sciences
Syllabus **ORGANIC CHEMISTRY I** CHEM 3404-01
Fall 2015; MWF 10:10 am – 11:00 am; SC C-26

INSTRUCTOR: Dr. M. Jeffrey Taylor
OFFICE: **SC-C-22**
PHONE: (870)-460-1766 (leave a voice mail)
E-MAIL: taylorj@uamont.edu **[use your official UAM campus email!]**
OFFICE HOURS: **MWF** 9:10-10:00 & 1:10-2:00;
TuTh 8:10-9:00 & 12:40-1:30.
COURSE TITLE: (CHEM 3404-01) **ORGANIC CHEMISTRY I**; 3 credit hours of lecture, 1 credit hour of lab.
PREREQUISITES: CHEM 1113 and 1131, (ACTS Equivalent # CHEM 1424) General Chemistry II lecture and lab.
DESCRIPTION: A study of carbon compounds, including an introduction to organic nomenclature, reactions, reaction mechanisms, organic synthesis, and structural and stereochemical problems.
STUDENT LEARNING OUTCOMES: By the conclusion of the course you should be able to:
1.) Understand the structure and reactivity of the major functional groups.
2.) Supplement organic theory with practical laboratory skills.
3.) Demonstrate improved study skills and test taking skills.
4.) Demonstrate a mastery of the material, not a superficial recognition of the material.

REQUIRED TEXTS: You may go to the online bookstore:
http://www.bkstr.com/uamontstore/shop/textbooks-and-course-materials

1.) *Organic Chemistry*; J.G. Smith, 4th Edition, McGraw-Hill; ISBN 978-0-07-340277-2. **You must bring your text to all class lectures!**
2.) *Student Study Guide/Solutions Manual;* J.G. Smith and E.S. Burk, 4th Edition, McGraw-Hill; ISBN 978-0-07-747982-4 is an **optional, but highly recommended**, supplement to the text.
3.) *Experiments in Organic Chemistry*; R. Hill and J. Barbaro; 3rd Edition, Contemporary Publishing Company; ISBN: 0-89892-311-5. **You must bring your lab manual to all laboratories!**
4.) Student Lab Notebook; Hayden McNeil Publishing. ISBN: 978-1-930882-50-8. **You must bring your lab notebook to all laboratories!**
5.) A non-graphing calculator capable of (log) and (ln) functions is required for all class **laboratories and exams**. You may not borrow calculators or use a cell phone. GRAPHING CALCULATORS ARE NOT ALLOWED.

TECHNICAL SUPPORT INFORMATION:
Blackboard Assistance: Contact Office of Instructional Technology; phone 870-460-1663; open Monday-Friday, 8 a.m. – 4:30 p.m.
Online Help Desk: http://www.uamont.edu/pages/resources/academic-computing/
Email Assistance: Contact the Office of Information Technology; phone 870-460-1036; open Monday-Friday, 8 a.m. – 4:30 p.m.
Library Services: The computer section in the Library is open during regular Library hours. Go to the Taylor Library website for hours of operation: http://www.uamont.edu/pages/library/

ATTENDANCE POLICY: You will be expected to attend every class meeting and arrive on time. The university does not allow for unexcused absences. To reward punctuality and attendance, a quiz may be given at the start of the class period. You must arrive on time to participate in the quiz; quiz points will cumulatively count as an exam. Absences involving University sponsored events are considered excused unless the proper notifications were not delivered to the instructor according to Policy XV on page 71 of the UAM Faculty Handbook. If an absence is planned for a University sponsored event, exams should be taken early if possible. If an absence occurs; it is the student's responsibility to obtain the missed lecture material. *If you do not have time for class; do NOT expect my time later.*

COURSE SPECIFIC POLICY CONCERNING CELL PHONES: Your career is more important than what/who is on the other end of your phone. If you access your cell phone during class time you will simply be asked to leave for the remainder of the day and 10 quiz points (not percentage points) will be forfeited.

ACADEMIC ALERT: The Academic Alert System is a retention program that puts students in contact with the appropriate campus resources to assist them in meeting their educational goals at UAM. If you are doing poorly in your academic work, are chronically absent from class, are exhibiting disruptive behavior or are having difficulty adjusting to campus life, University faculty, staff or a fellow student may report you to the Office of Academic Affairs through the Academic Alert system.

STUDENTS WITH DISABILITIES: It is the policy of the University of Arkansas at Monticello to accommodate individuals 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; email: whitingm@uamont.edu.
For assistance on a College of Technology campus contact:
McGehee: Office of Special Student Services representative; phone 870 222-5360; fax 870 222-1105.
Crossett: Office of Special Student Services representative; phone 870 364-6414; fax 870 364-5707.

FEEDBACK SCHEDULE: Please use you UAM email account for **ALL** correspondences. A student can expect a response to email within 24 hours Monday through Friday. It is very unlikely that an email will be answered between Friday afternoon and Monday morning.

ASSESSMENTS: Lecture points include 3 exams of 100 points each, a comprehensive FINAL exam of 200 points, a quiz average of 100 percent (points) yielding a total of 600 lecture points. The test format will include multiple choice, short answer, reactions and syntheses. The percentage score from the comprehensive final will substitute for ONE missed exam. Second and subsequent missed exams will have a zero recorded as the grade. Exams may not be made up or given late for any reason. If an absence is planned for a University sponsored event, exams should be taken early. **Lecture** contributes **600** points and **Laboratory** contributes **200** points for a **total** of **800** points. Assessment of the laboratory points are discussed in the lab syllabus.

GRADE ASSIGNMENT:

A	85.0-100.0%
B	75.0-84.9%
C	65.0-74.9%
D	55.0-64.9%
F	< 55.0%

STUDENT CONDUCT STATEMENT: Students at the University of Arkansas at Monticello are expected to conduct themselves appropriately, keeping in mind that they are subject to the laws of the community and standards of society. The student must not conduct him/herself in a manner that disrupts the academic community or breaches the freedom of other students to progress academically. This includes cell phone use during class. Seats may be assigned to prevent problems.

ACADEMIC DISHONESTY: Cheating will not be tolerated!

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;
    d. Buying, selling, stealing, soliciting, or transmitting an examination or any material purported to be the unreleased contents of coming examinations or the use of any such material;
    e. Substituting for another person during an examination or allowing such substitutions for oneself.
2. Collusion: Collusion is defined as obtaining from another party, without specific approval in advance by the instructor, assistance in the production of work offered for credit to the extent that the work reflects the ideas of the party consulted rather than those of the person whose name in on the work submitted.
3. Duplicity: Duplicity is defined as offering for credit identical or substantially unchanged work in two or more courses, without specific advanced approval of the instructors involved.
4. Plagiarism: Plagiarism is defined as adopting and reproducing as one's own, to appropriate to one's use, and to incorporate in one's own work without acknowledgement the ideas or passages from the writings or works of others.

For any instance of academic dishonesty that is discovered by the instructor, whether the dishonesty is found to be cheating, collusion, duplicity, or plagiarism, the result for the student(s) involved will be withdrawal from the class or awarding the student a failing grade for the course. Accessing a cell phone during an exam or quiz constitutes cheating, and a score of zero will be recorded. Accessing a cell phone while reviewing confidential materials or exams constitutes cheating and will result in withdrawal/failure for the class.

COURSE CONTENT AND TENTATIVE EXAM SCHEDULE:

Exam I	Bonding; Acids/bases; Alkanes; Cycloalkanes	Chap 1-4	Mon. 9/28/15
Exam II	Stereochemistry, Substitution; Elimination	Chap 5-8	Mon. 10/26/15
Exam III	Alcohols; Alkenes; Alkynes; Redox	Chap 9-12	Fri. 12/04/15
Final Exam	**Comprehensive Exam Chap 1-12**	**Thursday 12/10/15 at 1:30 pm**	

COLLABORATION: Collaboration is an important aspect of science. I encourage you to associate in small study groups to discuss the homework and lecture. You will benefit from the interaction with your peers whether you are giving or receiving help.

UNIVERSITY OF ARKANSAS AT MONTICELLO
School of Mathematics and Natural Sciences
Syllabus **ORGANIC CHEMISTRY II LAB** CHEM 3414-51
SPRING 2015 Th 1:40-4:30 pm SC C-26

INSTRUCTOR: Dr. M. Jeffrey Taylor
OFFICE: **SC-C-22**
PHONE: (870)-460-1766 (leave a voice mail)
E-MAIL: taylorj@uamont.edu **[use ONLY your official UAM campus email!]**
OFFICE HOURS: 9:10 - 10:00 am MWF; 9:40 - 10:30 am TuTh
1:10 - 2:00 pm MW; 12:40 - 1:30 pm TuTh, or by appointment.
COURSE TITLE: (CHEM 3414-51) **ORGANIC CHEMISTRY II LABORATORY**;
1 credit hour of lab consolidated with 3 credit hours of lecture.
DESCRIPTION: A continuation of Organic Chemistry I (3404). A study of organic nomenclature, reactions, reaction mechanisms, organic spectroscopy, with a greater emphasis on organic synthesis. An ACS standardized exam will be given as the final exam. 3 hours lecture and 3 hours of lab.

PREREQUISITES: CHEM 3404 (Organic Chemistry I)

REQUIRED TEXTS: **1.)** *Experiments in Organic Chemistry*; R. Hill and J. Barbaro; 3rd Edition, Contemporary Publishing Company. ISBN: 0-89892-311-5. You must bring your lab manual to all laboratories.
2.) Student Lab Notebook; Hayden McNeil Publishing. ISBN: 978-1-930882-50-8. You must bring your lab notebook to all laboratories.

STUDENT LEARNING OBJECTIVES:
1.) Understand the structure and chemistry of the major functional groups.
2.).Supplement organic theory with practical laboratory skills.
3.) Continue to develop study skills and test taking skills.
4.) Develop a mastery of the material, not just a superficial recognition of the material.

REQUIRED CALCULATOR: Any non-graphing calculator capable of (log) and (ln) functions is required for all class **laboratories**. You may not borrow calculators or use a cell phone. GRAPHING CALCULATORS ARE NOT ALLOWED.

REQUIRED ATTENDANCE: You will be expected to attend every lab meeting and arrive on time. You must attend the pre-lab to participate in the experiment. A **make-up / CLEAN-UP** laboratory will be available for **ONE** absence at the end of the semester. Second and subsequent missed laboratories will have a **zero** recorded as the grade.

CELL PHONES: You should NOT access your cell phone during class time. Your career is more important than what/who is on the other end of your phone. However, you will be given enough rope to hang yourself. I will not ask anyone to turn off their cell phone. *If you do not have time for class because of your cell phone; do NOT expect my time later.*

ACADEMIC MISCONDUCT: Cheating will not be tolerated. Penalties for violations are described on page 55 of the 2013-15 UAM catalog and include withdrawing the student from the class or awarding the student a failing grade for the course. Accessing a cell phone during an exam constitutes cheating, and a score of zero will be recorded. Accessing a cell phone while reviewing confidential materials or exams will result in withdrawal/failure for the class.

COURSE CONTENT AND LABORATORY SCHEDULE:

1/08	Check in, Safety, Notebooks & Lab Reports
1/15	Ex1-Williamson Ether Synthesis S_N2 (E17)
1/22	Ex2 Dehydration of an Alcohol E1 (E5A)
1/29	Ex3 Diels Alder (E7)
2/05	Ex4- Electrophilic Aromatic Substitution (E9A)
2/12	Ex5- Prep of Acetanilide (E20B)
2/19	**Mid Term Exam (Exp 1-5)**
2/26	Ex6 Oxidation of Alcohol (E11)
3/05	Ex7 Sodium Borohydride Reduction (E25)
3/12	Ex8 Prep of Aspirin (E19)
3/19	Ex9 Fischer Esterification (E18A)
4/02	Ex10 Prep of Dibenzalacetone (E12)
4/09	check-out; **LAB CLEAN-UP! (make-up)**
4/23	**Final Exam (Exp 6-10)**

EVALUATION: Laboratory points include 10 experiments and 2 exams to yield **200** points. A **make-up / CLEAN-UP** laboratory will be available for **ONE** absence at the end of the semester. Second and subsequent missed laboratories will have a **zero** recorded as the grade. **Lecture** contributes **600** points and **Laboratory** contributes **200** points for a **total** of **800** points ($1/4^{th}$ of the combined lecture/lab).

10 experiments @ 10 points: (5 points DATA report, 5 points notebook)	100 points
Mid Term exam	50 points
Final exam	50 points
Total	200 points

GRADING:

A	85.0-100.0%
B	75.0-84.9%
C	65.0-74.9%
D	55.0-64.9%
F	< 55.0%

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; email: whitingm@uamont.edu

Student Conduct Statement: Students at the University of Arkansas at Monticello are expected to conduct themselves appropriately, keeping in mind that they are subject to the laws of the community and standards of society. The student must not conduct him/herself in a manner that disrupts the academic community or breaches the freedom of other students to progress academically. This includes cell phone use during class. Seats may be assigned to prevent problems.

COLLABORATION: Collaboration is an important aspect of science. I encourage you to interact during lab. Whether you are giving or receiving help among your study group, you will benefit from the interaction with your peers.

ORGANIC LABORATORY NOTEBOOK:

1.) The lab notebook must be the carbonless copy type specified and sold in the bookstore.
2.) The table of contents can be completed on the inside cover when the notebook is finished.
3.) Never remove original pages from your notebook. The carbonless copies will be removed and stapled to the back of the DATA report sheets.
4.) Always use waterproof, blue or black, ink.
5.) The lab notebook is to be written as a continuous journal of experiments conducted in lab. Never skip pages. Put a large X on the page and date any skipped pages.
6.) Never erase, use white-out, or obliterate an erroneous entry. Place a single line through the erroneous entry.
7.) Be thorough. Drawings, tables, all calculations, and detailed descriptions are expected. These should be well labeled. If graphs, calculation, photo, etc. are added, they should be **taped** on the original with nothing hanging outside the notebook.
8.) Always sign and record the date on every page anytime something is written in the notebook.
9.) Complete as much of the notebook as possible during lab.
10.) **THE NOTEBOOK MUST BE SIGNED / DATED BY THE INSTRUCTOR PRIOR TO LEAVING LAB!**

GENERAL FORMAT FOR PREPARING ORGANIC CHEMISTRY LAB NOTEBOOK: MUST BE IN THIS ORDER!

Fill in the NAME and DATE in the space provided at the top.
I. TITLE: (be specific)
II. BALANCED REACTION: (write N/A if Not Applicable)
III. MECHANISM: (write N/A if Not Applicable)
IV. TABLE OF COMPOUNDS: (not all items are necessary for each experiment)

Compound	structure	MW	mass/volume	density	moles	mp	bp

V. SAFETY INFORMATION:
VI. PROCEDURE: (you may cut and paste the procedure provided)
VII. APPARATUS: (simple sketch of the apparatus)
VII. DATA/CALCULATIONS/OBSERVATIONS:
IX. RESULTS AND DISCUSSION:
X. CONCLUSIONS:

ORGANIC LABORATORY SAFETY AND ETIQUETTE

VIOLATIONS WILL RESULT IN A DEDUCTION OF TECHNIQUE POINTS OR DISMISSAL FROM THE LAB FOR THE REMAINDER OF THE DAY.

1.) Contact lenses are **NOT** permitted under any circumstances. You will be dismissed if you are wearing contact lenses.
2.) Safety glasses/goggles must be worn **AT ALL TIMES**. The **FIRST** thing you do in lab is to put on your safety glasses. The **LAST** thing you do in lab is **wash your hands then remove your safety glasses,** and exit the lab. You will be dismissed if you are not wearing your safety glasses. NO EXCEPTIONS!!
3.) Absolutely **NO EXPOSED SKIN** from your chest to the floor. You will be dismissed if you are wearing shorts, flip-flops, open toed shoes, sandals, bare-midriffs, etc. NO EXCEPTIONS!!
4.) Long hair must be restrained to prevent accidental contact with chemicals or equipment.
5.) Food, drinks, smokeless tobacco, smoking, radios, CELL PHONES, or horseplay will **NOT** be tolerated in lab. You will be DISMISSED if you participate in any of the above-mentioned activities. Backpacks and other materials must not be on the lab benches or isles.
6.) Never remove the stock chemicals from the fume hood or from the balance area.
7.) Broken glass and melting point capillaries must be put in the broken glass container.
8.) Solid waste and paper towels, etc. may be disposed in the trashcans.
9.) Water soluble solvents such as acetone, ethanol, methanol, aqueous acids and bases can be diluted and disposed in the sink with lots of running water. Organic solvents such as toluene MUST be disposed in the waste bottles provided.
10.) Extreme care must be exercised when handling THERMOMETERS. If you break a mercury thermometer through carelessness, you will be DISMISSED and earn a zero for the lab.
11.) Know the location of the eyewash, safety shower, fire extinguisher, and fire blanket.
12.) In case of a fire, do not panic. Let it burn, smother with a wet towel, or use a fire extinguisher if it is a large fire. Do NOT use water on an organic fire. If clothing is on fire, use the fire blanket or the safety shower, do not use the fire extinguisher.
13.) If exposed to chemicals, wash the affected area immediately with soap and water. Do not touch your face, eyes, nose, etc. while in lab. Wash your hands before leaving lab.
14.) Your notebook should be prepared prior to the start of the pre-lab lecture.
15.) You may **NOT START OVER**. If you spoil your experiment, or don't produce a product, you will earn a zero for the experiment portion of your grade.
16.) Before you leave the lab, your work area must be **CLEAN**. You must return **ALL COMMUNITY EQUIPMENT** to the appropriate community equipment drawers.

UNIVERSITY OF ARKANSAS AT MONTICELLO
School of Mathematics and Natural Sciences
Syllabus **ORGANIC CHEMISTRY II** CHEM 3414-01
SPRING 2015 MWF 10:10 a.m. SC C-26

INSTRUCTOR: Dr. M. Jeffrey Taylor
OFFICE: **SC-C-22**
PHONE: (870)-460-1766 (leave a voice mail)
E-MAIL: taylorj@uamont.edu **[use ONLY your official UAM campus email!]**
OFFICE HOURS: 9:10 - 10:00 am MWF; 9:40 - 10:30 am TuTh
1:10 - 2:00 pm MW; 12:40 - 1:30 pm TuTh, or by appointment.
COURSE TITLE: (CHEM 3414-01) **ORGANIC CHEMISTRY II**; 3 credit of hours lecture, 1 credit hour of lab.
DESCRIPTION: A continuation of Organic Chemistry I (3404). A study of organic nomenclature, reactions, reaction mechanisms, organic spectroscopy, with a greater emphasis on organic synthesis. An ACS standardized exam will be given as the final exam. 3 hours lecture and 3 hours of lab.

PREREQUISITES: CHEM 3404 (Organic Chemistry I)

REQUIRED TEXTS: **1.)** *Organic Chemistry*; J.G. Smith, 4th Edition, McGraw-Hill; ISBN 978-0-07-340277-2. **You must bring your text to all class lectures.**
2.) *Student Study Guide/Solutions Manual;* J.G. Smith and E.S. Burk, 4th Edition, McGraw-Hill; ISBN 978-0-07-747982-4 is an optional, but highly recommended, supplement to the text.
3.) *Experiments in Organic Chemistry*; R. Hill and J. Barbaro; 3rd Edition, Contemporary Publishing Company; ISBN: 0-89892-311-5. **You must bring your lab manual to all laboratories.**
4.) Student Lab Notebook; Hayden McNeil Publishing. ISBN: 978-1-930882-50-8. **You must bring your lab notebook to all laboratories.**

STUDENT LEARNING OBJECTIVES: 1.) Understand the structure and chemistry of the major functional groups.
2.).Supplement organic theory with practical laboratory skills.
3.) Continue to develop study skills and test taking skills.
4.) Develop a mastery of the material, not just a superficial recognition of the material.

REQUIRED CALCULATOR: Any non-graphing calculator capable of (log) and (ln) functions is required for all class **laboratories**. You may not borrow calculators or use a cell phone. GRAPHING CALCULATORS ARE NOT ALLOWED.

