

Pre-Pharmacy A.S. Degree Program Review Report

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Program Name and History

The Pre-Pharmacy Associate of Science degree is intended to prepare students for admission to the College of Pharmacy at Ferris State University. A program with this aim has been at Ferris for decades, as many students attend Ferris to obtain the credentials for pharmacy.

The current AS degree in Pre-Pharmacy was developed during the 2016-2017 academic year. The necessity for a separate degree was spurred by the needs of students in FSU's Tuition Incentive Program (TIP). These students had to enroll in an associate's degree, and the existing associate's degree in Pre-Science was not specific enough for pre-pharmacy students. A committee from the College of Arts and Sciences (specifically, from the Biology and Physical Sciences Departments) debated how to formulate two-year degrees for our students. One option was to have a single all-encompassing degree. However, due to the number of pre-pharmacy students with specific entry requirements, the committee opted to devise two associate degree programs: one in pre-pharmacy and the other in natural science for other students.

Requirements for students in a pre-pharmacy curriculum or program have changed over time as the College of Pharmacy moved from a B.S. degree to a Pharm.D. degree. Admissions requirements in both science and math were increases when the Pharm.D. was instituted, so the amount of time for a beginning first-year student to finish meet pharmacy entry qualifications went from two years to three years. The current Pre-Pharmacy degree incorporates all of the courses required by our College of Pharmacy, as well as the general education courses required for a bachelor's degree.

Program Mission

FSU mission statement.

Ferris State University prepares students for successful careers, responsible citizenship, and lifelong learning. Through its many partnerships and its career-

oriented, broad-based education, Ferris serves our rapidly changing global economy and society.

College of Arts and Sciences mission statement.

Through academic programs, general education, and outreach activities, the College of Arts and Sciences provides a learning-centered education that prepares students to contribute to a complex and diverse world.

Physical Sciences Departmental Mission Statement.

The department of Physical Sciences provides students with the opportunity to acquire the knowledge and skills needed to be successful in their science-related careers and regardless of career path, to be scientifically literate citizens.

Program Mission Statement.

The mission of the Pre-Pharmacy degree program is to provide students with the basic knowledge and skills to become successful applicants to a pharmacy college and ultimately to pursue a career in pharmacy.

Both the university and college mission statements refer to the preparation of students—for their careers and for life in a complex world. The specific program requirements of Pre-Pharmacy help prepare students for their careers, by providing the foundation in math and science that will be used in their professional education in pharmacy. The general education requirements help students prepare for a complex and diverse world.

Given that the mission of the program is to prepare students for professional school, curricular decisions are related to the program's mission, as shown by the development of the current degree.

The students spend much of their time in biology and chemistry classes, so the mission statements of the program and the departments are closely linked. Students in Pre-Pharmacy are preparing for a career in science, and the missions of the two departments involved are not only providing science to create literate citizens, but also to prepare students for scientific careers. While students aren't taking courses focused solely on pharmacy in the AS degree, they are learning the basic science they need.

Program Goals

The learning outcomes for the students are:

- Explain major concepts underpinning pharmacy, including those from biology, chemistry, physics and mathematics.
- Apply scientific theories and principles to analyze and solve problems.
- Perform laboratory experiments in a safe and appropriate manner.
- Apply the scientific method to the interpretation of experiments and experimental data.
- Clearly communicate scientific information in both oral and written forms.
- Collaborate in various team settings.

These goals were developed in Fall 2016; they are similar to (but not identical with) the goals for students in other programs in the Biology and Physical Sciences Departments. Previous iterations of pre-pharmacy didn't have explicitly-stated student learning outcomes. While all of the goals are related to the students' professional aspirations, the first three goals emphasize the skills, abilities and knowledge that they'll need to enter pharmacy. The last three goals are related to the students' general education, that is, their need to interpret data, communicate with others, and collaborate on teams.

Programs in physical sciences all have similar goals, incorporating the following items:

Program Goal #1: Use program assessment data to improve student learning.

Desired Outcome: Assessments demonstrate that student learning is improving.