REQUIRED ATTENDANCE: You will be expected to attend every class meeting and arrive on time. Quizzes may not be made up or given late. You must arrive on time to participate in the quiz. Absences due to University sponsored events are excused. If an absence occurs; it is the student's responsibility to obtain the missed lecture material. *If you do not have time for class; do NOT expect my time later.*

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COURSE CONTENT AND TENTATIVE EXAM SCHEDULE:

Exam I	MS, IR, NMR, Radicals	Chap 13-16	Fri. 2/13/15
Exam II	Diens, Aromatics, EAS, Acids, Derivatives	Chap 17-19, 22	Fri. 3/20/15
Exam III	Carbonyls, α-Subst/Condensations, Amines	Chap 20-1, 23-5	Mon. 4/27/15
Final Exam	ACS Comprehensive Exam	**Tuesday 05/05/15 at 1:30 pm**	

EVALUATION: Lecture points include 3 exams of 100 points each, a comprehensive final exam of 200 points, and a quiz average of 100 percent yielding a total of 600 lecture points. The test format will include multiple choice, short answer, reactions and syntheses. The percentage score from the comprehensive final will substitute for ONE missed exam. Second and subsequent missed exams will have a zero recorded as the grade. Exams or quizzes may not be made up or given late for any reason. If an absence is planned for a University sponsored event, exams should be taken early. **Lecture** contributes **600** points and **Laboratory** contributes **200** points for a **total** of **800** points.

GRADING:	A	85.0-100.0%
	B	75.0-84.9%
	C	65.0-74.9%
	D	55.0-64.9%
	F	< 55.0%

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; email: whitingm@uamont.edu

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University of Arkansas at Monticello
School of Mathematics and Sciences

(Face to Face) Course Syllabus
Spring 2015, MWF 11:10-12:00

INSTRUCTOR: Jinming Huang, SC C-14, 460-1866, huang@uamont.edu

COURSE TITLE and CREDIT HOURS: CHEM 3444, Instrumental Analysis, 4 hrs

PREREQUISITES: CHEM 3314 and PHYS 2203 or 2213

TEXT: Lecture, *Quantitative Chemical Analysis, 8*th Ed., 2010 by Daniel Harris
Lab, none

OFFICE HOURS: MWF 9 - 10, TH 10-11, or by appointment

FORMAT: Lecture 3 hours/week and lab 3 hours/week.

COURSE OBJECTIVES: The objectives of the lecture portion of this course are to provide the student with detailed understanding of the nature of various instrumental methods of chemical analysis and to explore the calculations involved with these methods. The objectives of the laboratory portion of this course are to provide the student to gain experience in the use of many of the instruments and techniques discussed in lecture.

COURSE CONTENT:

The topics covered in lecture portion include:

1) Electroanalytical techniques;
2) Spectroscopy techniques including ultraviolet and visible spectroscopy (UV-Vis), atomic absorption spectroscopy, infrared spectroscopy (IR), nuclear magnetic resonance spectroscopy (NMR), and mass spectroscopy;
3) Chromatographic techniques, including gas chromatography (GC), high pressure liquid chromatography (HPLC), and capillary electrophoresis if time permit.

The topics covered in laboratory portion include:

1) Acid-base titration experiments on the pH meter,
2) Precipitation and redox titrations using potentiometry,
3) The using of ion selective electrodes,
4) UV-Visible spectroscopy experiments,
5) Infrared Spectroscopy experiment,
6) Atomic absorption experiment,
7) Gas chromatography experiment,
8) HPLC experiment

If all of the equipments are available

Grade Scale
86 - 100% = A
76 - 85% = B
65 - 75% = C

GRADING: The grade in this course consists of 60% on exams, 25% on lab, 10% on homework, and 5% on attendance. The lecture portion includes three hour exams with the 3rd hour exam be given as the final. Approved graphing calculators are allowed on exams. However, they will be taken up before the

student begins the exam. They will have the memory cleared and then be turned to the student. Make-up exams will not be given on individual exams but will rather be given only once during the semester and will be comprehensive. Only one exam may be made up under any conditions. Homework is required and graded. The lab grade is based on lab report submitted on each experiment. These are graded on the report itself, the results, and some subjective portion on lab performance.

ATTENDANCE: Regular attendance is required. Roll will be taken daily, and irregular attendance may be reported to the university administration for possible action involving financial aid. The student is responsible for all assignments, announcements, etc. made during class. Full attendance will get 5% toward the overall grade. Tardy 15 minutes will be account as absence.

ADDITIONAL READINGS: No specific additional readings will be assigned. However, the use of other texts for clarification is encouraged. Some experiments will involve handout material.

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;
    d. Buying, selling, stealing, soliciting, or transmitting an examination or any material purported to be the unreleased contents of coming examinations or the use of any such material;
    e. Substituting for another person during an examination or allowing such substitutions for oneself.
2. Collusion: Collusion is defined as obtaining from another party, without specific approval in advance by the instructor, assistance in the production of work offered for credit to the extent that the work reflects the ideas of the party consulted rather than those of the person whose name in on the work submitted.
3. Duplicity: Duplicity is defined as offering for credit identical or substantially unchanged work in two or more courses, without specific advanced approval of the instructors involved.
4. Plagiarism: Plagiarism is defined as adopting and reproducing as one's own, to appropriate to one's use, and to incorporate in one's own work without acknowledgement the ideas or passages from the writings or works of others.

For any instance of academic dishonesty that is discovered by the instructor, whether the dishonesty is found to be cheating, collusion, duplicity, or plagiarism, the result for the student(s) involved will be given a score of zero for the first offensive and lead to dismissal from the course with a failing grade for the second offensive. The use of graphing and programmable calculators are permitted, however, if your calculator contains information that you do not want erased, (even from another class) you should bring a different calculator on test days

DISRUPTIVE BEHAVIOR: Any behavior that disrupts the regular or normal functions of the university community is prohibited under the Student Conduct Code, including behavior which breaches the peace or violates the rights of others. Cell phones are disruptive to classroom environment and must be placed on silent if brought to class. Cell phones are not allowed under any circumstances during exams.

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; email:whitingm@uamont.edu

SOME IMPORTANT DATES TO REMEMBER:

January 7 (Wednesday):	First day of classes.
January 9 (Friday):	Last day to register or add classes.
January 19 (Monday):	Martin Luther King Holiday.
March 18 (Wednesday):	Last day to drop with W.
March 23-27 (M - F):	Spring break.
April 6-17(M - F):	Preregistration for summer and fall.
April 28 (Tuesday):	Last day of classes.
April 30 (Thursday):	**Final exam, 1:30 -3:30**

UNIVERSITY OF ARKANSAS AT MONTICELLO
School of Mathematics and Natural Sciences
Syllabus **BIOCHEMISTRY I** CHEM 4633-01
Fall 2015; MWF 8:10 am – 9:00 am; SC C-26

INSTRUCTOR: Dr. M. Jeffrey Taylor
OFFICE: **SC-C-22**
PHONE: (870)-460-1766 (leave a voice mail)
E-MAIL: taylorj@uamont.edu **[use your official UAM campus email!]**
OFFICE HOURS: **MWF** 9:10-10:00 & 1:10-2:00;
TuTh 8:10-9:00 & 12:40-1:30.
COURSE TITLE: (CHEM 4633-01) **BIOCHEMISTRY I**; 3 credit hours lecture.
PREREQUISITES: CHEM 3414 Organic Chemistry II Lecture and Lab
DESCRIPTION: Introduction to the chemical aspects of living systems: organization and production of cellular macromolecules, production and utilization of energy by the cell, major metabolic pathways and biochemical control mechanisms.
STUDENT LEARNING OUTCOMES: By the conclusion of the course you should be able to:
1.) Understand the molecular basis of life.
2.) Integrate Biology, Chemistry, Physics and Math for a comprehensive view of science.
3.) Demonstrate improved study skills and test taking skills.
4.) Demonstrate a mastery of the material, not a superficial recognition of the material.

REQUIRED TEXTS: You may go to the online bookstore:
http://www.bkstr.com/uamontstore/shop/textbooks-and-course-materials
1.) *BIOCHEMISTRY*; Garrett and Grisham, 5th Edition, Brooks/Cole Publishers; ISBN 13-978-1-133-10629-6. **You must bring your text to class lectures.**
2.) A non-graphing calculator capable of (log) and (ln) functions is required. **You must bring your calculator to class lectures and exams.** You may not borrow calculators or use a cell phone. GRAPHING CALCULATORS ARE NOT ALLOWED.

TECHNICAL SUPPORT INFORMATION:
Blackboard Assistance: Contact Office of Instructional Technology; phone 870-460-1663; open Monday-Friday, 8 a.m. – 4:30 p.m.
Online Help Desk: http://www.uamont.edu/pages/resources/academic-computing/
Email Assistance: Contact the Office of Information Technology; phone 870-460-1036; open Monday-Friday, 8 a.m. – 4:30 p.m.
Library Services: The computer section in the Library is open during regular Library hours. Go to the Taylor Library website for hours of operation: http://www.uamont.edu/pages/library/

ATTENDANCE POLICY: You will be expected to attend every class meeting and arrive on time. The university does not allow for unexcused absences. To reward punctuality and attendance, a quiz may be given at the start of the class period. You must arrive on time to participate in the quiz; quiz points will cumulatively count as an exam. Absences involving University sponsored events are considered excused unless the proper notifications were not delivered to the instructor according to Policy XV on page 71 of the UAM Faculty Handbook. If an absence is planned for a University sponsored event, exams should be taken early if possible. If an absence occurs; it is the student's responsibility to obtain the missed lecture material. *If you do not have time for class; do NOT expect my time later.*

COURSE SPECIFIC POLICY CONCERNING CELL PHONES: Your career is more important than what/who is on the other end of your phone. If you access your cell phone during class time you will simply be asked to leave for the remainder of the day and 10 quiz points (not percentage points) will be forfeited.

ACADEMIC ALERT: The Academic Alert System is a retention program that puts students in contact with the appropriate campus resources to assist them in meeting their educational goals at UAM. If you are doing poorly in your academic work, are chronically absent from class, are exhibiting disruptive behavior or are having difficulty adjusting to campus life, University faculty, staff or a fellow student may report you to the Office of Academic Affairs through the Academic Alert system.

STUDENTS WITH DISABILITIES: It is the policy of the University of Arkansas at Monticello to accommodate individuals 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; email: whitingm@uamont.edu.
For assistance on a College of Technology campus contact:
McGehee: Office of Special Student Services representative; phone 870 222-5360; fax 870 222-1105.
Crossett: Office of Special Student Services representative; phone 870 364-6414; fax 870 364-5707.

FEEDBACK SCHEDULE: Please use you UAM email account for **ALL** correspondences. A student can expect a response to email within 24 hours Monday through Friday. It is very unlikely that an email will be answered between Friday afternoon and Monday morning.

ASSESSMENTS: Points include 3 exams of 100 points each, a comprehensive FINAL exam of 200 points, a quiz average of 100 percent (points) yielding a total of 600 points. The test format will include structures, calculations, multiple choice, short answer, and discussion. The percentage score from the comprehensive final will substitute for ONE missed exam. Second and subsequent missed exams will have a zero recorded as the grade. Exams may not be made up or given late for any reason. If an absence is planned for a University sponsored event, exams should be taken early.

GRADE ASSIGNMENT:

A	85.0-100.0%
B	75.0-84.9%
C	65.0-74.9%
D	55.0-64.9%
F	< 55.0%

STUDENT CONDUCT STATEMENT: Students at the University of Arkansas at Monticello are expected to conduct themselves appropriately, keeping in mind that they are subject to the laws of the community and standards of society. The student must not conduct him/herself in a manner that disrupts the academic community or breaches the freedom of other students to progress academically. This includes cell phone use during class. Seats may be assigned to prevent problems.

ACADEMIC DISHONESTY: Cheating will not be tolerated!

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;
    d. Buying, selling, stealing, soliciting, or transmitting an examination or any material purported to be the unreleased contents of coming examinations or the use of any such material;
    e. Substituting for another person during an examination or allowing such substitutions for oneself.
2. Collusion: Collusion is defined as obtaining from another party, without specific approval in advance by the instructor, assistance in the production of work offered for credit to the extent that the work reflects the ideas of the party consulted rather than those of the person whose name in on the work submitted.
3. Duplicity: Duplicity is defined as offering for credit identical or substantially unchanged work in two or more courses, without specific advanced approval of the instructors involved.
4. Plagiarism: Plagiarism is defined as adopting and reproducing as one's own, to appropriate to one's use, and to incorporate in one's own work without acknowledgement the ideas or passages from the writings or works of others.

For any instance of academic dishonesty that is discovered by the instructor, whether the dishonesty is found to be cheating, collusion, duplicity, or plagiarism, the result for the student(s) involved will be withdrawal from the class or awarding the student a failing grade for the course. Accessing a cell phone during an exam or quiz constitutes cheating, and a score of zero will be recorded. Accessing a cell phone while reviewing confidential materials or exams constitutes cheating and will result in withdrawal/failure for the class.

COURSE CONTENT AND EXAM SCHEDULE:

Exam I	Biology, Buffers, Thermodynamic, Amino acids	Chap 1-4	Mon. 9/28/15
Exam II	1^o, 2^o, 3^o, 4^o Structure of proteins, Carbohydrates	Chap 5-8	Mon. 10/26/15
Exam III	Lipids, Membranes, Nucleic Acids and Structure	Chap 9-12	Fri. 12/04/15
Final Exam	**Comprehensive Exam Chap 1-12**	**Wednesday 12/09/15 at 1:30 pm**	

COLLABORATION: Collaboration is an important aspect of science. I encourage you to associate in small study groups to discuss the homework and lecture. You will benefit from the interaction with your peers whether you are giving or receiving help.

UNIVERSITY OF ARKANSAS AT MONTICELLO
School of Mathematics and Natural Sciences
Syllabus **BIOCHEMISTRY II** CHEM 4643-01
SPRING 2015 MWF 8:10 a.m. SC C-26

INSTRUCTOR: Dr. M. Jeffrey Taylor; Associate Professor of Chemistry
OFFICE: **SC-C-22**
PHONE: (870)-460-1766 (leave a voice mail)
E-MAIL: taylorj@uamont.edu **[use ONLY your official UAM campus email!]**
OFFICE HOURS: 9:10 - 10:00 am MWF; 9:40 - 10:30 am TuTh
1:10 - 2:00 pm MW; 12:40 - 1:30 pm TuTh, or by appointment.
COURSE TITLE: (CHEM 4633-01) **BIOCHEMISTRY I**; 3 credit hours lecture
DESCRIPTION: Continuation of studies of chemical aspects of living systems: organization and production of cellular macromolecules, production and utilization of energy by the cell, major metabolic pathways and biochemical control mechanisms. An ACS standardized exam will be given as the final exam.

PREREQUISITES: CHEM 4633 Biochemistry I

REQUIRED TEXT: *BIOCHEMISTRY*; Garrett and Grisham, 5th Edition, Brooks/Cole Publishers; ISBN 13-978-1-133-10629-6. **You MUST bring your text to class lectures.**

STUDENT LEARNING OBJECTIVES: 1.) Understand the molecular basis of life.
2.) Integrate Biology, Chemistry, Physics and Math for a comprehensive view of science.
3.) Continue to develop study skills and test taking skills.
4.) Develop a mastery of the material, not just a superficial recognition of the material.

REQUIRED CALCULATOR: Any non-graphing calculator capable of (log) and (ln) functions is required for exams. You may not borrow calculators or use a cell phone. GRAPHING CALCULATORS ARE NOT ALLOWED.

REQUIRED ATTENDANCE: You will be expected to attend every class meeting and arrive on time. Absences due to University sponsored events are excused. If an absence occurs; it is the student's responsibility to obtain the missed lecture material. *If you do not have time for class; do NOT expect my time later.*

CELL PHONES: You should NOT access your cell phone during class time. Your career is more important than what/who is on the other end of your phone. However, you will be given enough rope to hang yourself. I will not ask anyone to turn off their cell phone. *If you do not have time for class because of your cell phone; do NOT expect my time later.*

ACADEMIC MISCONDUCT: Cheating will not be tolerated. Penalties for violations are described on page 55 of the 2013-15 UAM catalog and include withdrawing the student from the class or awarding the student a failing grade for the course. Accessing a cell phone during an exam constitutes cheating, and a score of zero will be recorded. Accessing a cell phone while reviewing confidential materials or exams will result in withdrawal/failure for the class.

COURSE CONTENT AND TENTATIVE EXAM SCHEDULE:

Exam I	metabolism, glycolysis, TCA, ETC	Chap 18, 19, 20, 17	Fri. 2/06/15
Exam II	enzymes, kinetics, mechanisms, regulation	Chap 13, 14, 15	Fri. 3/06/15
Exam III	replication; transcription, translation	Chap 12, 28, 29, 30	Fri. 4/03/15
Exam IV	vitamins, glycogen, lipids, amino acids	Chap 22, 23, 24	Mon. 4/27/15
Final Exam	ACS Comprehensive Exam	**Monday 05/04/15 at 1:30 pm**	

EVALUATION: Points include 4 exams of 100 points each, a comprehensive FINAL exam of 200 points, and a quiz average of 200 points yielding a total of 800 lecture points. The test format will include structures, calculations, multiple choice, short answer, and discussion. The percentage score from the comprehensive final will substitute for ONE missed exam. Second and subsequent missed exams will have a zero recorded as the grade. Exams may not be made up or given late for any reason. If an absence is planned for a University sponsored event, exams or quizzes should be taken early.

GRADING:

A	85.0-100.0%
B	75.0-84.9%
C	65.0-74.9%
D	55.0-64.9%
F	< 55.0%

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; email: whitingm@uamont.edu

Student Conduct Statement: Students at the University of Arkansas at Monticello are expected to conduct themselves appropriately, keeping in mind that they are subject to the laws of the community and standards of society. The student must not conduct him/herself in a manner that disrupts the academic community or breaches the freedom of other students to progress academically. This includes cell phone use during class. Seats may be assigned to prevent problems.

UNIVERSITY OF ARKANSAS AT MONTICELLO
School of Mathematics and Natural Sciences
Syllabus **BIOCHEMISTRY LAB** CHEM 4731-01
SPRING 2015 F 1:10 p.m. SC C-26

INSTRUCTOR: Dr. M. Jeffrey Taylor
OFFICE: **SC-C-22**
PHONE: (870)-460-1766 (leave a voice mail)
E-MAIL: taylorj@uamont.edu **[use ONLY your official UAM campus email!]**
OFFICE HOURS: 9:10 - 10:00 am MWF; 9:40 - 10:30 am TuTh
1:10 - 2:00 pm MW; 12:40 - 1:30 pm TuTh, or by appointment.

COURSE TITLE: (CHEM 4731-01) **BIOCHEMISTRY LAB** 1 credit hour of lab.

DESCRIPTION: A laboratory course in modern biochemical techniques investigating proteins, nucleic acids, carbohydrates, lipids, buffers, and enzymes.

PREREQUISITES: CHEM 4633 Biochemistry I.

REQUIRED TEXTS: No text is required since laboratory procedures will be provided in the form of handouts with additional instruction during the pre-lab discussion.

STUDENT LEARNING OBJECTIVES: To introduce the student to biochemical laboratory techniques, equipment and instrumentation. To further develop those skills by employing the use of computer spreadsheets to prepare and present data for analysis. To further develop a mastery of lecture concepts through application in the laboratory.

REQUIRED CALCULATOR: Any non-graphing calculator capable of (log) and (ln) functions is required for ALL class **laboratories** and **exams**. You may not borrow calculators or use the calculator function on a cell phone. GRAPHING CALCULATORS ARE NOT ALLOWED.

REQUIRED ATTENDANCE: You will be expected to attend **EVERY** class meeting and arrive on time.

CELL PHONES: You should NOT access your cell phone during class time. Your career is more important than what/who is on the other end of your phone. However, you will be given enough rope to hang yourself. I will not ask anyone to turn off their cell phone. *If you do not have time for class because of your cell phone; do NOT expect my time later.*

ACADEMIC MISCONDUCT: Cheating will not be tolerated. Penalties for violations are described on page 55 of the 2013-15 UAM catalog and include withdrawing the student from the class or awarding the student a failing grade for the course. Accessing a cell phone during an exam constitutes cheating, and a score of zero will be recorded. Accessing a cell phone while reviewing confidential materials or exams will result in withdrawal/failure for the class.

EVALUATION: There will be five experimental sections worth 150 points (30 points each) and a comprehensive final exam (Apr. 24 at 1:10 pm) for 50 points for a total of 200 points. Each section will be graded according to the experiment with an emphasis on the original, sequential-entry lab notebook, professionally prepared lab reports, and a very subjective portion on lab technique and scientific maturity.