Program Goal #2: Continuously evaluate program offerings.

Desired Outcome: Strengthen programs and broaden options for all students.

Program Goal #3: Maintain and upgrade learning spaces and equipment.

Desired Outcome: Improve student learning experiences through up-to-date equipment and facilities.

Program Goal #4: Support faculty development.

Desired Outcome: Maintain a high quality knowledge base for departmental faculty.

Recent actions regarding these goals.

Goal #1: assessment. The program learning outcomes were formulated last year. As assessment plan will be devised for these outcomes in Fall 2017, including:

- a curriculum map linking the goals with courses
- a determination of which courses will be used for program assessment
- a time sequence for when the courses will be assessed (not every course will be assessed every semester).
- specific plans for assessment of these courses.

Goal #2: evaluation of course offerings. The set of courses in the program was recently revised (Fall 2016), and the required courses in the major support the expected student outcomes. During the process of assessment, faculty will have the opportunity to review how well the courses are performing.

Goal #3: learning spaces and equipment. Typically the most pressing space and equipment needs in Biology and Physical Sciences are related to upper-level courses, particularly laboratory classes. Few classes of this type are in the associate's degree. However, since many students transition to another program before applying to the College of Pharmacy (particularly to the pre-pharmacy

option of the Biology BS degree), it is important to maintain and update the equipment in all the labs.

Goal #4: support for faculty development. Faculty in both Biology and Physical Sciences are supported by the dean's office, with a per-faculty-member allotment given to the departments for faculty development. In the College of Arts and Sciences, each department determines how this funding is to be distributed.

Curriculum

The program checklist and syllabi for required science and math courses in the program are attached in the appendix. The courses in the program are necessary for entering the FSU College of Pharmacy or for completing a bachelor's degree prior to entering a college of pharmacy (whether FSU or elsewhere).

Some of the general education requirements are dictated by pharmacy entrance standards (for example, the required course in economics). Outside of math and science requirements, if a general education course isn't required for graduate or as an entry requirement, then the choice of that elective is left up to the students, in consultation with their advisors.

The requirements for the program are communicated to the students during orientation, and then reinforced through the advising process. There are two professional advisors who work with students in the pre-pharmacy program. Most incoming students meet these advisors at orientation. Students typically remain assigned with the professional advisor for at least a year. Students who appear to be well on their way are transferred to a faculty advisor as early as the sophomore year. These students may be continuing with the pre-pharmacy program, or they may transfer to another program (such as Biology's four-year BS in pre-pharmacy).

Our professional advisors remain in contact with the College of Pharmacy. They also arrange for combined meetings of Pharmacy administrators and Arts and Sciences faculty advising pre-pharmacy students. The combined meeting occurs at least annually; a smaller subset of personnel may meet more frequently

throughout the year. The combined meeting is an opportunity for faculty advisors to learn about the nuances of the admissions process, such as the various factors in a student's portfolio count towards admissions (including overall GPA, math/science GPA, PCAT test scores, and the interview process). The contribution that each factor makes may vary from year to year. In addition, advisors need to be aware of other factors, such as when/if students should repeat a course due to grades. Math and science courses must have a C grade to be acceptable; however, too many repeats of a course (for example, a student trying to raise a B to an A) isn't necessarily advisable. These meetings keep advisors aware of what they need tell their students.

As mentioned before, the program itself was recently revised as an associate's degree meeting all of the requirements for pre-pharmacy. Since students need three years of classes for entry, the number of courses and hours (84 credits minimum) in this degree reflect the fact that more than two years is needed to become prepared for professional school.

Assessment of Student Learning

Although they have been listed before, once again, here are the learning outcomes for students in the pre-pharmacy program:

1. Explain major concepts underpinning pharmacy, including those from biology, chemistry, physics and mathematics.
2. Apply scientific theories and principles to analyze and solve problems.
3. Perform laboratory experiments in a safe and appropriate manner.
4. Apply the scientific method to the interpretation of experiments and experimental data.
5. Clearly communicate scientific information in both oral and written forms.
6. Collaborate in various team settings.

Last year all bachelor-degree-granting programs in the College of Arts and Sciences devised complete assessment plans, including: a) a revision of the learning outcomes; b) a list of courses required for all majors in the program; c) a curriculum map showing the links between program outcomes and courses; and d) an assessment calendar showing the semesters (over a two-year period) in which outcomes would be assessed in various courses in the curriculum map.

As this is an associate's degree program, the full implementation of this plan has not yet been undertaken for Pre-Pharmacy. Steps a) and b) are done; the latter two steps still need to be completed.

Having said that, there are so many overlaps between this associate's degree and bachelor's degrees in Biology and Chemistry that it will be possible to finish the preparation for assessment and collate some results quickly. For example, both departments have programs with a learning outcome similar to #1, and the results reported for the explanation of majors concepts could be immediately applicable to this program. Similarly, both departments already have assessment results with regard to #5, the communication of scientific information. Outcomes #3 and #4 will automatically be handled as the new general education outcomes in the natural sciences are assessed, as one of these learning outcomes references experiments.

This program does not currently have a faculty champion or coordinator; such a person would help in getting the assessment process up to speed.

Program Profile

Enrollment (Headcounts)

		On campus	Off campus	On-line	Total
2012	Freshman	224	0	0	224
	Sophomore	170	0	0	170
	Junior	38	0	0	38
	Senior	3	0	0	3

		On campus	Off campus	On-line	Total
	TOTAL				435
2013	Freshman	187	0	0	187
	Sophomore	133	0	0	133
	Junior	30	0	0	30
	Senior	0	0	0	0
	TOTAL				350
2014	Freshman	155	0	0	155
	Sophomore	132	0	0	132
	Junior	44	0	0	44
	Senior	4	0	0	4
	TOTAL				335
2015	Freshman	133	0	0	133
	Sophomore	110	0	0	110
	Junior	84	0	0	84
	Senior	12	0	0	12
	TOTAL				339
2016	Freshman	74	0	0	74
	Sophomore	86	0	0	86
	Junior	66	0	0	66
	Senior	9	0	0	9
	TOTAL				235

The number of students in the program has decreased over the last five years. Part of the decrease is due to students opting to complete a portion of their pre-pharmacy program at a community college closer to home. Most communi-

ty colleges offer all of the courses in the first two years of the program at lower cost. Some of the courses in the junior year are offered primarily at four-year institutions (such as CHEM 364, a junior-level biochemistry class), so students would need to attend a four-year university to complete their requirements.

The College of Arts and Sciences is concerned about this drop in numbers and is taking steps that may reverse the decline. One is the re-vamping of the pre-pharmacy curriculum into a pre-pharmacy associate’s degree. Some students may find it attractive to earn a degree after two years, rather than waiting for a bachelor’s degree after four or taking a more generic associate’s degree in pre-science. Another is emphasizing the possibility of transferring to a four-year program here at Ferris after completing the associate’s degree. If a student isn’t admitted to the College of Pharmacy after three years, it is a seamless transition to a four-year program at FSU.

Dr. Anne Spain of the biology department will be overseeing a new program designed to attract students and give them support. She and Dean Haik have worked together to create the POSIT program—Pharmacy and Optometry Scholars In Training. Students admitted to this program will live together, take many of their science and math classes together as cohorts, and have the chance to work more closely with faculty members, both in terms of work done in labs and research conducted outside of class. This year’s entering class has a full complement of POSIT scholars.

Student Credit Hours

		On campus	Off campus	On-line	Total
2012	Freshman	3552	0	0	3552
	Sophomore	2085	0	0	2085
	Junior	691	0	0	691
	Senior	237	0	0	237
	TOTAL				6565
2013	Freshman	3563	0	0	3563
	Sophomore	2190	0	0	2190

		On campus	Off campus	On-line	Total
	Junior	473	0	0	473
	Senior	87	0	0	87
	TOTAL				6313
2014	Freshman	3707	0	0	3707
	Sophomore	2203	0	0	2203
	Junior	683	0	0	683
	Senior	44	0	0	44
	TOTAL				6637
2015	Freshman	3547	0	0	3547
	Sophomore	2452	0	0	2452
	Junior	507	0	0	507
	Senior	35	0	0	35
	TOTAL				6541
2016	Freshman	2812	0	0	2812
	Sophomore	1898	0	0	1898
	Junior	399	0	0	399
	Senior	9	0	0	9
	TOTAL				5118

Again, as mentioned in the previous section, the number of credit hours has dropped, especially from 2015 to 2016.