TENTATIVE EXPERIMENTS:

1. Ethanolic fermentation; Fractional distillation; Analysis by GC.
2. Preparation of buffers; Standardized solutions; Titrations.
3. Determination of pK_a of a weak acid; Spreadsheet analysis.
4. Saponification of Lipids; Analysis of soap.
5. Spectrophotometry; Protein Concentration.

GRADING:

A	90.0-100.0%
B	80.0-89.9%
C	70.0-79.9%
D	60.0-69.9%
F	< 60.0%

TENTATIVE COURSE CONTENT AND LABORATORY SCHEDULE:

1/09	Check in, Safety, Notebooks & Lab Reports
1/16	Ethanolic Fermentation / Fractional Distillation
1/23	Buffers / Titrations
1/30	Ethanolic Fermentation / Fractional Distillation Continued
2/06	Buffers / Titrations Continued
2/13	pK_a of a weak acid
2/20	pK_a of a weak acid Continued
2/27	Spreadsheet Analysis / Computer Lab
3/06	Spreadsheet Analysis / Computer Lab Continued
3/13	Saponification of Lipids
3/20	Saponification of Lipids Continued
4/03	Spectrophotometry
4/10	Spectrophotometry Continued
4/17	Check-out; **LAB CLEAN-UP!**
4/24	**Final Exam**

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Student Conduct Statement: Students at the University of Arkansas at Monticello are expected to conduct themselves appropriately, keeping in mind that they are subject to the laws of the community and standards of society. The student must not conduct him/herself in a manner that disrupts the academic community or breaches the freedom of other students to progress academically. This includes cell phone use during class. Seats may be assigned to prevent problems.

University of Arkansas at Monticello
School of Mathematics and Sciences
Elements of Physical Chemistry
(Face to Face) Course Syllabus
Spring 2015, TTh 8:10-9:30

INSTRUCTOR: Dr. Jinming Huang, Science Center C-14, 870- 460-1866, huang@uamont.edu

Course title and Credit Hours: CHEM 3424, Elements of Physical Chemistry**,** 4 credit hours

Office Hours: MWF 9-10, TH 10-11, or by appointment

Prerequisites: Math 2255, 12 hours Chemistry.
Co-requisites: None

Text: Lecture: Elements of Physical Chemistry, by Atkins and De Paula, 6th Ed, W.H.Freeman, ISBN: 1-4292-1813-4
Reference: Applied Mathematics for Physical Chemistry, by James Barrante, 3rd Ed
Lab: None

Format: Lecture 3 hours/week and lab 3 hours/week

Course Description: Fundamental concepts of physical chemistry primarily for Biochemistry Option Chemistry majors and pre-professional students. Concepts will be presented utilizing basic calculus with application to life processes and biochemistry.

Course Objectives: The objective of this course is to provide the student with an introduction to the fundamentals of Physical Chemistry. This is a one semester physical chemistry course especially applied to students in biology or health science majors. The course covers thermodynamics and kinetics. The objective of the laboratory is to acquaint the student with some basic physical chemical measurements and to give the student some experience with the concepts from lecture.

Course Content: The topics covered include: the first law and the second law of thermodynamics, physical equilibria of pure substances, properties of mixtures, chemical equilibrium, chemical kinetics, molecular interactions, macromolecules and aggregates. Quantum theory and spectroscopy will also be covered if time allowed. The laboratory portion includes a variety of experiments including any or all of the following: various kinetics experiments, viscosity, heat effects in various changes, chemical equilibrium studies, as well as spectroscopic techniques.

Grading Practices and Procedures: The grade in this course consists of 68% on exams, 20% on labs, 8% on homework, and 4% on attendance. The lecture portion includes four hour exams, with the 4th hour exam being given at the time for final. Make-up exam will not be given on individual exams but will rather be given only once during the semester and will be comprehensive. Only one exam may be made up under any conditions. Approved graphing calculators are allowed on exams. However, they will be taken up before the student begins the exam. They will have the memory cleared and then be turned to the student. The exams consist principally of problems with a few derivations, calculations, and discussion questions. The grading in the lab is based on reports which are submitted on each experiment. These are graded on the report itself, the results, and some subjective portion on lab performance. The report should be turned in within **one week** after the experiment is completed as scheduled. Late report will be penalized **10 points per day**. Any missed lab report will be given

a grade of zero for that experiment. **Homework assignments** are graded on how many assignments practiced and **must be turned in before due date, any late turn in homework will not be accepted**.
The overall course grade is assigned on the basis of 100-88: A, 87-78: B, 77-67: C, 66-55: D, and below 55: F.

Attendance: Regular attendance is required. Roll will be taken daily, and irregular attendance may be reported to the university administration for possible action involving financial aid. Full attendance will get 4% toward the overall grade. Tardy 15 minutes will be account as absence. The student is responsible for all assignments, announcements, etc. made during class.

Additional Readings: A suggested list of references will be provided. However, no specific outside readings will be assigned. The use of other texts for clarification is encouraged. All experiments will involve some handout material.

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;
   d. Buying, selling, stealing, soliciting, or transmitting an examination or any material purported to be the unreleased contents of coming examinations or the use of any such material;
   e. Substituting for another person during an examination or allowing such substitutions for oneself.
2. Collusion: Collusion is defined as obtaining from another party, without specific approval in advance by the instructor, assistance in the production of work offered for credit to the extent that the work reflects the ideas of the party consulted rather than those of the person whose name in on the work submitted.
3. Duplicity: Duplicity is defined as offering for credit identical or substantially unchanged work in two or more courses, without specific advanced approval of the instructors involved.
4. Plagiarism: Plagiarism is defined as adopting and reproducing as one's own, to appropriate to one's use, and to incorporate in one's own work without acknowledgement the ideas or passages from the writings or works of others.

For any instance of academic dishonesty that is discovered by the instructor, whether the dishonesty is found to be cheating, collusion, duplicity, or plagiarism, the result for the student(s) involved will be given a score of zero for the first offensive and lead to dismissal from the course with a failing grade for the second offensive.
The use of graphing and programmable calculators are permitted, however, if your calculator contains information that you do not want erased, (even from another class) you should bring a different calculator on test days

DISRUPTIVE BEHAVIOR: Any behavior that disrupts the regular or normal functions of the university community is prohibited under the Student Conduct Code, including behavior which breaches the peace or violates the rights of others. Cell phones are disruptive to classroom environment and must be placed on silent if brought to class. Cell phones are not allowed under any circumstances during exams.

SOME IMPORTANT DATES TO REMEMBER:

January 7 (Wednesday):	First day of classes.
January 9 (Friday):	Last day to register or add classes.
January 19 (Monday):	Martin Luther King Holiday.
March 18 (Wednesday):	Last day to drop with W.
March 23-27 (M - F):	Spring break.
April 6-17(M - F):	Preregistration for summer and fall.
April 28 (Tuesday):	Last day of classes.
April 30 (Thursday):	**Final exam, 8-10 AM**

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; email:whitingm@uamont.edu

School of Mathematics and Sciences
Physical Chemistry-Quantum and Kinetics
(Face to Face) Course Syllabus
Spring 2014, MWF 9:10-10:00

INSTRUCTOR: Dr. Jinming Huang, Science Center C-14, 870- 460-1866, huang@uamont.edu

Office Hours: M~F 10-11, TWF2-3, or by appointment

Course title and Credit Hours: CHEM 4714, Physical Chemistry - Kinetics and Quantum Mechanics, 4 credit hours

Prerequisites: 12 hours Chemistry, MATH 3495, PHYS 2313 and PHYS 2323

Co-requisite: Math 3543

Text: Lecture: Physical Chemistry by Atkins and De Paula, 9th Ed.
Reference: Applied Mathematics for Physical Chemistry, by James Barrante, 3rd Ed
Lab: None

Format: Lecture 3 hours/week and lab 3 hours/week

Course Objectives: The objective of this course is to provide the student with a thorough introduction to the fundamentals of Physical Chemistry. This is one course of a two part group required for this purpose. This course concentrates on kinetics and quantum mechanics. The objective of the laboratory is to acquaint the student with some basic physical chemical measurements and to give the student some experience with the concepts from lecture.

Course Content: As stated above, this course involves the areas of kinetics and quantum mechanics. The topics covered include: molecules in motion; the rates of chemical reactions; reaction dynamics; catalysis; quantum theory; atomic structure; molecular structure; and other topics if time allows.
The laboratory portion includes a variety of experiments including any or all of the following: various kinetics experiments; electrical conductance; viscosity; and spectroscopic techniques.

Grading Practices and Procedures: The grade in this course consists of 68% on exams, 20% on lab, 8% on homework, and 4% on attendance. The lecture portion includes four hour exams which count 68% of the overall grade. Approved graphing calculators are allowed on exams. However, they will be taken up before the student begins the exam. They will have the memory cleared and then be turned to the student. Make-up exams will not be given on individual exams but will rather be given only once during the semester and will be comprehensive. Only one exam may be made up under any conditions. The exams consist principally of problems with a few derivations and occasional discussion questions. The grading in the lab is based on reports which are submitted on each experiment. These are graded on the report itself, the results, and some subjective portion on lab performance. The report should be turned in within **one week** after the experiment is completed as scheduled. Late report will be penalized **10 points per day**. Any missed lab report will be given a grade of zero for that experiment. **Homework assignments** are graded on how many assignments practiced and **must be turned in before due date, any late turn in homework will not be accepted**. The overall course grade is assigned on the basis of 100-85 A, 84-70 B, 69-60 C, 59-50 D, and below 50 F.

Attendance: Regular attendance is required. Roll will be taken daily, and irregular attendance may be reported to the university administration for possible action involving financial aid. Full attendance will get 4% toward the overall grade. Tardy 15 minutes will be account as absence. The student is responsible for all assignments, announcements, etc. made during class.

Additional Readings: A suggested list of references will be provided. However, no specific outside readings will be assigned. The use of other texts for clarification is encouraged. All experiments will involve some handout material.

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;
   d. Buying, selling, stealing, soliciting, or transmitting an examination or any material purported to be the unreleased contents of coming examinations or the use of any such material;
   e. Substituting for another person during an examination or allowing such substitutions for oneself.
2. Collusion: Collusion is defined as obtaining from another party, without specific approval in advance by the instructor, assistance in the production of work offered for credit to the extent that the work reflects the ideas of the party consulted rather than those of the person whose name in on the work submitted.
3. Duplicity: Duplicity is defined as offering for credit identical or substantially unchanged work in two or more courses, without specific advanced approval of the instructors involved.
4. Plagiarism: Plagiarism is defined as adopting and reproducing as one's own, to appropriate to one's use, and to incorporate in one's own work without acknowledgement the ideas or passages from the writings or works of others.

For any instance of academic dishonesty that is discovered by the instructor, whether the dishonesty is found to be cheating, collusion, duplicity, or plagiarism, the result for the student(s) involved will be given a score of zero for the first offensive and lead to dismissal from the course with a failing grade for the second offensive. The use of graphing and programmable calculators are permitted, however, if your calculator contains information that you do not want erased, (even from another class) you should bring a different calculator on test days

DISRUPTIVE BEHAVIOR: Any behavior that disrupts the regular or normal functions of the university community is prohibited under the Student Conduct Code, including behavior which breaches the peace or violates the rights of others. Cell phones are disruptive to classroom environment and must be placed on silent if brought to class. Cell phones are not allowed under any circumstances during exams.

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; email:whitingm@uamont.edu

Important Dates:

January 8 (Wednesday):	First day of classes.
January 10 (Wednesday):	Last day to register or add classes.
January 20 (Monday):	Martin Luther King Holiday.
March 24-28 (M - F):	Spring break.
April 7-18(M - F):	Preregistration for summer and fall.
April 2 (Wednesday):	Last day to drop with W.
April 30 (Tuesday):	Last day of classes.
May 5 (Monday):	**Final exam, 8-10 AM**

School of Mathematics and Sciences
Physical Chemistry - Thermodynamics
(Face to Face) Course Syllabus
Spring 2015, MWF 10:10-11

Instructor: Dr. Jinming Huang, SC C-14, 460-1866, huang@uamont.edu

Course Title and Credit Hours: CHEM 4704, Physical Chemistry – Thermodynamics, 4 hrs

Prerequisites: 12 hours Chemistry, PHYS 2313 and 2323
Co-requisite: Math 3525

Text: Lecture: Physical Chemistry by Atkins and De Paula, 10th Ed.
Reference: Applied Mathematics for Physical Chemistry, by James Barrante, 3rd Ed
Lab: None

Office Hours: MWF 9 – 10, TH 10-11, or by appointment

Format: Lecture 3 hours/week and lab 3 hours/week

Course Objectives: The objective of this course is to provide the student with a thorough introduction to the fundamentals of Physical Chemistry. This is one course of a two part group required for this purpose. This course concentrates on thermodynamics. The objective of the laboratory is to acquaint the student with some basic physical chemical measurements and to give the student some experience with the concepts from lecture.

Course Content: As stated above, this course involves the areas of thermodynamics. The topics covered include: the properties of gases, the first law of thermodynamics, the second and third law of thermodynamics, physical transformations of pure substances, simple mixtures, and chemical equilibrium. The laboratory portion includes a variety of experiments including any or all of the following: various gas properties; heat effects in various changes; phase equilibrium studies; and chemical equilibrium studies.

Grading Practices and Procedures: The grade in this course consists of 60% on exams, 25% on lab, 10% on homework, and 5% on attendance. The lecture portion includes three hour exams with the 3rd hour exam being given at the time for final. Approved graphing calculators are allowed on exams. However, they will be taken up before the student begins the exam. They will have the memory cleared and then be turned to the student. Make-up exams will not be given on individual exams but will rather be given only once during the semester and will be comprehensive. Only one exam may be made up under any conditions. The exams consist principally of problems with a few derivations and occasional discussion questions. The grading in the lab is based on reports which are submitted on each experiment. These are graded on the report itself, the results, and some subjective portion on lab performance. The overall course grade is assigned on the basis of 100-86 A, 85-76 B, 75-65 C, 64-55 D, and below 55 F.

Attendance: Regular attendance is required. Roll will be taken daily, and irregular attendance may be reported to the university administration for possible action involving financial aid. Full attendance will get 5% toward the overall grade. Tardy *15* minutes will be account as absence. The student is responsible for all assignments, announcements, etc. made during class.

Additional Readings: No specific outside readings will be assigned. The use of other texts for clarification is encouraged. All experiments will involve some handout material.

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;
d. Buying, selling, stealing, soliciting, or transmitting an examination or any material purported to be the unreleased contents of coming examinations or the use of any such material;
e. Substituting for another person during an examination or allowing such substitutions for oneself.

9. Collusion: Collusion is defined as obtaining from another party, without specific approval in advance by the instructor, assistance in the production of work offered for credit to the extent that the work reflects the ideas of the party consulted rather than those of the person whose name in on the work submitted.
10. Duplicity: Duplicity is defined as offering for credit identical or substantially unchanged work in two or more courses, without specific advanced approval of the instructors involved.
11. Plagiarism: Plagiarism is defined as adopting and reproducing as one's own, to appropriate to one's use, and to incorporate in one's own work without acknowledgement the ideas or passages from the writings or works of others.

For any instance of academic dishonesty that is discovered by the instructor, whether the dishonesty is found to be cheating, collusion, duplicity, or plagiarism, the result for the student(s) involved will be given a score of zero for the first offensive and lead to dismissal from the course with a failing grade for the second offensive. The use of graphing and programmable calculators are permitted, however, if your calculator contains information that you do not want erased, (even from another class) you should bring a different calculator on test days

Disruptive Behavior: Any behavior that disrupts the regular or normal functions of the university community is prohibited under the Student Conduct Code, including behavior which breaches the peace or violates the rights of others. Cell phones are disruptive to classroom environment and must be placed on silent if brought to class. Cell phones are not allowed under any circumstances during exams.

UAM Policy Concerning 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; email:whitingm@uamont.edu

SOME IMPORTANT DATES TO REMEMBER:

January 7 (Wednesday):	First day of classes.
January 9 (Friday):	Last day to register or add classes.
January 19 (Monday):	Martin Luther King Holiday.
March 18 (Wednesday):	Last day to drop with W.
March 23-27 (M - F):	Spring break.
April 6-17(M - F):	Preregistration for summer and fall.
April 28 (Tuesday):	Last day of classes.
May 5 (Tuesday):	Final exam, 1:30-3:30 PM

School of Mathematical and Natural Sciences **Fall 2014**

CHEM 4623 **Advanced Inorganic Chemistry**

Text: *Inorganic Chemistry* (5th Ed.) Shriver & Atkins

Prerequisites: 12 hours of chemistry.
Recommended Materials: TI-30 or 36 scientific calculator.

INSTRUCTOR: Andrew Williams
Office: C-9, Science Center
Office Hours: M-F 8:00-9:00 or by appointment.
Contact Information Phone: 460-1465 FAX: 460-1316 E-mail: Williamsa@uamont.edu

ACADEMIC HONESTY:

Cheating, helping others cheat, disruptive behavior (including cell phones or pagers), or other improper conduct will not be tolerated and could lead to dismissal from the course with a failing grade. Storing of materials in a graphing calculator for use on exams is not permitted. All graphing calculators will be cleared on exam day, so if there is material you don't want deleted permanently, bring another calculator to use on the exams. All cell phones are to be turned off and put away in class. 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 will result in a failing grade in the course.

SOME IMPORTANT DATES TO REMEMBER:

August 20 (Wednesday): First day of classes.
August 20-22 (Wednesday through Friday): Late registration. A $25 late registration fee will be assessed.
August 20-22 (Wednesday through Friday): Students may make schedule changes.
August 22 (Friday): Last day to register or add fall classes.
September 1 (Monday): Labor Day Holiday. All offices and classes closed.
October 3 (Friday): Deadline to apply for May graduation.
October 29 (Wednesday): Last day to drop a regular fall class (not applicable to fast-track classes). Grade will be W.
November 3 (Monday): Preregistration for spring begins.
November 7 (Friday): INBRE Conference in Fayetteville, class meets in Fayetteville.
November 14 (Friday): Preregistration for spring ends.
November 26 (Wednesday): Classes closed. University offices open.
November 27-28 (Thursday-Friday): Thanksgiving Holiday. All offices and classes closed.
December 5 (Friday): Last day of classes.
December 8-12 (Monday-Friday): Final exams.

FINAL EXAM Friday, Dec 12th, 8:00-10:00.

COURSE: Format: 150 Minutes of lecture per week.

Goals: Overview of nuclear chemistry, theories of chemical bonding, acid-base definitions, molecular symmetry, coordination compounds, organometallic chemistry, and selected descriptive chemistry. We will also cover current topics in inorganic chemistry including solid state, materials, nanotechnology, catalysis, and biological inorganic chemistry, depending on time.

ATTENDANCE: Regular attendance is expected. Total absences greater than 6 hours may result in being dropped from the course with a grade of W or F as appropriate. The student is responsible for ALL material covered in class, whether present or not. University functions requiring absences, such as athletics, debate, band, etc... are excused absences and quizzes and exams may be made up **if prior arrangements are made in advance.**

Material Covered:

Chap. #	Topic
1.	Atomic Structure
2.	Molecular Structure and bonding
3.	The structure of simple solids
4.	Acids and bases
5.	Oxidation and reduction
6.	Molecular symmetry
7.	Coordination compounds
8.	Physical Techniques
20.	d-Metal complexes: electronic structure and properties
21-22.	Coordination and d-metal organometallic chemistry
24.	Solid-state and materials chemistry
25.	Nanomaterials, nanoscience, and nanotechnology
26.	Catalysis

GRADING:

Four one-hour exams and a comprehensive final exam of equal weight will be given (100 pts each). If no exams are missed, the lowest test score (of exams 1 - 4) will be dropped and replaced with the percentage scored on the final exam, if the final exam percentage is higher than the lowest exam. A missed exam will be counted as the drop exam and replaced with the percentage scored on the final exam, unless prior arrangements can be made and a make-up exam given. Make-up exams are given only in extreme emergencies. Only one exam can be replaced with the final exam score. Quizzes will be given regularly, with the 10 highest being calculated into your grade. A quiz average will be calculated out of 100 points possible. No make-up quizzes will be given, except for those missed for a pre-scheduled university function. A short presentation over applied inorganic chemistry will be discussed.