Productivity

Year	Department	SCH/FTEF (annual)
2012	Biology	619.49
2013	Biology	636.03

Year	Department	SCH/FTEF (annual)
2014	Biology	618.42
2015	Biology	595.73
2012	Physical Sciences	778.04
2013	Physical Sciences	777.76
2014	Physical Sciences	783.94
2015	Physical Sciences	772.33

There is no course in this program unique to pre-pharmacy, so there is no single course prefix that can be used to represent the productivity of the program. However, the productivity of the Biology and Physical Sciences Departments does give an indication of the pre-pharmacy program itself.

Enrollment - Residency

	Resident	Midwest Compact	Non-Resident
2012	405	21	9
2013	333	13	4
2014	322	10	3
2015	327	0	12
2016	227	0	8

Most of the student in Pre-Pharmacy are Michigan residents, and this is not surprising. Students from other states can complete the entrance requirements for Pharmacy locally, as all the required courses are standard math and science classes.

Enrollment - Age

Average Age	
2012	18
2013	18
2014	18
2015	18
2016	18

Since many students are transitioned out of pre-pharmacy to another program prior to graduation (as mentioned before), it is not surprising that the average age is 18.

Enrollment - GPA

Average GPA	
2012	3.23
2013	3.10
2014	3.22
2015	3.26
2016	3.33

There isn't much change in average GPA from year to year. During the advising process, students are reminded that overall GPA is one of the factors considered in admission to Pharmacy. Some students do move from pre-pharmacy to another major based, in part, on their ability to maintain a GPA in their science and math classes.

Enrollment - ACT

Average ACT	
2012	25.59
2013	25.33
2014	25.41
2015	25.53
2016	25.95

Compared to other programs on campus, the average ACT score is on the higher end. In order to be enrolled in pre-pharmacy, students must have the background to take MATH 120. Since the MATH ACT (and now SAT) is one of the factors determining math placement, this subscore for program enrollees helps drive up their overall ACT scores. Once the ACT exam has been used for placement, it isn't used for subsequent purposes in the program.

Enrollment - Gender/Ethnicity/Full-Time Status

	2012	2013	2014	2015	2016
Enrolled	435	350	335	339	235
Gender					
Male	202	156	141	146	86
Female	233	194	194	193	149
Ethnicity					
Unknown	8	8	4	1	1
Black	11	7	8	5	1
Hispanic	12	12	11	13	8
Native Am	1	1	2	1	2
Asian	17	13	15	16	14
White	368	297	283	293	202
Hawaiian	0	0	0	0	0
Multi	12	8	10	7	5
Foreign	6	4	2	3	2
Status					
Full time	433	346	329	332	234
Part time	2	4	6	7	1

The majority of student in pre-pharmacy are female. Almost all of the students are full time. And while the overall number of students in the program has dropped, the drop is most pronounced in black students. Again, some of the efforts mentioned before (such as the POSIT scholars) may help reverse this trend.

Graduate Data

	AY 2012	AY 2013	AY 2014	AY 2015	AY 2016
Graduates	3				
Avg. GPA	3.55				
Avg ACT	29				

Institutional Research information shows 3 graduates in AY 2012 (2011-2012), and there is no information for the following years. The pre-pharmacy degree is newly created. Previous students may have received an associate in science degree (if they sought an associate degree at all), or may have transitioned to the bachelor's level for their degree. Now that there is a new program, we may see more students graduating with a degree. However, the purpose of this curriculum is more geared towards fulfilling the entrance requirements for pharmacy, whether at FSU or elsewhere.