GRADE SCALE

A = > 90%

B = 80 - 89%

C = 70 - 79%

READING AND REFERENCE MATERIALS: Textbook reading of the topics indicated above is expected as those chapters are being covered in class. Additional copied material may be distributed in. Also, materials for further study are available in the library, in the study area found in the hallway of the C-wing of the Science Center, or my office.

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.

PRACTICE HOMEWORK PROBLEMS

These problems are assigned as practice problems, and will be helpful to you in preparing for exams. They will not be taken up at any time, nor will any grade be given for completion of these problems. Students who do these problems usually do far better than those who do not. These problems will be given at the beginning of each section.

Division of Mathematics and Sciences **Spring 1996**

CHEM 3454 **ORGANIC ANALYSIS** **164501**

Description: Systematic separation and identification of organic compounds with emphasis on molecular structure. Use and theory of spectrometric methods and other physical techniques.

Prerequisites: CHEM 3414 (Organic Chem II and Lab)

Required Text: *Spectrometric Identification of Organic Compounds* (5th Ed.), Silverstein, Bassler, & Morrill.

Suggested Text: *The Organic Chem Lab Survival Manual* (3rd Ed.) Zubrick.

Instructor: Morris Bramlett, C-24 Science Center, 460-1465, BRAMLETT@UAMONT.EDU
Office hours: 8:00 - 9:00 MWF, 10:00 - 11:00 M-F, available most afternoons.

Course Goals: To teach structure determination of organic compounds using mass, NMR, IR, and ultraviolet spectrometry; and to teach related techniques such as purification methods, qualitative tests, use of computer aids, data collection and reporting, and laboratory safety.

Grading:

Three 1 hour exams @100 pts each	= 300 pts
Take home portion of the final exam	= 100 pts
In class portion of the final exam	= 100 pts
Homeworks and Quizzes combined	= 100 pts
Laboratory	= 600 pts

No exam scores will be dropped. The lowest quiz score will be dropped. No make-ups will be allowed on quizzes. Homework assignments are expected on the date due. Late papers will be penalized 20% per day.

Grades will be assigned according to the following scale:

88 - 100 %	= A
77 - 87 %	= B
66 - 76 %	= C
55 - 65 %	= D
below 55 %	= F

Attendance: Regular attendance is expected. In the event of an absence, you are responsible for all notes and or homework assignments assigned during the missed class period.

Academic Honesty: Cheating, helping others cheat, disruptive behavior, or other improper conduct will result in dismissal from the course, possibly with a failing grade.

Lab Safety: Standard laboratory safety will always be enforced. Goggles should be worn at all times that anyone is working. Food, drink, or tobacco will not be tolerated in the lab. Do only the designed experiments. Treat all unknowns as if they are flammable, poisonous, and carcinogenic.

Disabled Student: UAM is committed to providing equal education opportunities for all students. A student with a disability requiring accomodations should discuss his/her needs with the instructor and the Office of Special Student Services (Harris Hall room 124, 460-1045) during the first few weeks of the semester.

Important Dates:

Spring Break	March 18 -22
Last W drop day	April 5
Last withdraw day	April 25
Last day of class	April 30
Final Exam	Thursday, May 2, 8:00 - 10:00 a.m.

Course Outline:

I. General overview
   A. Introduction of instruments
   B. Physical properties
   C. Methodology in gathering preliminary imformation

II. Mass spectrometry
   A. Instrumentation and theory
   B. The mass spectrum
   C. Molecular ions
   D. Molecular formula determination
   E. Fragmentation
   F. Rearrangements
   G. MS of classes of organic compounds

III. Infrared Spectrometry
   A. Theory and instrumentation
   B. Sample preparation techniques
   C. Spectrum interpretation
   D. Characteristic functional groups

IV. Proton Magnetic Resonance Spectrometry
   A. Theory and instrumentation
   B. Sample preparation
   C. Interpretation of spectra
   D. Chemical shift
   E. Spin coupling
   F. Presence of heteroatoms and functional groups
   G. Presence of other NMR active nuclei

V. Carbon-13 NMR Spectrometry
   A. Introduction
   B. Interpretation of spectra
   C. Chemical shifts
   D. Spin coupling
   E. Peak assignment aids
   F. Quantitative analysis

VI. New Techniques in NMR
   A. 2-D NMR
   B. Connectivity
   C. Special techniques

VII. Ultraviolet Spectrometry
   A. Theory and instrumentation
   B. Sample preparation
   C. Interpretation of spectrum
   D. Characteristic absorptions

Reading and Reference Materials: This course requires the use of several different chemical techniques that are highly specialized and may require outside reading. Some informative texts are:

Beynon, J. H. (John Herbert). Mass Spectrometry and its Applications to Organic Chemistry. Amsterdam, New York, Elsevier Pub. Co. 1960.

Bhacca, Norman S. Applications of NMR Spectroscopy in Organic Chemistry; Illustrations from the Steroid Field. 1964.

Brown, D. W. (David W.). Organic Spectroscopy. Chichester [Eng.];New York: J. Wiley. 1988.

Budzikiewicz, Herbert. Mass Spectrometry of Organic Compounds. San Francisco, Holden-Day. 1967.

Cheronis, Nicholas Dimitrius. Identification of Organic Compounds; a Student's Text Using Semimicro Techniques. 1963.

Cheronis, Nicholas Dimitrius, 1896-1962. Semimicro Qualitative Organic Analysis; the Systematic Identification of Organic Compounds. 1965.

Nakanishi, Koji, 1925. Infrared absorption Spectroscopy, Practical. San Francisco, Holden-Day. 1962.

Pretsch, E. Tables of Spectral Data for Structure Determination of Organic Compounds. 2nd Ed. (English Translation). Berlin; New York: Springer/Verlag. 1983.

Scott, Alastair I. Interpretation of the Ultraviolet Spectra of Natural Products. 1964.

Shapiro, Robert Howard. Spectral Exercises in Structural Determination of Organic Compounds. New York, Holt, Rinehart & Winston. 1969.

Siggia, Sidney. Quantitative Organic Analysis via Functional Groups. 4th ed. New York: Wiley. 1979.

Sorrell, Thomas N. Interpreting Spectra of Organic Molecules. Mill Valley, Calif.: University Science Books. 1988.

Weiss, Frederick T. Determination of Organic Compounds: Methods and Procedures. New York, Wiley-Interscience. 1970.

Williams, Dudley H. Spectroscopic Methods in Organic Chemistry. 5th ed. London; New York: McGraw-Hill. 1995.

CHEM 4742 ADVANCED LABORATORY TECHNIQUES

Prerequisites: Eleven hours of 3000-4000 level chemistry and instructor permission

Textbook: Instructor prepared handouts/lab manual

Instructors:	Jinming Huang (JH)	SC-C14	460-1866	Huang@uamont.edu
	Andrew Williams (AW)	SC-C9	460-1465	WilliamsA@uamont.edu
	Morris Bramlett (MB)	SC-A7	460-1116	Bramlett@uamont.edu
	Jeff Taylor (JT)	SC-C22	460-1766	TaylorJ@uamont.edu

Course:

Format: 2 hours lecture for one-half term, 3 hours lab activity per week arranged (2 credit hours)

Goals: To introduce a variety of specialized skills and laboratory methods often not covered in the traditional chemistry curriculum. To provide students a better understanding of synthesis, analysis, and structure determination. To introduce students to chemical literature search and retrieval using electronic databases. To provide students experience in safely using chemicals and operating instrumentation used in the chemical workplace. To provide chemistry majors and minors with skills that will be needed in a graduate program or in the chemical industry.

Material Covered: (Tentative)

Exercise #		**Topic**
AW	Jan7	Seminar discussion and Chemical Literature
AW	Jan 12	Chemical literature and electronic databases
AW	Jan 14	Introduction to Glassblowing
AW	Jan 21	Introduction to Glassblowing
JH	Jan 26	UV-Vis Spectroscopy
JH	Jan 28	UV-Vis Spectroscopy
JH	Feb 2	UV-Vis Spectroscopy
JH	Feb 4	UV-Vis Spectroscopy
JT	Feb 8	Molecular Modeling/NMR
JT	Feb 10	Molecular Modeling/NMR
JT	Feb 16	Molecular Modeling/NMR
JT	Feb 18	Molecular Modeling/NMR
MB	Feb 23	Selected Topic (This year Food Analysis)
MB	Feb 25	Selected Topic
MB	Mar 2	Selected Topic
MB	Mar 4	Selected Topic
MB	Mar 9	Selected Topic
All	Mar 11-Apr 17	Arranged Lab Exercises and Seminar
All	Apr 20	Oral Presentations
All	Apr 22	Oral Presentations
All	Apr 27	Oral Presentations

Grading: Each unit will be worth 20% of the overall grade, with the oral presentation being the 5th unit, also worth 20% of the grade. **A minimum grade of 50% is needed in each unit in order to pass the course**. Grading will be based on quizzes, tests, content and quality of written reports and assignments given on each exercise, and on the oral presentation required at the end of the semester. The oral presentation will be graded on content, quality of audiovisuals, and clarity of presentation as per rubric. All chemistry faculty members, and possibly other science center faculty, will participate in the grading of the oral presentation.

Grading Scale:	90- 100	A
	80 - 89	B
	70 - 79	C
	60 - 69	D
	0 - 59	F

Attendance: Regular attendance is expected. Although some of the laboratory time will be arranged at the convenience of the student and the faculty member, it is necessary to attend the 1-hour lecture per week in which the current exercise is being covered. With this in mind, 4 or more absences will result in failure of the course.

Special Dates of Concern:

January 7 (Wednesday)	First Day of Classes
January 9 (Friday)	Last Day to Add Classes
January 19 (Monday)	Martin Luther King Holiday. All offices and classes closed.
March 18 (Wednesday)	Last day to drop with W in regular classes
March 23-27 (Monday-Friday)	Spring Break for faculty and students.
April 6 (Monday):	Preregistration for summer and fall begins.
April 17 (Friday)	Preregistration for summer and fall ends
April 28 (Tuesday)	Last day of classes
April 29 - May 5 (Wednesday-Tuesday)	Final exams
May 8 (Friday)	Commencement

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.

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 in Harris Hall, Room 120; telephone 870-460-1026; TDD 870-460-1626; Fax 870-460-1926.

APPENDIX E—CHEMISTRY FACULTY VITAE

Dr. J. Morris Bramlett, Professor of Chemistry and Dean of Math and Natural Sciences

Dr. M. Jeffrey Taylor, Associate Professor of Chemistry

Dr. Jinming Huang, Associate Professor of Chemistry

Dr. Andrew Williams, Associate Professor of Chemistry

Ms. Kelley Sayyar, Chemistry Laboratory Instructor

Ms. Susan Hatfield, Chemistry Laboratory Instructor

CurriculumVita for

Joseph Morris Bramlett

Interests: Science Education, Inorganic Chemistry, Organic Chemistry, Organometallic Chemistry

Education:

University of Arkansas - Fayetteville, 1985-1993, Ph.D. (Organometallic Chemistry)
Dissertation: Synthesis and Chemistry of η^1-Butadienyl and η^1-Pentadienoyl Transition Metal Complexes.

Arkansas Tech University, 1981-1985, B.S. (Chemistry)

Employment at Institutions of Higher Education:

University of Arkansas-Monticello,1991-1992, 1993-present

2007-present, Dean of Mathematical and Natural Sciences
2006-2007, Assistant Dean for the Sciences
2005-present, Professor of Chemistry
1998-2005, Associate Professor of Chemistry
1993-1997, Assistant Professor of Chemistry
1991-1992, Instructor of Chemistry

Courses Taught: Introduction to Chemistry, Introduction to Organic and Biochemistry, General Chemistry, Organic Chemistry, Organic Analysis, Advanced Lab, Advanced Inorganic Chemistry, Elements of Physics, Introduction to Physical Science, Astronomy Lab, Higher Order Thinking in Science (a graduate education course in conjunction with the Arkansas Science Crusade)

Non-Teaching Positions and Committees at UAM: Chair of the Pre-professional Advisory Committee, Pre-pharmacy advisor, Chemistry advisor, Arkansas Space Grant (NASA) Campus Coordinator, Chemical Waste Officer, Undergraduate Research Mentor, NCAA Faculty Athletics Representative, NCAA Compliance Coordinator, Marketing Committee, Student Evaluation Committee, Faculty Handbook Revision Committee, Assessment Committee, Faculty Advisor for the Student Government Association, Regional Science Fair Judge, Athletic Committee

Berea College, 2001, RSEC Fellow and Visiting Faculty in Chemistry (during UAM sabbatical)

Courses Taught: General Chemistry I and lab, General Chemistry II and lab
Non-Teaching Responsibilities: RSEC Research Program

University of Tennessee, 2000, RSEC Fellow and Visiting Faculty in Chemistry (during UAM sabbatical)

Courses Taught: Organic Chemistry II
Non-Teaching Responsibilities: RSEC Research Program

Arkansas State University-Beebe, 1992-1993, Instructor of Physical Science and Chemistry

Courses Taught: Physical Science with lab, General Chemistry I and II with lab

Service and Professional Recognition

Positions:

Board Member, Arkansas Dean's Association, 2015-present

Board of Directors, Arkansas STEM Coalition, 2013-present

Consultant/Trainer, Arkansas Advanced Initiative for Math and Sciences (AAIMS), 2010-present

Honors and Awards:

Alpha Chi Administrator of the Year, 2008 and 2010, University of Arkansas at Monticello

UAM Faculty Excellence Gold Award Winner, 2002 & 1997 (Outstanding UAM Faculty Member selected by peers)

Chairman, Ouachita Valley Section of the American Chemical Society, 1998

A.W. Cordes Teaching Award, 1985 &1989 Outstanding graduate teaching assistant, Department of Chemistry and Biochemistry, University of Arkansas-Fayetteville

Professional Organizations:

American Chemical Society

Arkansas Academy of Science

Professional Publications:

Im, Hee-Jung; Yost, Terry; Yang, Yihui; **Bramlett, J. Morris**, Yu, Xiangua; Fagan, Bryan, Barnes, Craig E; Dai, Sheng; "Organofunctional sol-gel materials for toxic metal separation," ACS Symposium Series (2006) 943 (Nuclear Waste Management), 223-237.

J. Morris Bramlett, Hee-Jung Im, Xiang-Hua Yu, Tanniu Chen, Hu Cai, Lee E. Roecker, Craig E. Barns, Sheng, Dai, Zi-Ling Xue**;** "Reactions of Thioether Carboxylic Acids with Mercury (II). Formation and X-ray Crystal Structure of Mercury (II) mercaptoacetate",, *Inorganica Chemica Acta*, 357 (**2004**) 243-249.

Im, Hee-jung; Yost, Terry L; Yang, Yihui; **Bramlett, J. Morris**; Yu, Xiang-Hua; Barnes, Craig E; Dai, Sheng; "Organofunctional sol-gel materials for toxic metal separation," Abstracts of Papers, 226th ACS National Meeting, New York, NY, Sept 2003, NUCL-091

Phillips, Bradley J; McConnell, Rose; **Bramlett, Joseph M**; Godwin, Walter; "Polyfuran: Molecular modeling and synthetic studies," Book of Abstracts, 211th ACS National Meeting, New Orleans, LA, March 1996, CHED-564

Stanley, Brant K; McConnell, Rose; **Bramlett, J. Morris**; Godwin, Walter; "The effect of deuterium solutions on pH," Book of Abstracts, 211th ACS National Meeting, New Orleans, LA, March 1996, CHED-254

D.P. Dawson; W.Yongskulrote; **J.M. Bramlett**; J.B. Wright; B. Durham; N.T. Allison; "Photolysis of $CpFe(CO)_2$Butadienyl Complexes. Synthesis and Electrocyclic Ring Closure of CpFe-Pentadienoyl

Complexes to Hydroxyferrocenes",, *Organometallics*, **1994**, *13(10)*, 3873-3880.

W. Yongskulrote; **J.M. Bramlett**; C.A.Mike; B. Durham; N.T. Allison; "Photochemical Conversion of η^1-Butadienyl Iron Complexes to Hydroxyferrocenes",*Organometallics*, **1989**, *8(2)*, 556-558.

Grants (external):

National Science Foundation, $3.5 M total for 9 campuses, **Dr. J. Morris Bramlett** UAM Writer and Coordinator, Arkansas-Louis Stokes Alliance for Minority Participation in Math, Science, Engineering, and Technology, 2008-2013.

NASA-Arkansas Space Grant Consortium, $23,400, **Dr. J. Morris Bramlett** and Mr. Joe M. Guenter, Equipment Grant for Upgrading the UAM Planetarium, 2008.

NASA-Arkansas Space Grant Consortium, $4000, **Dr. J. Morris Bramlett**, for continuation of the project, "Removal of Transition Metals from Aqueous Systems using Silica Bound Ligands" 2005-06

NASA-Arkansas Space Grant Consortium, $4000, **Dr. J. Morris Bramlett**, for the project, "Removal of Transition Metals from Aqueous Systems using Silica Bound Ligands," 2004-05

NASA-Arkansas Space Grant Consortium, $5000, Dr. Rose McConnell, **Dr. J. Morris Bramlett**, for the project, "DVD/Video Tape Library and Hands-on Laboratory Experiences in Science and Calculus Concepts," 2003-04

NASA-Arkansas Space Grant Consortium, $3500, **Dr. J. Morris Bramlett**, for undergraduate research project "Transition Metal Complexes with Sulfur Containing Ligands," 2003-04

NASA-Arkansas Space Grant Consortium, $4000, **Dr. J. Morris Bramlett**, for the undergraduate research project "Removal of Heavy Metals from Aqueous Systems using Sulfur Containing Ligands," 2002-03

Research Sites for Educators in Chemistry-National Science Foundation Grant: $38,500, **Dr. Joseph M. Bramlett**, for research conducted while on off-campus duty assignment during the 2000-01 academic year at the University of Tennessee and Berea College. A $5000 continuation grant was provided upon return to UAM.

Arkansas Math and Science Crusades: School/College Collaboration Project, $32,550 for fiscal year 1997 from Arkansas Department of Higher Education to **Dr. J. Morris Bramlett** and Mr. Lowell Lynde, project directors, University of Arkansas - Monticello.

Arkansas Science Crusade: Higher Order Thinking in Science, $21,196 for fiscal year 1996 from the Arkansas Systemic Initiative National Science Foundation Program to **Dr. J. Morris Bramlett**, project director, University of Arkansas - Monticello.

Arkansas Science Crusade: Higher Order Thinking in Science, $46,626 for fiscal year 1995 from the Arkansas Systemic Initiative National Science Foundation Program to **Dr. J. Morris Bramlett**, and Dr. James Edson, project directors, University of Arkansas - Monticello.

Undergraduate Research Projects:

Adair Claycomb, "Biofuel Production from Wood Waste, and Analysis of Byproducts,"

Lindsay Rymes and Misti Temple, "*Saline River Water Quality Survey*" (co-directed with Dr. Ed Bacon, internally funded by UAM Research Grant)

Jerri Webb, "*Molecular Modeling of Heavy Metal Disulfides,"* 2005. (externally funded by NASA/ASGC)

Michael E. McMillan, *"Synthesis of Sulfur Containing Ligands for forming Heavy Metal Complexes,"* 2004-2005. (externally funded by NASA/ASGC)

Ethan Trana, "*Transition Metal Complexes with Sulfur Containing Ligands,"* 2003-2004. (externally funded by NASA/ASGC)

Max E. Hetzer, "*Heavy Metal Complexes with Dithioacetals*," 2001-2002. (externally funded by NASA/ASGC)

Joe Sundell (Arkansas High School for Mathematics and Sciences), "Comparison of Experimental and Theoretical Van't Hoff Factors in Aqueous Ionic Compounds," 1999-2000.

Christopher Holiman, "Improvement of Classic Physics and Chemistry Experiments through use of TI Graphing Calculators and TI-CBL Devices," 1999.

Diana K. Gray, Honors Program Research Option, "A Comparison of Simple Alkanes Using Molecular Modeling," 1997.

Presentations at Professional Meetings:

Trana, Ethan; Bramlett, Joseph Morris; *"Transition Metal Complexes with Sulfur Containing Ligands.,"* NASA/Arkansas Space Grant Consortium Symposium, April 2004, Batesville, AR.

Bramlett, Joseph Morris*;"Using Software to Enhance Chemistry Teaching"* Biomedical Research Infrastructure Network (BRIN) Symposium, Sept. 2003, Fayetteville, AR Presentation:

Xue, Zi-Ling, Im, Hee-Jung, Yost; Yost, Terry L; Bramlett, Joseph Morris; Yu, Xianghua; Fagan, Bryan C; Allain, Leonardo; Chen, Tianniu; Barnes, Craig E; Dai, Sheng; Roecker, Lee E; Sepaniak, Michael J;*"Oranofunctional Sol-Gel Materials for Toxic Metal Separation."* Enviromental Management Science Program (EMSP) National Meeting of the American Chemical Society, September 2003, New York, NY

Hetzer, Max E.; Bramlett, Joseph Morris; "*Heavy Metal Complexes with Dithioacetals.*" NASA/Arkansas Space Grant Consortium Symposium, April 2002, Jonesboro, AR.

J. Morris Bramlett, *Using the TI-83 and the TI-Calculator Based Laboratory in Mathematics and Science Education*. Southwest Arkansas Science Teachers Alliance, Camp Clearfork (Hot Springs), AR, 1998.

Stanley, Brant; McConnell, Rose M.; Bramlett, J. Morris; Godwin, Walter, "The Effect of Deuterium Solutions on pH." The 211th National Meeting of the American Chemical Society, New Orleans, LA, 1996, CHED PS 254.

Phillips, Bradley; McConnell, Rose M.; Bramlett, J. Morris; Godwin, Walter, "Polyfuran: Molecular Modeling and New Synthetic Studies." The 211th National Meeting of the American Chemical Society, New Orleans, LA, CHED PS 564.

Bramlett, J.M.; Sylvester, M. "Black Boxes, Owl Pellets, and CBL's" Southeastern Arkansas Science Teacher's Alliance, Monticello, AR, Nov. 15, 1995.

Phillips, Bradley; McConnell, Rose M.; Bramlett, J. Morris; Godwin, Walter, "Polyfuran: Molecular Modeling & Synthetic Studies." Chemical Education Conference, Fayetteville, AR, 1995, Poster 12.

Bramlett, J.M.; Huddle, J. "Using Computers to Help Teachers: An Introduction to Science CAPS." Arkansas Science Crusade Training Meetings, Searcy, AR April 1995.

Bramlett, J. M.; Allison, N.T., "Synthesis and Chemistry of η^1-Butadienyl Iron Complexes." Ouachita Valley Section of the American Chemical Society, Monticello, AR Sept. 1991.

Bramlett, J.M.; Durham, B.; Allison, N.T., "Photochemical Reactions of Transition Metal Butadiene Complexes." 197th National Meeting of the American Chemical Society, Dallas, TX, April 1989, INOR 161.

Bramlett, J.M.; Allison, N.T.; Durham, B., "Formation of Hydroxyferrocenes via Photochemical Methods." 43rd Meeting of the Southwest Region of the American Chemical Society, Little Rock, AR, Dec 1987, INOR 197.

CURRICULUM VITA
M. JEFFREY TAYLOR
ASSOCIATE PROFESSOR OF CHEMISTRY

I. PERSONAL DATA:

Date of Birth: June 23, 1962

II. EDUCATION:

Postdoctoral Fellow	University of Illinois at Urbana-Champaign (1992-1994)
Ph.D.	University of Arkansas, Fayetteville, AR, 1992 Ph.D. Biochemistry **GPA=4.0/4.0**
M.A.	University of Texas; Austin TX; 1987 M.A. Chemistry **GPA=4.0/4.0**
B.S.	University of Arkansas at Little Rock; Little Rock, AR, 1984 B.S. Chemistry (ACS Certified) **GPA=3.93/4.0** (magna cum laude, alpha epsilon)
High School	Mountain View Public High School; Mountain View, AR; 1980 (honors)

III. PROFESSIONAL HISTORY:

1. Associate Professor of Chemistry, University of Arkansas at Monticello; Monticello, AR August 2006 - present.
2. Assistant Professor of Chemistry, University of Louisiana at Monroe; Monroe, LA, August 1995 – August 2006.
3. Adjunct Assistant Professor of Chemistry; Lyon College, Batesville, AR, August 1994 - May 1995.
4. Post-Doctoral Research Fellow; University of Illinois at Urbana-Champaign, Urbana, Illinois, June 1992 - August 1994.
5. Graduate Teaching/Research Assistant; University of Arkansas, 1987 - 1992.
6. Graduate Teaching/Research Assistant; University of Texas, 1984 - 1987.
7. University Lecturer, University of Arkansas at Little Rock, 1983 - 1984.
8. Laboratory Teaching Assistant, University of Arkansas at Little Rock, 1981 - 1983.

IV. GRANTS FUNDED:

1. “Molecular Modeling of Phylogenetically Significant Carotenoids” Danielle Cook and M. Jeffrey Taylor; (2014); Arkansas Space Grant Consortium; STEM Award; $1500.
2. “Hydrogen Generation through the Electrolysis of Water”; Chris Roberts and M. Jeffrey Taylor; (2014); Arkansas Space Grant Consortium; STEM Award; $1500.
3. “Hydrogen Generation through the Electrolysis of Water” Esgar Jimenez and M. Jeffrey Taylor; (2013); Arkansas Space Grant Consortium; STEM Award; $1500.
4. “Proposal to Enhance Research and Academic Instruction Through the Use of Molecular Modeling”; M. Jeffrey Taylor; (2012); INBRE; $11,447.
5. "2000 Undergraduate Biological Sciences Education Program"; F.L. Pezold, P.M.K. Aku, G.L. Stringer, S. Davis, A.M. Findley, M.J. Taylor, A.M. Hill; Howard Hughes Medical Institute (2000-2004), $1,500,000.
6. “Sterilization Equipment for the Chemistry and Natural Sciences Building Laboratory Suite”; H. C. Bounds, A. M. Findley, J. A. Knesel, D. W. Pritchett, T. W. Sasek, T. G.

Lewis, W. C. Hoefler, J. L. Oakes, T. Smith, and M. J. Taylor; 1999-2000; ULM Development Grants Program, $6,300.

7. "Molecular Modeling and Conformational Analysis of Biological Macromolecules"; M. Jeffrey Taylor; 1997-1999; Louisiana Educational Quality Support Fund (LEQSF), $66,000.
8. "Teaching Molecular Biology in the Laboratory"; Ann M. Findley, Steven J. Hecht, Tsunami Yamashita, and M. Jeffrey Taylor; 1997-1998; NLU Development Program, $8,000.
9. "Enhancement of Undergraduate Chemistry Instruction Utilizing Molecular Graphics"; M. Jeffrey Taylor; 1996-1997; Teaching and Learning Resource Center Grant (TLRC), $4,000.

V. AWARDS AND HONORS:

1. Recipient of 2015 Hornaday Outstanding Faculty Award.
2. Directed Top Student Poster Presentation in Chemistry at the Arkansas Academy of Sciences 2014 meeting.
3. Finalist for the 2014 Hornaday Outstanding Faculty Award.
4. Alpha-Chi Teacher of the Year for 2008.
5. Who's Who Among America's Teachers for 2002.
6. Alpha Lambda Delta Favorite Professor Award, Spring 2002.
7. Finalist selected for the Scott Endowed Professorship in Teaching Excellence, March 1999.
8. Outstanding Professor selected by Mortar Board and Omicron Delta Kappa, April 1999.
9. Radiation Oncology Training Post-Doctoral Fellowship (National Research Service Award derived from NIH) University of Illinois at Urbana-Champaign, June 1992 - August 1994.
10. University Dissertation Fellowship; University of Arkansas, 1990 – 1991.
11. Chemistry Department Fellowship for Entering Graduates; University of Arkansas, 1987.
12. Honorable Mention, National Science Foundation Graduate Fellowship; University of Texas, 1985.
13. Dupont Graduate Fellowship; University of Texas, 1984 – 1985.
14. Eakins Graduate Fellowship; University of Texas, 1984 – 1985.
15. Outstanding Senior Chemistry Student (American Institute of Chemists); UALR, 1984.
16. Outstanding Achievement in Chemistry (American Chemical Society); UALR, 1984.
17. Outstanding Analytical Chemistry Student (American Chemical Society); UALR, 1982.
18. Outstanding Freshman Chemistry Student (American Chemical Society); UALR, 1981.

VI. THESES DIRECTED:

1. "Molecular Modeling Studies of Two 9,10-Diphenylanthracene Derivatives"; Reddy M. Chilakuri; December 2001.
2. "Theoretical Conformational Analysis of Four TNT-Degradation Products"; Zhong Li; May 2001.
3. Theoretical Conformational Analysis of Gramicidin-Like Channels"; Yi (Alex) Gu; May 1999.

VII. SELECTED PUBLICATIONS:

1. Roger E. Koeppe II, J. Antoinette Killian, T. C. Bas Vogt, Ben de Kruijff, M. Jeffrey Taylor, Gwendolyn L. Mattice, and Denise V. Greathouse. "Palmitoylation-Induced Conformational Changes of Specific Side Chains in the Gramicidin Transmembrane Channel." (1995) *Biochemistry* **34**, 9299-9306.
2. J. Antoinette Killian, M. Jeffrey Taylor, and Roger E. Koeppe II. "Orientation of the Valine-1 Side Chain of the Gramicidin Transmembrane Channel and Implications for Channel Functioning. A ^{2}H NMR Study." (1992) *Biochemistry* **31**, 11283-11290.
3. Linda P. Williams, Elizabeth J. Narcessian, Olaf S. Andersen, George R. Waller, M. Jeffrey Taylor, John P. Lazenby, James F. Hinton, and Roger E. Koeppe II. "Molecular and Channel-Forming Characteristics of Gramicidin K's: A Family of Naturally Occurring Acylated Gramicidins." (1992) *Biochemistry* **31**, 7311-7319.
4. Roger E. Koeppe, M. Jeffrey Taylor, and Olaf S. Andersen. "Models for Gramicidin Channels." (1992) *Biophysical J.* **61**, 831.
5. M. Jeffrey Taylor, James F. Hinton and Roger E. Koeppe II "2D NMR Determination of the Structure of Acylated Gramicidin in d_{25}SDS Micelles." (1992). *Biophysical J.* **61**, 3038a.
6. M. Jeffrey Taylor, Gwendolyn L. Mattice, James F. Hinton and Roger E. Koeppe II "NMR Studies of Acylated Gramicidin in d_6DMSO Solution and d_{25}SDS Micelles." (1991), *Biophysical J.* **59**, 319a.
7. M. Jeffrey Taylor and Roger E. Koeppe II "NMR Studies of Tyr-1 Gramicidin A. " (1990) *Biophysical J.***57**, 99a.

VIII. SELECTED PRESENTATIONS:

1. Danielle S. Cook and M. Jeffrey Taylor, "Construction of a Large Scale Photovoltaic Hydrogen Gas Generator"; Posters at the Capitol, Feb. 11, 2015, Little Rock, AR.
2. Danielle S. Cook and M. Jeffrey Taylor, "Molecular Orbital Calculations of Echinenone and 3-Hydroxyechinenone from Orange Carotenoid Proteins from Algae"; INBRE, Nov. 8, 2014, Fayetteville, AR.
3. Esgar Jimenez and M. Jeffrey Taylor, "Photovoltaic Generation of Hydrogen" Arkansas Space Grant Consortium Symposium, April 7, 2014, Hot Springs, AR.
4. Ryan M. Reyes and M. Jeffrey Taylor, "Molecular Modeling Studies of Phylogenetically Significant Carotenoids of Oxygenic Phototrophs", Meeting of the Arkansas Academy of Sciences, April 5, 2014, Harding University.
5. Ryan M. Reyes and M. Jeffrey Taylor, "Molecular Modeling Studies of Phylogenetically Significant Carotenoids of Oxygenic Phototrophs", National Meeting of the American Chemical Society, March 15-17, 2014, Dallas, TX.
6. Esgar Jimenez and M. Jeffrey Taylor; "Hydrogen Generation through the Hydrolysis of Water"; ARKLSAMP Poster Presentation; April 19-20, 2012.
7. Reddy M. Chilakuri and M. Jeffrey Taylor; "Conformational Analysis of Diphenylanthracenes by Molecular Mechanics"; First Annual ULM Student Research Symposium; University of Louisiana at Monroe, Monroe LA, Apr. 18, 2001.

8. Zhong Li and M. Jeffrey Taylor; "Conformations of TNT-Degradation Products Determined by Molecular Mechanics"; 74th Annual Meeting of the Louisiana Academy of Sciences, Centenary College, Shreveport, LA, Feb. 4, 2000.
9. M. Jeffrey Taylor and Andrew H.-J. Wang; "The solution Structures of Four DNA Oligonucleotides Containing Tandem GA Mismatched Base-Pairs as Determined by Two-Dimensional NMR Spectroscopy"; Cell and Molecular Biology and Molecular Biophysics Research Symposium, Beckman Institute, Urbana, IL, Sep. 11, 1993.
10. J. Antoinette Killian, M. Jeffrey Taylor and Roger E. Koeppe II; "Orientation of the Val^1 Side Chain of Gramicidin A in Lipid Bilayers"; Cell and Molecular Biology and Molecular Biophysics Research Symposium, Beckman Institute, Urbana, IL, Sep. 19, 1992.
11. M. Jeffrey Taylor, James F. Hinton and Roger E. Koeppe II; "2D NMR Determination of the Structure of Acylated Gramicidin in d_{25}SDS Micelles"; Biophysical Society National Meeting, Houston, TX, Feb. 9-13, 1992.
12. M. Jeffrey Taylor, Gwendolyn L. Mattice, James F. Hinton and Roger E. Koeppe II; "NMR Studies of Acylated Gramicidin in d_6DMSO Solution and d_{25}SDS Micelles"; American Society for Biochemistry and Molecular Biology Fall Symposium, Keystone CO, Oct. 11-14, 1991.
13. M. Jeffrey Taylor, Gwendolyn L. Mattice, James F. Hinton and Roger E. Koeppe II; "NMR Studies of Acylated Gramicidin in d_6DMSO Solution and d_{25}SDS Micelles"; Biophysical Society National Meeting, San Francisco, CA, Feb. 24-28, 1991.
14. M. Jeffrey Taylor and Roger E. Koeppe II; "NMR Studies of Tyr-1 Gramicidin A"; Biophysical Society National Meeting, Baltimore MD, Feb. 18-22, 1990.

Jinming Huang

School of Mathematical and Natural Sciences, University of Arkansas, Monticello, AR 71656.
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jinminghuang@hotmail.com

Education

Ph.D.: Inorganic Chemistry (Bioinorganic), Fudan University, Shanghai, China.
1999
M.S: Analytical Chemistry, East China University of Sci & Tech, Shanghai, China.
1990
B.S: Analytical Chemistry, Soochow University, Suzhou, China.
1987

Academic Experience

Apr 2013 - Present, Associate Professor of Chemistry (with tenure), University of Arkansas, Monticello, AR, USA.
Teaching: General Chemistry, Quantitative Analysis, Instrumental Analysis, Physical Chemistry (Thermodynamics), Physical Chemistry (Kinetics and Quantum Mechanics), and Elements of Physical Chemistry (for life science). The above courses include lecture and lab.
Research: Investigating how nitrite and nitrate content change in fresh vegetables during storage, funded by **NASA** and **NSF EPSCoR**.
Aug 2007 - Apr 2013, Assistant Professor of Chemistry, University of Arkansas, Monticello, AR, USA.
2007 (Spring), Adjunct Instructor, Appalachian State University, Boone, NC, USA.
Teaching: Introductory Chemistry lab and Organic Chemistry lab.
May 2004 - Jul 2007, Research Assistant Professor, Wake Forest University, Winston Salem, NC, USA.
Research: Demonstrated the metabolism of hydroxyurea to nitric oxide by rat liver; identified and quantitatively determined intermediates during the nitric oxide formation from hydroxyurea; illustrated the mechanism and quantitatively determined of nitric oxide formation from nitrite; Evaluated new nitric oxide donors reaction with heme-proteins.
Oct 2000 - Apr 2004, Post-Doctoral Research Associate. Wake Forest University.
Research: Quantitatively determined the nitric oxide generation from reaction of hydroxyurea with heme proteins. Cloned and over-expressed ribonucleotide reductase (RNR) and the interaction study of hydroxyurea with RNR.
Aug 1999 - Sep 2000, Post-Doctoral Research Associate. University of North Carolina, Chapel Hill, NC, USA.
Research: Studied the water-soluble short chain phospholipid regulating the inactivation of blood coagulation factor Va by activated protein C.

Industrial Experience

1990-1995. Research scientist, Shanghai Institute of Biological Products, Shanghai, China. Developed processes for purification of various proteins (blood coagulation factors) from human blood, both in laboratory and pilot plant scale with virus inactivation process; developed analytical methods to characterize these protein products and quantitative determined chemical residues in these proteins.

Services

Instructor of Chinese Language, University of Arkansas at Monticello, 2013 - 2014
Member of Curriculum and Standards Committee, University of Arkansas at Monticello, 2010 - 2012
Member of Faculty Research Committee, University of Arkansas at Monticello, 2009 - 2011
Advisor of Chemistry Majors, Chemistry Department, University of Arkansas at Monticello

Award

Outstanding Post-doctoral Fellow Award of the American Institute of Chemists, USA, May 2003

Research Funding

Mentor, Student Undergraduate Research Fellowship (SURF), Arkansas Department of Higher Education, $4000, (2015)
PI, Research Infrastructure Grant, NASA-Arkansas Space Grant Consortium, $5000, (2014-2015)
PI, Research Infrastructure Grant, NASA-Arkansas Space Grant Consortium, $5900, (2013-2014)
Mentor, STEM Minority Award, NASA-Arkansas Space Grant Consortium, $2500, (2012-2013)
PI, Research Infrastructure Grant, NASA-Arkansas Space Grant Consortium, $5600, (2012-2013)
Mentor, Student Undergraduate Research Fellowship (SURF), NSF EPSCoR, $4000, (2012)
PI, Research Infrastructure Grant, NASA-Arkansas Space Grant Consortium, $21300, (2011-2012)
Mentor, Student Undergraduate Research Fellowship (SURF), NSF EPSCoR, $4000, (2011)
PI, Research Infrastructure Grant, NASA-Arkansas Space Grant Consortium, $5300, (2010-2011)
PI, Research Infrastructure Grant, NASA-Arkansas Space Grant Consortium, $9700, (2009-2010)
PI, University of Arkansas at Monticello Faculty Research Grant, $2000. (2009-2010)

Patent

1. Lentz, Barry R., Monroe, Dougald M., Majumder, Rinku, Huang, Jinming: Soluble Phospholipids for Use in Clotting Factor Assays. US Patent 20070037235

Recent Publications

1. **Jinming Huang,** Joshuah Hathcox, Samuel Pope, and MacKenzie Willis, Nitrate and Nitrite Change during Storage in Several Vegetable Juices (Submitted to Food Chemistry).
2. Sonia Donzelli, Michael Graham Espey, Wilmarie Flores-Santana, Christopher H. Switzer, Grace C. Yeh, **Jinming Huang**, Dennis J. Stuehr, S. Bruce King, Katrina M. Miranda, and David A. Wink**,** Generation of nitroxyl by heme protein-mediated peroxidation of hydroxylamine but not *N*-hydroxy-L-arginine, *Free Rad. Biol. Med*. **2008**, 45(5): 578-584.
3. Michael J. Gorczynski, **Jinming Huang**, Heather Lee, S. Bruce King, Evaluation of Nitroalkenes as Nitric Oxide Donors, *Bioorg & Med Chem Letters.***2007**, 17: 2013-2017.

4. Swati Basu, Rozalina Grubina, **Jinming Huang**, Zhi Huang, Anne Jeffers, Alice Jiang, Xiaojun He, Ivan Azarov, Ryan Seibert, Ahtul Mehta, Rakesh Patel, Neil Hogg, S. Bruce King, Mark T. Gladwin, Daniel B. Kim-Shapiro, Mechanism of NO escape from the erythrocyte: Catalytic generation of N_2O_3 by a concerted nitrite reductase/anhydrase activity of hemoglobin, Nature Chemical Biology **2007**, 3(12): 785-794.
5. **Jinming Huang**, Mamudu Yakubu, Daniel B. Kim-Shapiro, S. Bruce King, Rat Liver Mediated Metabolism of Hydroxyurea to Nitric Oxide, *Free Rad. Biol. Med*. **2006**, 40(9): 1675-1681.
6. Kris T. Huang, Ivan Azarov, Sawti Basu, **Jinming Huang**, Daniel B. Kim-Shapiro, Lack of allosterically controlled intramolecular transfer of nitric oxide from beta heme to cysteine, *Blood* **2006**, 107(7): 2602-2604.
7. Swati Basu, Jared D. Hill, Howard Shields, **Jinming Huang**, S. Bruce King, and Daniel B Kim- Shapiro, Hemoglobin effects in the Saville Assay, *Nitric Oxide: Biology and Chemistry* **2006**, 15: 1-4.
8. Michael J. Gorczynski, **Jinming Huang**, S. Bruce King, Regio- and Stereospecific Syntheses and Nitric Oxide Donor Properties of (E)-9-and (E)-10-Nitrooctadec-9-enoic Acids, *Organic Letters* **2006**, 8 (11): 2305-2308.
9. Bubing Zeng, **Jinming Huang**, Marcus W. Wright, and S. Bruce King, Nitroxyl (HNO) release from new functionalized N-hydroxyurea-derived acyl nitroso-9,10-dimethylanthracene cycloadducts, *Bioorg. & Med. Chem. Letters* **2004**, 14: 5565-5568.
10. **Jinming Huang,** Daniel B. Kim-Shapiro, and S. Bruce King, Catalase Mediated Nitric Oxide Formation from Hydroxyurea, *J. Med. Chem* **2004**, 47(14): 3495-3501.
11. **Jinming Huang**, Zhou Zou, Daniel B. Kim-Shapiro, Samir K. Ballas, and S. Bruce King, Hydroxyurea Analogues as Kinetic and Mechanistic Probes of the Nitric Oxide Producing Reactions of Hydroxyurea and Oxyhemoglobin, *J. Med. Chem* **2003**, 46(17): 3748-3753.
12. Virginia L. Lockamy, **Jinming Huang**, Howard Shields, Samir K. Ballas, S. Bruce King, and Daniel B. Kim-Shapiro, Urease Enhances the Formation of Iron Nitrosyl Hemoglobin in the Presence of Hydroxyurea, *Biochim. Biophys. Acta* **2003**, 1622: 109-116.
13. **Jinming Huang**, Shreeshailkumar B. Hadimani, Jeremy W. Rupon, Samir K. Ballas, Daniel B. Kim-Shapiro, and S. Bruce King, Iron Nitrosyl Hemoglobin Formation from the Reactions of
Hemoglobin and Hydroxyurea, Biochemistry **2002**, 41(7): 2466-2474.
14. **Jinming Huang**, Erin Sommers, Daniel B. Kim-Shapiro, and S. Bruce King, Horseradish Peroxidase Catalyzed Nitric Oxide Production from Hydroxyurea, *J. Am. Chem. Soc*. **2002**, 124(13): 3473-3480.

Recent Meeting Presentations

1. Cynthia Robinson, Autumn Webb, and **Jinming Huang** (P.I.), Cabbage Inhibits Nitrate Reduction in Celery during Storage, 23th Annual ASGC Symposium, Hot Springs, AR, Apr 10, **2015.** (Student poster presentation)
2. Cynthia Robinson, Alex White, and **Jinming Huang** (P.I.), Nitrate can be reduced to nitrite in celery during storage, 22th Annual ASGC Symposium, Hot Springs, AR, Apr 7, **2014.** (Student poster presentation)
3.**Jinming Huang***, Nathan Probst, Samuel Pope, Mackenzie Willis, Joshua Hathcox, Trent Roberts, Alexandra White, Dynamics of Nitrate Contents in Several Vegetables during Storage, 245th National Meeting of the American Chemical Society, New Orleans, LA, Apr 7-11,**2013**. (Oral Presentation)

4. Nathan Probst**,** Samuel Pope, Joshuah Hathcox, Mackenzie Willis, and **Jinming Huang** (P.I.), Is Nitrate More Stable in Cabbage than in Lettuce and Spinach? 20th Annual ASGC Symposium, Winthrop Rockefeller Institute, AR, April 20, **2012**. (Student Poster Presentation)
5. Trent Roberts**,** Samuel Pope, Joshuah Hathcox, Mackenzie Willis, and **Jinming Huang** (P.I.), The Effect of Temperature on Nitrate Reduction in Lettuce During Storage, 20th Annual ASGC Symposium, Winthrop Rockefeller Institute, AR, Apr 20, **2012**. (Student Poster Presentation)
6. **Jinming Huang** (P.I), Nathan Probst, Samuel Pope, Mackenzie Willis, Nitrate Contents Change during Storage in Lettuce and Cabbage, 43rd Middle Atlantic Regional Meeting of American Chemical Society, Baltimore, MD, May 31- Jun22, **2012**. (Oral Presentation)
7. Samuel Pope, Joshuah Hathcox, Mackenzie Willis, and **Jinming Huang** (P.I), Nitrate and Nitrite Contents Investigation in Fresh Lettuce, 19th Annual NASA-ASGC Symposium, Winthrop Rockefeller Institute, AR, April 22, **2011**. (Student Poster Presentation)
8. **Jinming Huang** (P.I), Samuel Pope, Joshuah Hathcox, and Mackenzie Willis, A Simple Method for Determination of Nitrate in Leafy Vegetables, 19th Annual NASA-ASGC Symposium, Winthrop Rockefeller Institute, AR, Apr 22, **2011**. (Oral Presentation)
9. **Jinming Huang** (P.I), Joshuah Hathcox, and Mackenzie Willis, Nitrate and nitrite in fresh spinach, Joint 66th SWRM and 62nd SERMACS of American Chemical Society, New Orleans, LA, Dec 1-4, **2010**. (Student Poster Presentation)
10. **Jinming Huang** (P.I) and Mackenzie Willis, Nitrate and nitrite in spinach, romaine, cilantro, and NAPA- cabbage, 94th Annual Meeting of the Arkansas Academy of Science, Little Rock, AR, Apr 9-10, **2010**. (Student Poster Presentation)
11. **Jinming Huang** (P.I), S. Bruce King, Daniel B. Kim-Shapiro, Detection of Nitroxyl from hydroxamic Acids, 64th Southwest Regional Meeting of American Chemical Society, little Rock, AR, Oct 1-4, **2008**. (Oral Presentation)
12. **Jinming Huang**, Howard Shields, Rachel Maree, Daniel B. Kim-Shapiro, S. Bruce King, NO Donor Properties of Ferrous Catalase-NO Complex, 4th International Conference: Biology, Chemistry & Therapeutic Applications of Nitric Oxide, Monterey, CA, Jun 25-29, **2006**.
13. Michael J. Gorczynski, **Jinming Huang**, Rich Alexander, Darcy Bates, Charles Morrow, S. Bruce King, Regio- and stereospecific syntheses, nitric oxide donor properties, and PPARγ activity of (E)-9-and (E)-10-nitrooctadec-9-enoic acids, 4th International Conference: Biology, Chemistry & Therapeutic Applications of Nitric Oxide, Monterey, CA, Jun 25-29, **2006**.
14. **Jinming Huang**, Swati Basu, S. Bruce King, Daniel B. Kim-Shapiro, Nitrosothiol Formation from the Reaction of Nitrite and Hemoglobin, 12th Annual Meeting of the Society for Free Radical Biology and Medicine, Austin, TX, Nov 16-20, **2005**.
15. Mamudu Yakubu**, Jinming Huang**, Daniel B. Kim-Shapiro, and S. Bruce King, GC/MS Analysis of Hydroxylamine Metabolite of Hydroxyurea in Rat Liver Microsomes, 229th National Meeting of the American Chemical Society, San Diego, CA, Mar 13-17, **2005**.
16. **Jinming Huang**, Daniel B. Kim-Shapiro, S. Bruce King, Metabolism of Hydroxyurea to Nitric Oxide by Rat Liver, 11th Annual Meeting of the Society for Free Radical Biology and Medicine, St. Thomas, U.S. Virgin Islands, Nov 17-21, **2004**.
17. Kris Huang, Xiuli Xu, Howard Shields, Anne Jeffers, Man Cho, **Jinming Huang**, Bruce King, Mark Gladwin, Rakesh Patel, Daniel Kim-Shapiro, Nitrite and deoxygenated hemoglobin: A source of nitric oxide, 48th Annual Biophysical Society Meeting, Baltimore, MD, Feb 14-18, **2004**.
18. Virginia L. Lockamy, **Jinming Huang**, Mamudu Yakubu, Howard Shields, Samir K. Ballas, S. Bruce King, Daniel B. Kim-Shapiro, The Search for the Mechanism of NO Release in Hydroxyurea Therapy, 48th Annual Biophysical Society Meeting, Baltimore, MD, Feb 14-18, **2004**.

19. Zhou Zou, **Jinming Huang**, Dennis Parrish, and Bruce King, Amino-Hydroxycyclohexane and cyclopentane Derived N-Hydroxyureas as New Nitric Oxide Donors, The 56th Southeast Regional Meeting of American Chemical Society, Research Triangle Park, NC, Nov10-13, **2004**.
20. **Jinming Huang**, Bernard A. Brown II, and S. Bruce King, Potential Nitric Oxide Producing Reactions of *E. Coli* Ribonucleotide Reductase with Hydroxyurea, 10th Annual Meeting of the Society for Free Radical Biology and Medicine, Seattle, WA, Nov 20-24, **2003**.
21. Dennis Parrish, **Jinming Huang**, S. Bruce King, Synthesis and Evaluation of Carbohydrate Based Hydroxyureas as Therapeutic Agents for Breast Cancer, 55th Southeast Regional Meeting of the American Chemical Society, Atlanta, GA, Nov 16-19, **2003**.
22. Virginia L. Lockamy, **Jinming Huang**, Howard Shields, Fouad Azizi, Samir K. Ballas, S. Bruce King and Daniel B. Kim-Shapiro, In Search of the Physiologically Relevant Mechanism for NO Release in Hydroxyurea Therapy, 47th Annual Biophysical Society Meeting, San Antonio, TX, Mar 1-5, **2003**.

Andrew Williams

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♦**Education:**

Ph.D. in Chemistry. University of Arkansas. Graduated: December 2009.
Major focus-Inorganic Chemistry
Advisor: Dr. Bill Durham

B.S. in Chemistry. John Brown University, Siloam Springs, AR. Graduated: May 2004.

♦**Teaching Experience:**

Assistant Professor: Fall 2009-Present
University of Arkansas Monticello
Courses: Introduction to Chemistry, Introduction to Organic and Biochemistry, General Chemistry I, General Chemistry II, Advanced Inorganic Chemistry, Forensic Chemistry, Quantitative Analysis, Advanced Lab Techniques, Chemistry Research, Labs for Introduction to Chemistry, General Chemistry I, and General Chemistry II.

Introductory Chemistry covers basic chemical principles including conversions, stoichiometry, gas laws, and bonding.
Intro Organic and Biochemistry covers organic naming and reactions, and the uses of those reactions in biochemical processes.
General Chemistry I covers basic conversions, stoichiometry, atomic structure, reactions, gas laws, energy relationships, electronic structure, and bonding.
General Chemistry II covers intermolecular forces, chemical kinetics, equilibrium, and thermodynamics.
Advanced Inorganic Chemistry covers atomic structure, molecular structure and bonding, the structure of simple solids, acids and bases, redox reactions, molecular symmetry and coordination compounds, physical techniques, d-metal chemistry, nonmaterial, and biological inorganic chemistry.
Quantitative Analysis covers analytical though processes, statistics and sampling, techniques such as titrations and gravimetric analysis, as well as many types of equilibrium including acid-base, EDTA complexes, and solubility product.
Forensic Chemistry covers scientific thought and statistics, sample preparation and instrumentation, drug analysis, and chemical analysis of physical evidence.
Advanced Lab Techniques brings to the upper level students a chance to see more specialized techniques such as scientific glassblowing, and a chance to begin scientific literature review in the classroom.
Chemistry Research allows students the chance to do independent research, with the resulting research being presented in the form of a poster or oral presentation at a regional conference.

Introduction to Chemistry Lab shows basic lab safety and techniques.
General Chemistry I Lab shows basic lab safety and techniques, with more emphasis on calculations and independent thinking.
General Chemisty II Lab continues where General Chemistry I Lab leaves off and introduces more complex techniques such and qualitative analysis and titrations.

Instructor: Fall 2008-Summer 2009
Northeastern State University
Courses: General Chemistry I Lecture and Lab

General Chemistry I covers basic conversions, stoichiometry, atomic structure, reactions, gas laws, energy relationships, electronic structure, and bonding.

General Chemistry I Lab shows basic lab safety and techniques, with more emphasis on calculations and independent thinking.

Graduate Assistant: Summer 2008
University of Arkansas
Course: Fundamentals of Chemistry Lecture

Fundamentals of Chemistry covers many of the same items found in General Chemistry, but with less emphasis on the calculations.

Research Assistant: Fall 2006-Spring 2006
University of Arkansas

Graduate Assistant: Fall 2004-Spring 2006
University of Arkansas
Lab courses: Organic Chemistry I, General Chemistry II Honors, Analytical Chemistry

♦ **Publications:**

Snider, T; Williams, A. Characterization of Fatty Acid Content in Freshwater *Eustigmatophyceae*. ASGC In review, 2014.

Williams, A.L.; Bhuiyan, A.A.; Turner, M.O.; Millett, F.; Durham, Bill. "Synthesis and Characterization of Cr(III), Mn(II), Co(II), Ni(II) and Cu(II) complexes with a hexadentate hemi-cage ligand formed with bipyridine." J. Coord. Chem. 64, 48-56 (2011).

Williams A. Synthesis and Characterization of Chromium(III) and Other Metal Complexes Formed by Reaction with a Hexadentate Polypyridine Ligand. Ph.D. Thesis, University of Arkansas, Fayetteville, AR, 2009.

♦**Presentations:**

Determination of Fatty Acid Content in Algae. Powerpoint presentation given at the fall 2015 26th MICA meeting, University of Arkansas at Fort Smith, Fort Smith, AR.

Chemistry of a Cr(cage)$^{3+}$ complex. Powerpoint presentation given at the fall 2009 MICA meeting, University of Central Arkansas, Conway, AR.

Photoredox Capabilities of a Caged Chromium Complex. Poster presented at the fall 2008 Oklahoma Research Day, Northeastern State University, Broken Arrow, OK.

Preparation of a Chromium cage complex. PowerPoint presentation given at the fall 2005 MICA meeting.

♦**Student Presentations:**

Determination of Fatty Acid Content in Native Arkansas Algae. White, D, Snider, T, Williams, A. Poster presented at 23rd Arkansas Space Grant Symposium. April 10, 2015. Hot Springs Convention Center, Hot Springs, AR.

Determination of Fatty Acid Content in Native Arkansas Algae. Snider, T, Williams, A. Oral presentation given at 23rd Arkansas Space Grant Symposium. April 10, 2015. Hot Springs Convention Center, Hot Springs, AR.

Determination of Fatty Acid Content in Native Arkansas Algae. Snider, T, Williams, A. Poster presented at Posters at the Capital. February 11th, 2015. Little Rock, AR.

Determination of Fatty Acid Content in Native Arkansas Algae. Snider, T, Williams, A. Poster presented at Arkansas INBRE Research Conference. Novermber 7th, 8th, 2014. Fayetteville, AR.

Determination of Fatty Acid Content in Native Arkansas Algae. Snider, T, Williams, A. Oral presentation at 21st MICA. October 25th, 2014. UAM, Monticello, AR.

Determination of Fatty Acid Content in Native Arkansas Algae. Snider, T, Williams, A. Poster presented at 22nd Arkansas Space Grant Symposium. April 7, 2014. Hot Springs Convention Center, Hot Springs, AR.

Anion Composition of Aerosols. Newhouse, K, Fong, B, Williams, A, Ali, H. Poster presented at 22nd Arkansas Space Grant Symposium. April 7, 2014. Hot Springs Convention Center, Hot Springs, AR.

Determination of Fatty Acid Content in Native Arkansas Algae. Snider, T, Williams, A. Poster presented at Arkansas INBRE Research Conference. October 21, 2013. Fayetteville, AR.

Anion Composition of Aerosols. Kiara Newhouse, Bryant Fong and Hashim Ali. Poster presented at 19th Mid-South Inorganic Chemists Association Meeting. October 5th, 2013.

Method Development for the Characterization for Fatty Acid Content in Freshwater Eustigmatophyceae. Snider, T, Williams, A. Poster presented at 21st Arkansas Space Grant Symposium. April 19, 2013. The Winthrop Rockefeller Institute, Morrilton, AR.

Method Development for the Characterization for Fatty Acid Content in Freshwater Eustigmatophyceae. Jager, M, Williams, A. Poster presented at 20th Arkansas Space Grant Symposium. April 20, 2012. The Winthrop Rockefeller Institute, Morrilton, AR.

Method Development for the Characterization for Fatty Acid Content in Freshwater Eustigmatophyceae. Snider, T, Williams, A. Poster presented at Posters at the Capital. February 21, 2012. Little Rock, AR.

Method Development for the Characterization for Fatty Acid Content in Freshwater Eustigmatophyceae. Jager, M, Williams, A. Poster presented at Arkansas INBRE Research Conference. October 21, 2011. Fayetteville, AR.

Method Development for the Characterization for Fatty Acid Content in Freshwater Eustigmatophyceae. Jager, M, Williams, A. Poster presented at 19th Arkansas Space Grant Symposium. April 22, 2011. The Winthrop Rockefeller Institute, Morrilton, AR.

♦ **Professional Service:**

June 2013 and following Served with Achieve on the Next Generation Science Standards (NGSS)

Fall 2012 to Spring 2014 Served on the University Curriculum and Standards Committee

Spring 2012 Served on the University Cost Containment Committee

Fall 2010 to Spring 2012 Served on the University Faculty Grievance Committee
March 13, 2010 Organized the 15th MICA meeting, held at UAM Science Center

♦**Professional Associations:**

American Chemical Society
MICA (Mid-South Inorganic Chemistry Association)
Sigma Zeta Beta Pi Chapter

♦**Awards:**

Hornaday Outstanding Faculty Award Nominee 2014
Awarded UAM Knights *Alvy Early "Spirit of Knighthood"* 2013
Alpha Chi Rookie of the Year Zeta Chapter 2012
Alpha Chi Rookie of the Year Zeta Chapter Nominee 2011
Alpha Chi Rookie of the Year Zeta Chapter Nominee 2010

Kelley L. Sayyar

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Education:

2010 M.S. degree in Geosciences, Mississippi State University
1989 B.S. degree in Biology and Life Sciences, Kansas State University

Professional Experience:

University of Arkansas at Monticello, Monticello, AR

2015-Present Instructor of Earth Sciences, School of Mathematical and Natural Sciences.

1999-2015 Instructor of Chemistry Laboratory, School of Mathematical and Natural Sciences.

Courses Taught at UAM: Introductory Chemistry Lab, General Chemistry I & II Lab, Organic Chemistry II Lab, Geology Lecture & Lab, Earth and Atmosphere Lecture &Lab, On-line Meteorology Lecture & Lab, Astronomy Lecture & Lab.

Kansas State University, Manhattan, KS

1996 Research Assistant (Electron Microscopy), Department of Anatomy and Physiology, College of Veterinary Medicine, Kansas State University, Manhattan, Kansas

1989-1995 Research Instrument Operator (Electron Microscopy), Department of Anatomy and Physiology, College of Veterinary Medicine.

Publications:

2006. McConnell, R.M., Trana, C.J., Green, A.W., Myers, N., Hatsfield, S.E., Sayyar, K.L. and Godwin, W.E., Development of cathepsin D inhibitors with new

hyroxyethyl cyclic piperazine derivatives, Journal of Undergraduate Research **1**: 19-27.

2005. McConnell, R.M., Godwin, W.E., Sayyar, K, Trana, C.J., Green, A.W., McConnell, M.S., Young, A., Young, L., Hatsfield, S.E., Synthesis and evaluation of new cathepsin D inhibitors, Journal of the Arkansas Academy of Science, vol. 59.

1998. Westfall, J. A. , Sayyar, K. L. and Elliott, C. F., Cellular origins of kinocilia, stereocilia, and microvilli on tentacles of sea anemones, Calliactis (Cnidaria: Anthozoa), Invertebrate Biology **117(3)**: 186-193.

1997. Westfall, J.A., Sayyar, K.L. and Bone, J.K., Ultrastructure of neurons and synapses in the tentacle gastrodermis of the sea anemone Calliactis parasitica, Journal of Morphology **232**:207-217.

1997. Westfall, J.A. and Sayyar, K.L., Ultrastructure of neurons and synapses in the tentacle epidermis of the sea anemone Calliactis parasitica, Journal of Morphology **231**:207-223.

1995. Westfall, J.A., Sayyar, K.L., Elliot, C.F., and Grimmelikhuijzen, C.J.P., Ultrastructural localization of Antho-RWamides I and II at neuromuscular synapses in the gastrodermis and oral sphincter muscle of the sea anemone Calliactis parasitica, Biological Buletin **189**: 280-287.

GrantsReceived:

2007. Faculty Development Travel Grant, University of Arkansas at Monticello, $900.

2006. Faculty Development Travel Grant, University of Arkansas at Monticello, $900.

2005. Faculty Research Grant, University of Arkansas at Monticello, $1,900.

Professional/Honor Societies:

2015-Present	American Meteorological Society
1995-Present	Microscopy Society of America
2004-Present	Sigma Zeta Honor Society

Other Duties/Certificates of Training:

2015. Completed 50 hours at the Minority Student Institutions-Reconstructing Earth's Climate History Advanced Professional Development program, Gulf Coast Repository at Texas A&M in College Station, Texas.

2014-2015. Served as a member on the State Science Fair Review Committee at the University of Central Arkansas, Conway, AR.

2007-2014. Served as the Judge Coordinator for the Southeast Arkansas Regional Science Fair hosted at the University of Arkansas at Monticello.

2004-2005. Served as Research Manager for REU chemistry students at the University of Arkansas at Monticello under the direction of Dr. Rose McConnell, Professor of Chemistry which culminated in 7 published abstracts and poster presentations at national scientific meetings. (Abstracts will be furnished upon request)

1994. Received a Certificate of Training in Hazardous Materials Shipping issued by the Department of Public Safety at Kansas State University.

1993. Received Certificate of Training in Laboratory Safety issued by the Department of Public Safety at Kansas State University.

SUSAN E. HATFIELD

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Bryan, TX 77802 Email: susanehatfield@gmail.com

HIGHLIGHTS OF QUALIFICATIONS

- Seven years experience instructing undergraduate laboratories
- Over seven years experience with maintaining inventories, organizing, and purchasing of materials, chemicals, and equipment for laboratories.
- Experienced with safety principles and practices including risk assessment and management, emergency response planning, and hazardous waste disposal.
- Well-organized, detail-oriented team member with excellent oral and written communication skills.
- Synthesized and purified organic compounds including small molecules, polymers, dendrons, dendrimers, and dendritic compounds on a solid support
- Experienced in use and analysis of various analytical techniques including NMR spectroscopy, GC, HPLC, FT-IR and ATR FT-IR spectroscopy, UV/Vis spectrometry, IC, GPC, DSC, and rheometry.

EDUCATION

M.S./Chemistry
May 2007, Texas A&M University, College Station, TX. GPA 3.647
Thesis: "Applications of Triazine Chemistry: Education, Remediation, and Drug Delivery"
Advisor: Dr. Eric E. Simanek

B.S./Chemistry; Minor concentration: Mathematics
May 2002, University of Arkansas at Monticello, Monticello, AR; GPA 4.0 *Summa Cum Laude*

EXPERIENCE

August 2015-Present **University of Arkansas at Monticello,** Monticello, AR, Chemistry Lab Instructor

- In charge of General Chemistry and Introductory Chemistry stockroom, and instructing all sections of those courses.
- Maintain all necessary chemicals and supplies for the laboratory
- Work closely with Chemistry faculty members and coordinate waste chemical storage and removal

March 2012-Present **TDI-Brooks International, Inc./B&B Laboratories**, College Station, TX, Laboratory Supervisor

- Supervise five laboratory technicians during the extraction process of tissues, sediments, and water samples for environmental or geochemical analysis
- Maintain all necessary chemicals and supplies in the laboratory
- Schedule work to maximize efficiency and quality of extraction process
- Work closely with the QA officer for development and implementation of SOPs, and the adherence of documentation and processes for ISO 9001 and NELAP.

August 2010-May 2013 **Blinn College**, Bryan, TX, Adjunct Chemistry Instructor

- Instructed undergraduate General Chemistry course and the accompanying laboratory.
- Responsible for writing and grading exams, quizzes, laboratory exams, etc, as determined by curriculum.

Nov. 2010-March 2012 **Department of Chemistry, Texas A&M University**, Organic Chemistry Laboratory Program, College Station, TX, Technician II

- Prepared and organized needed materials and chemicals for over 1000 students enrolled in undergraduate organic chemistry laboratory courses
- Supervised and trained approximately 15 undergraduate student workers each semester in the preparation and distribution of these supplies, as well as the proper collection and disposal of chemical waste
- Served as Departmental Hazardous Waste Facility Coordinator to ensure proper segregation of classes of chemicals, and proper identification of each container. Worked closely with the University's Safety Officer to ensure department is in compliance with Federal, State, and University policies and regulations. Participated in the Texas A&M University Hazardous Waste Research Group.

June 2010-Nov. 2010 **Energy Laboratories, Inc.,** College Station, TX, Analyst

- Utilized analytical techniques for environmental testing of raw water samples under specific quality control standards.
- Used LIMS system for data entry and inventory management.

November 2009-February 2010 **ExxonMobil Research & Engineering**, Structure & Performance of Organic Materials, Annandale, NJ, Research Technician

- Synthesized polyolefin compounds using air-free conditions and techniques.
- Led the startup process for a Parr Autoclave system to be used for transition-metal mediated olefin polymerizations.

June 2007-October 2009 **ExxonMobil Upstream Research Company**, Gas & Facilities Division, Corrosion & Flow Technology, Houston, TX, Technical Specialist

- Investigated the effects of environmental factors on materials in sweet and sour gas using electrochemical measurements and optical analytical techniques.
- Determined the properties of waxy crude oil samples using DSC, GC, and rheometry.
- Investigated the properties of kinetic hydrate inhibitors.
- Coordinated emergency response drills, assisted in semi-annual calibration of alarm system, conducted daily safety meetings and activity briefings, conducted quarterly safety inspections, provided safety briefings to lab visitors, and served as a safety leader.

Sept. 2002-May 2007 **Department of Chemistry, Texas A&M University**, College Station, TX, Graduate Research Assistant/Teaching Assistant

- Developed an undergraduate chemistry laboratory exercise to demonstrate the nucleophilic aromatic substitution of an organic molecule with environmental and societal applications
- Instructed undergraduate laboratories including Fundamentals in Chemistry I & II, Introduction to Organic and Biochemistry, Organic Chemistry II, and Organic Synthesis and Analysis
- Synthesized chitosan-based materials for environmental remediation.
- Synthesized triazine-based dendrimers for biomedical applications including drug delivery and imaging

Aug. 2000-Aug. 2002 **School of Mathematical and Natural Sciences, University of Arkansas at Monticello**, Monticello, AR, Research Assistant

- Synthesized copolymers of furan with pyrrole or thiophene in both the undoped and doped states to determine conductive properties
- Analyzed the activity of novel cathepsin-D enzyme inhibitors

PROFESSIONAL DEVELOPMENT AND TRAINING

- "Recent Developments of Organic Synthesis" – American Chemical Society Short Course
- "Introduction to Polymer Synthesis" – Center for Engineered Polymeric Materials, College of Staten Island, City University of New York
- "Corrosion: Fundamentals and Experimental Methods" – Department of Engineering Science and Mechanics, Penn State University

APPENDIX F—UNIVERSITY OF ARKANSAS COPYRIGHT AND DISTANCE LEARNING BOARD POLICY

Copyright and Distance Learning

I. Preamble

This policy addresses the use of Technology Enhanced Course Materials (TECM) to effectuate distance learning at the University of Arkansas. Distance learning for purposes of this policy is two-way communication between a teacher and student separated by a geographical distance using technology for the purpose of facilitating and supporting the education process. TECM are materials utilizing electronic transmissions to accomplish such an activity. The objective of this policy is to protect the copyright rights of both the faculty member and the University in TECM and to encourage the offering of quality distance learning programs.

It should be noted initially that, in most instances, the faculty member retains ownership of the copyright in TECM. At the same time, the University retains in all cases (with one exception) at least a non-exclusive license to reproduce and use TECM for educational purposes. The right to market and license TECM is addressed under the ownership and compensation provisions set forth in Section IV of this policy.

TECM have been a part of the curriculum at the University of Arkansas but, for a variety of reasons, there are still many questions about the rights and responsibilities of the University and its faculty members with respect to these methods of instruction. Since the demand for distance learning appears to be increasing and the continuing development of TECM in various media seems likely, it is important to address the issues raised by the creation, use and distribution of various forms of TECM and clarify the rights and responsibilities of each of the parties involved. This policy is a supplement to Board Policy 210.1, Patent and Copyright Policy, and only addresses copyright in the context of distance learning. To the extent this policy conflicts with Board Policy 210.1 on issues involving distance learning, this policy prevails.

II. Issues Raised

- Who owns the copyright in TECM and how should such rights be protected?
- What are the responsibilities of faculty members to utilize various technologies to meet the needs of their currently enrolled students?
- Under what circumstances should faculty members be expected to prepare TECM for use by students not currently enrolled in their classes?
- What are the rights of faculty members with regard to the continuing use of TECM?
- Who may receive Revenue from the sale or licensing of TECM?
- What procedures should be followed to limit liability for infringement of copyright or invasion of privacy or publicity if TECM contains material that belongs to someone other than the University or faculty creator(s) or contains the image or likeness of others.

III. General Guidelines

A. Copyright Ownership. Board Policy 210.1recognizes that in most instances faculty members own the copyright in scholarly works created by the faculty members. Faculty members thus normally hold the copyright in TECM they create on their own initiative. Board Policy 210.1 also recognizes ownership ofcopyright in works of authorship created under contract or as works made for hire as residing with the University ("University Works"). TECM created jointly by faculty authors and by those whose contributions would be works made for hire will be jointly owned by the faculty author and the University. Any owner of copyright in TECM may secure copyright registration; joint owners may, but do not have to, agree to bear responsibility for enforcement of the copyright. Specific ownership rights are addressed in Section IV below.

B. Faculty Responsibility to Currently Enrolled Students. Faculty members have a responsibility to meet the reasonable needs of their currently enrolled students, including those needs best addressed by the use of technologies to make class materials readily available. For example, if recordings may be needed by remoteor handicapped students, they should be created in the ordinary course of teaching and made available under reasonable circumstances. TECM such as tape recordings and videotapes created in the ordinary course of instruction and not intended for use beyond the end of the current semester or by students other than those registered for the class are the property and responsibility of the faculty member who creates or authorizes them. Faculty should be willing to utilize technologies appropriate to the circumstances to make their course materials reasonably available to their currently registered students. Faculty may dispose of such materials in whatever manner they choose at the end of each semester and in accordance with a campus or component records retentionpolicy.

C. Course Development. Faculty may receive release time for duties performed in the best interests of the University's instructional program, including the development of TECM. The grant of release time does not automatically determine the appropriate category to place the work. Normally, such a grant would imply at least a minimal allocation of University resources.

D. Revision Rights. Faculty members should normally retain the right to update, edit or otherwise revise TECM that become out of date, or, in certain circumstances, should place a time limit upon the use of TECM that are particularly time sensitive, regardless of who owns copyright in the TECM. These rights and limitations may be negotiated in advance of the creation of the TECM and may be reduced to writing. Absent a written agreement, each faculty member will have the right and moral obligation to revise the TECM on an annual basis in order tomaintain academic standards. If the University believes a revision is necessary and no timely revision is made or if the revision is made and, in the University's opinion, it does not meet academic standards, the University may refuse to market the product or the University may employ another person to update the TECM

E. Revenue. In accordance with Board Policy 210.1, faculty members shall receive all Revenue (as defined in Board Policy 210.1) that may accrue from the commercialization of

TECM they create on their own initiative. On the other hand, the University retains the right to receive all Revenue from the commercialization of TECM created by faculty members pursuant to contract or as a work made for hire. However, the University may share such Revenue with the creators according to Section I.F of Board Policy 210.1 or on other terms as set by the University in its sole discretion. Copyright law permits joint owners to pursue commercialization either jointly or separately but with an accounting to the other joint owner for Revenue received. Other circumstances may require review on a case-by-case basis (such as the creation of TECM initiated by a faculty member but using University resources over and above those usually and customarily provided.) Absent a contract specifying to the contrary, specific division of Revenue is addressed in Section IV below. In instances of joint ownership between faculty members where the University also retains rights to Revenue, the faculty members shall determine by written document the division of Revenue. Absent a written document of division of Revenue, the faculty members shall divide their share pro rata based on participation.

F. Contributed Materials. Liabilities may be incurred with respect to the inclusion of materials in TECM other than materials created by the author of the TECM and inclusion of voices or images of persons in the TECM, including audience members and guest lecturers. It is the policy of University that all faculty and staff comply with the law, including copyright and privacy laws; therefore, it is the responsibility of the creator of TECM (normally the faculty member) to obtain all permissions and releases necessary to avoid infringing copyright or invading the personal rights of others.

G. Use of University's Name. Faculty members must observe the same requirements that apply in other contexts with respect to the use of the University's name.

H. Protecting TECM. The University will determine whether to register the copyright and will be responsible for enforcement of TECM they own. Faculty members will make such decisions and take such steps to protect TECM they own. Any one of the authors of a joint work may register and enforce the copyright in the names of all owners, with accounting.

I. University Resources Usually and Customarily Provided. When determining ownership and license rights in TECM, "university resources usually and customarily provided" includes such support as office space, library facilities, ordinary access to computers and networks or salary. In general, it does not include use of students or employees as support staff to develop the TECM, or substantial use of specialized or unique facilities and equipment, or other special subventions provided by the University unless approved as an exception.

J. Retention of Nonexclusive License. Except in category I below, the University shall retain, at a minimum, a perpetual non-exclusive, royalty-free license to reproduce and use TECM in its internally administered programs of teaching, research and public service.

K. Administration. The Campus Patent and Copyright Committee shall be responsible for the administration of this policy and applying the policy equitably across the campus. The faculty member should first meet with his/her department chair and dean to determine which category the TECM will be assigned and the ownership, institutional resource commitment and the Revenue. A copy of the agreement will be forwarded to the Patent and Copyright Committee for its review and assurance that the policy is being applied in an equitable

manner. The chair of the committee shall inform the dean and department chair of any inequitable applications of the policy and it shall be the responsibility of the dean and department chair to resolve the issue with the faculty member. If any dispute arises between the faculty member and department chair and dean, they shall initially attempt to resolve the disputed issue. Issues that cannot be resolved by the parties shall be handled in the same manner as in Section II.C.7 of Board Policy 210.1.

IV. Specific Categories Assigning Ownership and Compensation

Faculty members should meet with their Department Chair and Dean prior to creating TECM for distance learning in order to reach an agreement as to the appropriate category classification. It is understood that in some circumstances this category classification may change based upon a modification in University support for the project. Written contracts should be entered into between the University and the faculty member to resolve any issues of ownership and compensation. In addition, each campus or component has the discretion to vary by written contract the ownership of and compensation for any TECM despite the category classification of the TECM.

Category I – Totally Faculty or Staff Generated

Description of Individual and University Contribution:

The TECM resulted from an individual's efforts on his own personal time without any direct support from or through the University and without the use of any University resources beyond those usually and customarily provided.

Examples:

1. A faculty member in the School of Social and Behavioral Sciences at UAM works with a publishing company to create a Web-based course. The publishing company provides 700 hours of instructional design and production support and the course is mounted on the company's server. All of the work is done on the faculty member's own time, but some of the development is done on weekends using the faculty member's office computer. Development software licensed by UAM that is available throughout the department is also used. The course is mounted on a commercial server.

2. A professor at one of the law schools is approached by the publishing arm of a learned society to create a CD containing 2,000 images of evidence that this professor has photographed in preparing for classes over the years. The professor took the photographs on weekends using own camera and film, but on the department's copystand. The learned society creates and markets the CD.

Ownership and Compensation:

The individual owns the copyright and is entitled to receive all Revenue from the commercialization of the TECM.

Category II– Minimal University Resources

Description of Individual and University Contribution:

The work resulted from the individual's efforts with minimal resources above and beyond those normally provided.

Examples:

1. A faculty member at UAMS works with Digital Inc., a Web course publishing company, to put the course, Serving an Aging Population, totally on the Web. The University provides funds to purchase time from UAMS's Media Services to videotape two hours of lecture to be streamed as part of the course. In addition, the UAMS Library checks out to the faculty member one of two digital recording workstations for a period of two weeks. Digital Inc. spends over 300 hours recording materials provided by the faculty member and creating the Web course, and mounts the course on their server. The faculty member works on the project almost exclusively on his/her own time.

2. An adjunct faculty member at UAPB who teaches Accounting Principles for Non- Profit Agencies for UAPB volunteers to put half of the course on the Web. UAPB provides 30 hours of training on WebCT, the Web platform utilized. UAPB also provides twenty hours of assistance in creating a Power Point Presentation to be used as part of the course. The adjunct faculty member spends 200 hours creating the course on their own time. The course is mounted on the University's server.

Ownership and Compensation:

The individual owns the copyright and has the right to distribute the TECM. The individual may receive the Revenue for any distribution outside the University course delivery. The University has a non-exclusive, royalty-free license to use the work as part of the University course delivery. The University may agree, in its sole discretion, to compensate the faculty member for its use of the TECM.

Category III– Substantial University Resources Are Provided

Description of Individual and University Contribution:

The work resulted from the individual's efforts with use of University resources above and beyond those usually and customarily provided.

Examples:

1. A faculty member at UA-Fayetteville volunteers to make her department's Literature for Children Course totally available on the Web. The faculty member is provided with release time in the Spring Semester and paid for a course in the Summer to develop the product, but also contribute some of her own time. The University provides a substantial grant to purchase a digital camera to use in the project or a .5 FTE Web developer housed in the department for a semester to work with the faculty member. Personnel from University Relations record speakers for the class, digitize audio and video, totaling over 300 clock hours of production and support services. The course is mounted on the University's server.

2. UALR's MBA Program decides to offer the degree by taping courses and allowing employees of two corporations to download the courses to view on their own schedules. Three faculty from the EMBA Program will rotate grading and answering questions for each course. A faculty member who teaches Human Resource Management volunteers to offer the first course. During the next year, this faculty member is given release time each semester and paid for two courses in the Summer. UALR funds production time in the Radio, Television and Film Department for the production of the tapes. Computing Services contributes significant hours in digitizing the tapes. The faculty member spends 60 hours over the year of their own time designing the course for television delivery. The University mounts the course on its server.

Ownership andCompensation:

The individual and the University may be joint owners of the copyright under Example 1 and therefore, absent an agreement, each has the right to distribute it and receive Revenue for any distribution outside the University course delivery. At the minimum, the University has a non-exclusive license to use the work as part of University course delivery and a non-exclusive commercial license to market the course outside the University, subject to an accounting of Revenue to the other joint owner.

Category IV– Work Made For Hire – University Assigns Duty to Faculty or Staff Member to Develop a Work

Description of Individual and University Contribution:

An employee of the University was contracted to develop a specific product. The University provided all resources for the work. The work was carried out totally as a part of the faculty or staff member's assigned time.

Example:

1. The Dean of the College of Education at UALR assigns a faculty member to a course that will be videotaped and broadcast the next year to sites in five school districts as part of a new Master's Program offered by the college. The faculty member is given release time for

the Fall and Spring Semester and is paid a task payment. All of the design and production work is done during working hours. The faculty member is assigned a .5 FTE research assistant for the academic year. The Radio, Television and Film Department contributes 250 hours in the design and production of the videotapes.

Ownership and Compensation:

The University owns the copyright and has exclusive educational and commercial ownership and licensing rights. The faculty or staff member is not entitled to a share of the Revenue except as agreed upon by the University in its sole discretion.

Category V– Faculty Member Uses Own Work as Part of Course Offering at University

Description of Individual and University Contribution:

The faculty member is using TECM that he/she created as part of his/her teaching duties at the University.

Examples:

1. See Category II, Example 1 above. In this case, the faculty member might offer the course at the University. The University would pay the previously negotiated fee to Digital, Inc. for access to the course materials, but this payment would not include compensation to the faculty member beyond the standard compensation for teaching the course.

2. See Category III, Example 2 above. In this case, the faculty member might teach the course to students in the program. There would be no compensation to the faculty member beyond the standard compensation for teaching the course.

Ownership and Compensation:

Ownership will be determined by categories one through four. There will normally be no extra compensation beyond normal teaching compensation for use of the TECM except as agreed upon by the University in its sole discretion.

APPENDIX G: INITIAL PLACEMENT OF CHEMISTRY GRADUATES, 2006-2015

Traditional Chemistry graduates are listed as Chemistry

Chemistry with Biochemistry Option are listed as Biochemistry

Student	Year	Major	2nd Major	Placement
Brown, Joe W	2015	Biochemistry	Biology	UAMS College of Medicine
Cook, Danielle	2015	Biochemistry	Biology	Working in business unrelated to chemistry, preparing to take MCAT exam
Derrick, John	2015	Biochemistry	Biology	Working in business unrelated to chemistry
Emanuele, Alexa R	2015	Biochemistry	Biology	UAMS College of Pharmacy
Hill, Brannon	2015	Biochemistry	Biology	UAMS College of Pharmacy
Holland, Douglas	2015	Biochemistry	Biology	Masters program in biology Texas A&M International
Cash, Jake	2015	Biochemistry		UAMS College of Pharmacy
Emberton, Courtney	2015	Biochemistry		UAMS College of Pharmacy
Rice, Wendy	2015	Biochemistry		ULM College of Pharmacy
Snider, Taylor	2015	Chemistry		Working in business unrelated to chemistry
Whipple, Joel	2015	Biochemistry		UAMS College of Medicine
Cagle, Douglas	2014	Biochemistry	Biology	D. O. School, William Carey
Cason, Samual	2014	Biochemistry	Biology	UT-Memphis Dental School
Chancellor, Shana	2014	Biochemistry	Biology	UAMS Ph.D. Program in Molecular Biology
Cucurullo, Tessa	2014	Biochemistry	Biology	D. O. School, William Carey (switched to M.S. Program)
Dunlap, Hope	2014	Biochemistry	Biology	LSU Vet School
John Austin Beatty	2014	Biochemistry	Biology	UAMS College of Medicine
Reyes, Ryan	2014	Biochemistry	Biology	Yale University PREP research internship. then Ph.D./M.D. program at the University of Texas-San Antonio
White, Darren	2014	Biochemistry	Biology	Working in business unrelated to chemistry and preparing for the MCAT exam
Rice, Haley	2014	Biochemistry		UT-Memphis College of Pharmacy
Smith, Kaitlyn J	2014	Biochemistry		Harding Univ. College of Pharmacy
Coleman, Kody	2014	Biochemistry	Mathematics	Applied to NASA Internship / Accepted into graduate program in Astronautics and Aeronautics at Purdue Univ.
Kelley, John Bo	2013	Biochemistry	Biology	Univ of Memphis, Ph.D. program in Neurobiology
Livingston, Olivia	2013	Biochemistry	Biology	Harding Univ. College of Pharmacy
Norrell, Nicki	2013	Biochemistry	Biology	UT-Memphis Pharmacy College of Pharmacy
White, Alexandra	2013	Biochemistry	Biology	UAMS College of Pharmacy
Roberts, Trent	2013	Biochemistry	Biology	Alternate at Univ. of Tennessee Dentistry Program Currently working in a dental lab
Hearnsberger, W. Glyn	2013	Biochemistry		Industrial Chemist at Aerojet Rockets in Camden, AR
Probst, Nathan	2012	Biochemistry	Biology	UAMS College of Medicine

Student	Year	Major	2nd Major	Placement
Rose, Robert	2012	Biochemistry	Biology	UAMS College of Medicine
Stephens, Faye	2012	Biochemistry	Biology	Ph.D. Biology program, Auburn University
Claycomb, Adair	2012	Biochemistry		Ph.D. Chem program, Univ of Arkansas
Dickey, Jessica	2012	Biochemistry		UAMS College of Pharmacy
Ellington, Christopher	2011	Biochemistry	Biology	UAMS College of Medicine
Lockwood, Joseph	2011	Biochemistry	Biology	LSU New Orleans, College of Medicine
Hathcox, Joshuah	2011	Biochemistry	Biology	Drilling Engineer at Weisinger Incorporated, Houston area
Leftwich, Manda	2011	Biochemistry	Biology	Lab Tech at Harvest Rice in McGehee
Miller, Brandon	2011	Biochemistry		Univ. of Okla. College of Pharmacy
Pope, Samual	2011	Biochemistry		Univ. of Louisville Dental School
Renfroe, James A	2010	Biochemistry	Biology	UAMS College of Medicine
Scott, Shyann N	2010	Biochemistry	Biology	UAMS College of Medicine
Gibson, Kimberly J	2010	Biochemistry	Biology	Regional Trainer for Dialysis Clinics
Willis, MacKenzie l	2010	Chemistry	Mathematics	M.S. Program in Forensic Chemistry and Sam Houston State University
Lowe, Shuneize E	2009	Chemistry		Ph.D. Chemistry, University of Mississippi
Ramsey, Ashley	2009	Chemistry		Ph.D. Chemistry, University of Arkansas
White, Vicki L	2009	Chemistry		Industry Chemist related job for company in KS
Henley, Maranda	2008	Chemistry	Biology	UC-San Diego Ph.D. program in Chemistry
Trana, Carol J	2008	Chemistry	Biology	Graduated Physicians Asst. Program at Harding Univ.
Rymes, Lindsay	2008	Chemistry		Ph.D. Program in Chemistry, Univ. of Minn; however completed M.S. in Chemistry
Temple, Amanda	2007	Chemistry	Mathematics	D.O. Virgina Tech
McConnell, Matthew	2006	Chemistry		M.S. Chem, Southern Miss; Now in Ph.D. Chem University of Iowa
Webb, Jerri	2006	Chemistry		Ph.D. Chem, University of Arkansas

APPENDIX H—CLASSROOM VISITATION POLICY, CLASSROOM VISITATION EVALUATION FORM,

Classroom Visitation Policy
School of Mathematical & Natural Sciences

The peer reviewers and the Dean will conduct classroom visits of all faculty receiving a full evaluation - faculty during their first six years of service, other faculty on a five year cycle, and faculty wishing to be considered for promotion and/or tenure. The individual being reviewed will meet with the reviewers to decide upon the class or classes to be visited, the possible days for observations, methods, and other details. The reviewers will be given a choice of several days in which they may make observations.

Each reviewer will record his/her observations on the designated form (see attached.) Within ten days of the classroom observation a copy of the report will be provided the faculty member. The observed faculty member will be able to discuss any areas of disagreement with the observer. The reviewer and the reviewed faculty may request additional observations.

For continuing faculty, peer reviewers will be appointed by January 31 of each year. Peer reviewers for new faculty with an original appointment for the Fall semester will be appointed by September 30.

School of Mathematical & Natural Sciences Classroom Observation Form

Instructor's Name: _____ Course:

Date & Time: _____ Evaluator:

Approximate number of students in class:

Format of course: (Eg. Lecture, laboratory, lecture/discussion, seminar)

Preparation & Organization:

Does the instructor appear to be prepared for the course?

Comments:

Is the presentation at a level appropriate for the course?

Comments:

Are the objectives for this meeting of the class clear?

Comments:

Is the presentation organized?

Comments:

Does the instructor appear to be interested in the subject?

Comments:

Does the instructor appear to be interested in the student?.

Comments:

Does the instructor encourage student involvement in class?

Comments:

Does the instructor appear to have a good rapport with the students?

Comments:

Mechanics:

Can the students read material in the manner in which it is presented?

Comments:

Is the instructor's voice understandable to students - both clear and sufficiently loud?

Comments:

Does the instructor maintain eye contact with students?

Comments:

Does the instructor use technology in an appropriate manner?

Comments:

Other comments:

Include any additional comments relevant to this class. Be as specific as possible. Use NA if the item does not apply to this class.

APPENDIX I—PROPOSED NEW UAM SCIENCE CENTER

SITE PLAN

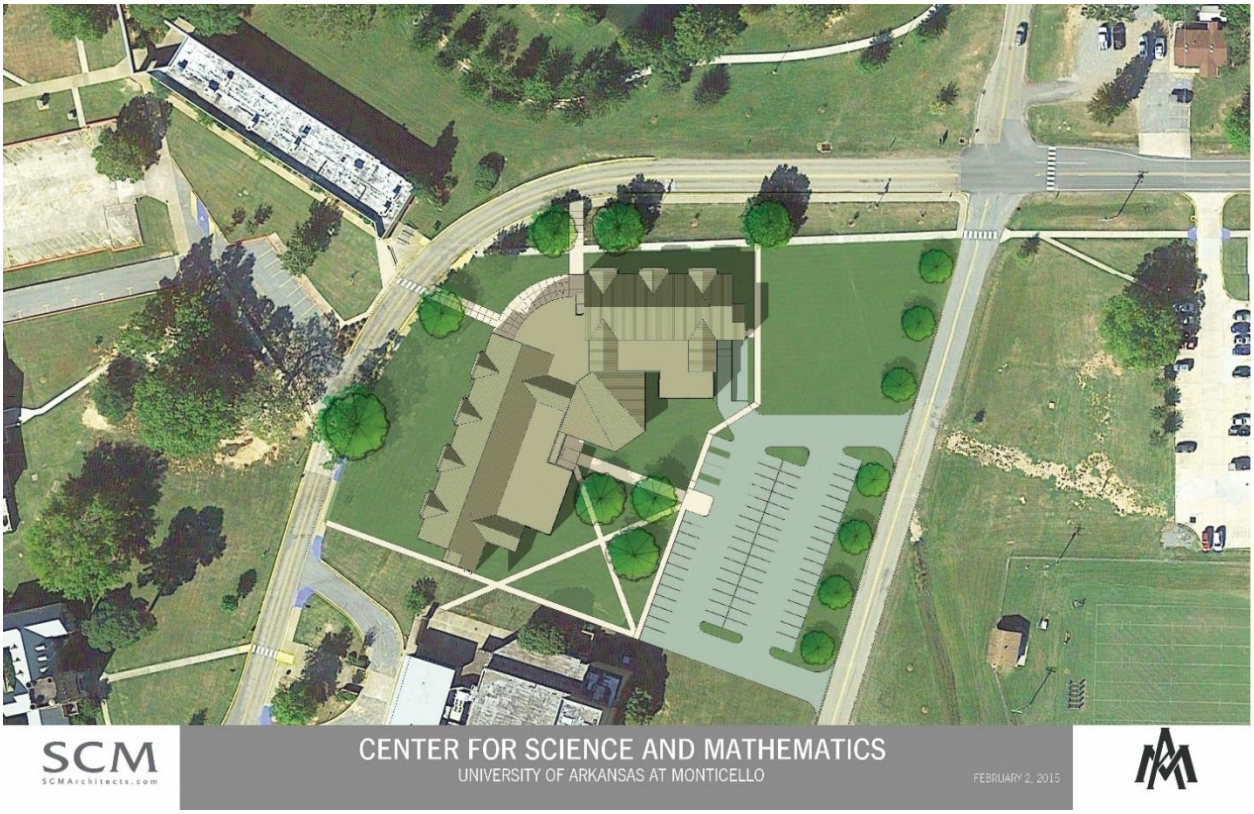
NORTHWEST PERSPECTIVE

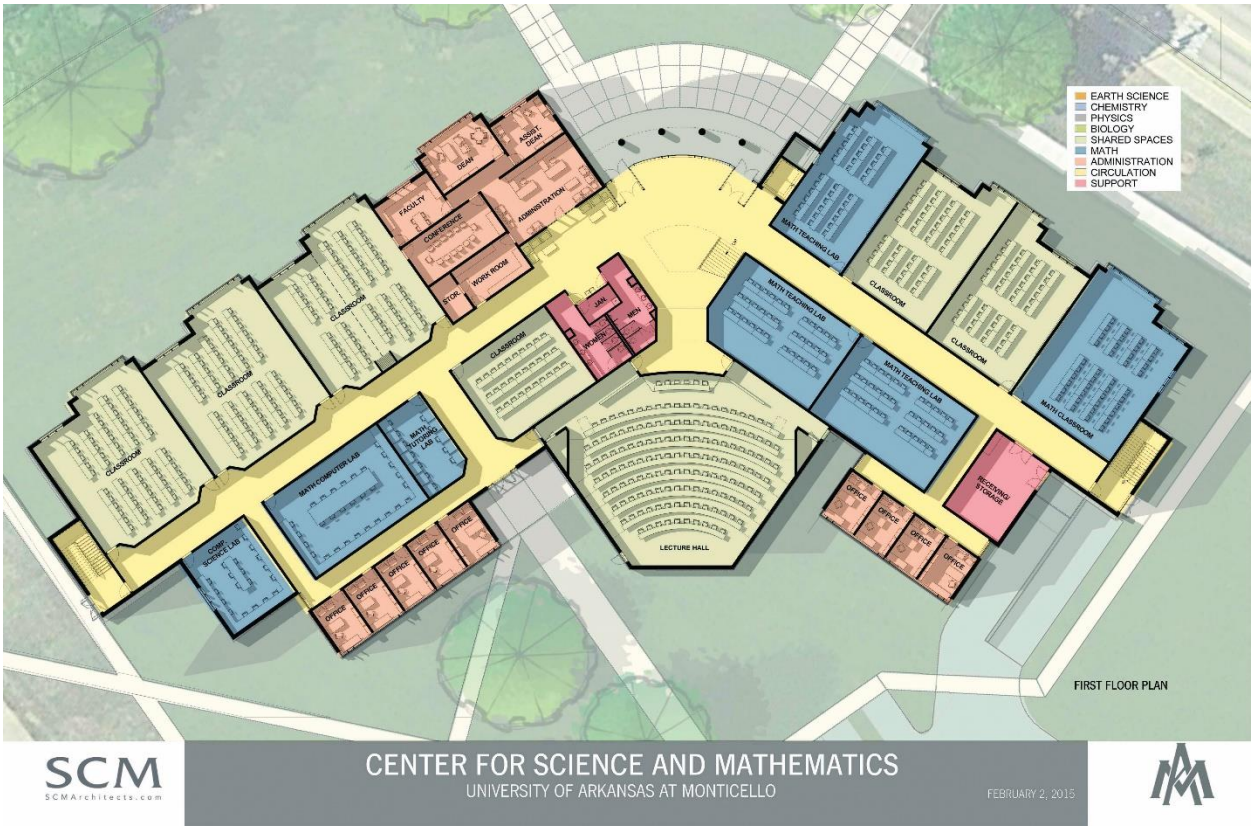
SOUTHEAST PERSPECTIVE

FIRST FLOOR PLAN

SECOND FLOOR PLAN

THIRD FLOOR PLAN


SCM
SCMArchitects.com
CENTER FOR SCIENCE AND MATHEMATICS
UNIVERSITY OF ARKANSAS AT MONTICELLO
FEBRUARY 2, 2015



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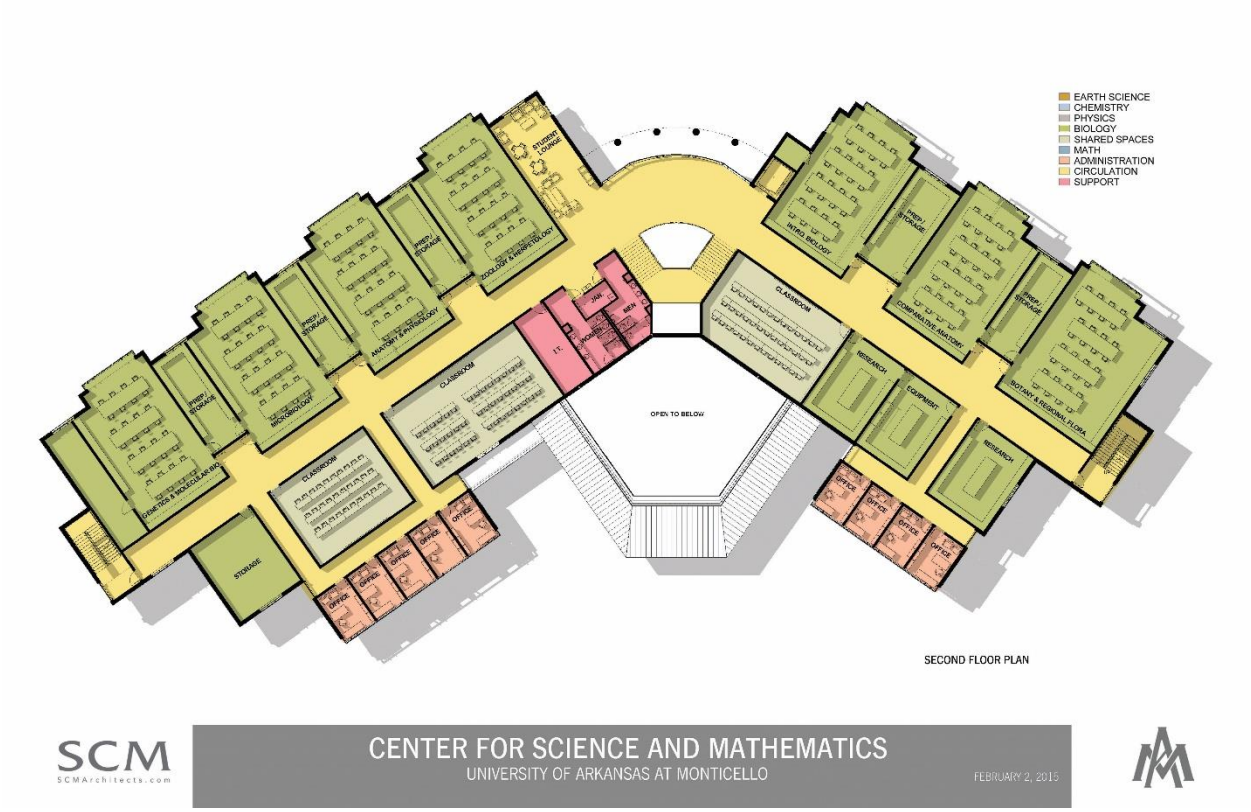
FEBRUARY 2, 2015



SECOND FLOOR PLAN

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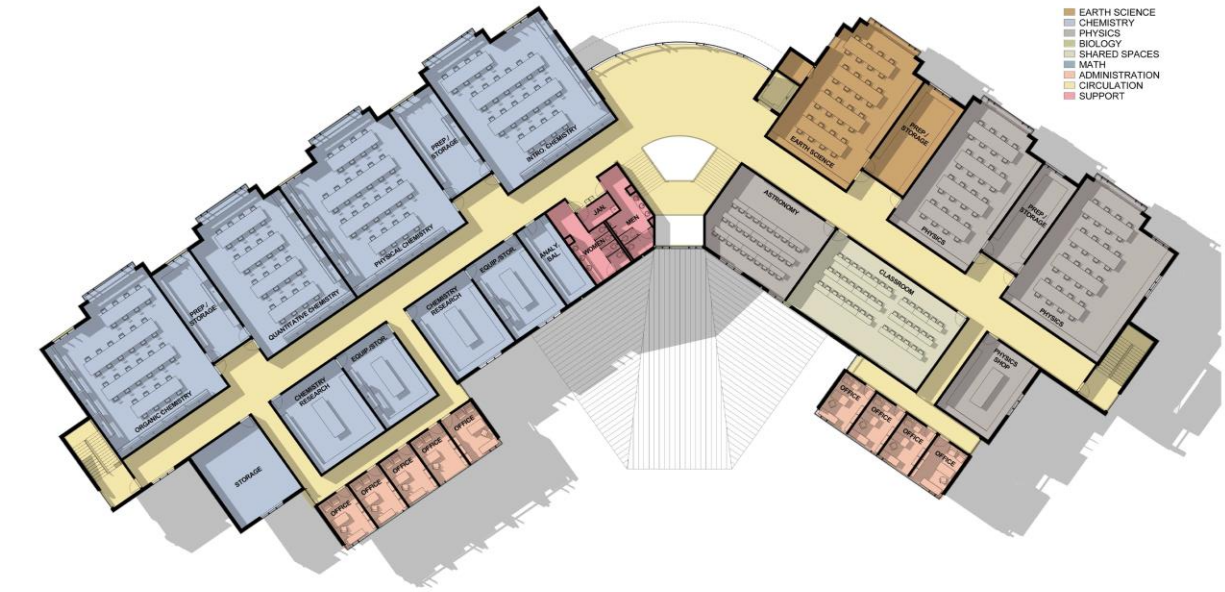

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FEBRUARY 2, 2015

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