State and National Exams

Students are not required to take an external examination to graduate from this program. If they wish to enter a college of pharmacy, then they must take the PCAT exam; however, those exam scores would be sent to the professional school(s) of their choice, not the undergraduate programs.

Program Value beyond Productivity and Enrollment Numbers

Pharmacy is one of FSU's signature programs, and students who want to be prepared for entering the College of Pharmacy are attracted by a program specifically designed for them. Students who complete their pre-pharmacy education at Ferris have some opportunities that students on other campuses don't have, including the ability to interact with (and possibly conduct research with) professors in the College of Pharmacy. They can also learn what it's like to be in a college of pharmacy by talking with current professional students. This program is necessary for our TIPS students, because they can easily justify all the courses that they're taking for this associate's degree.

Program Flexibility and Access

Most students enter the pre-pharmacy program as freshmen. The science courses are all offered in a face-to-face format here on the main campus in Big Rapids. Students more than fulfill their general education requirements in quantitative reasoning and natural science in this program, due to the number of courses prescribed by their future entrance into pharmacy. They do have some choice about the general education electives they take. We don't plan to take courses in the program to off-campus locations, as the community colleges hosting our off-campus sites already have (for the most part) counterparts that transfer back to FSU as equivalents.

One aspect of flexibility that FSU offers that isn't found in many other locations is the ability to complete year-long science sequences in the summer, including general biology, general chemistry and organic chemistry. So if a student gets off sequence during the regular academic year, there is an opportunity to catch up with the rest of the cohort and remain on track to finish in three years.

Visibility and Distinctiveness

Because FSU has one of three colleges of pharmacy in the state, many undergraduates naturally look to FSU as the locale for completing pre-pharmacy requirements. This helps to attract students, and gives our program visibility.

The courses that students need to take, whether they are enrolled at FSU or elsewhere, are the same. So from that standpoint, our program is not distinctive, nor is it meant to be. But there are advantages for students who study at Ferris. Because pre-pharmacy is such a large program (and attracts more students than any other single program in Physical Sciences or Mathematics), there are many professors who serve as advisors and understand that a significant percentage of their students have pharmacy as a goal.

Demand

Recent enrollments reflect a downturn in demand for pre-pharmacy at FSU. As mentioned in an earlier section, the science departments have the capacity to handle more students in the program, and we are taking steps to make pre-pharmacy at Ferris more attractive to potential students.

Student Achievement

Many students in the pre-pharmacy program are Honors students. As such, they take many classes together and live in the same dorms; they have abundant opportunities to interact with each other and to learn together. Sophomore students can encourage the freshmen by letting them know what it was like for them to adjust from high school to college classes.

There is also a long-standing Pre-Pharmacy student group at Ferris, which allows students of similar interest to cooperate academically and socially.

Undergraduates also have opportunities to participate in research with faculty in the Physical Sciences and Biology Departments. Pre-pharmacy majors are often among the best students in class, and professors encourage them to work one-on-one or in small groups on extended projects.

However, there is no single faculty advisor with the responsibility of overseeing the pre-pharmacy program, so we don't have hard data on the out-of-classroom student participation of our pre-pharmacy students.

Employability of Graduates

Currently, most students are seeking to enter a college of Pharmacy, and most of our students do so after switching to a bachelor's program of their choosing (typically the BS Biology in Pre-Pharmacy, but some students pursue other bachelor degrees on their way to pharmacy, including a BA in chemistry). This program is not intended to lead to a well-defined work pathway upon graduation.

Faculty Composition and Engagement

Almost all of the faculty in the Biology and Physical Sciences Departments work with pre-pharmacy students in some fashion, whether teaching lecture courses, running lab sections, or advising students. Those faculty are summarized below. Their resumés are included in an appendix.

Tenured/Tenure-Track Faculty in Biology and Physical Sciences			
Faculty	Department	Highest Degree	Average FTE
Adsmond, Daniel	Phy Sci	Ph.D.	1.07
Bacon, Charles	Phy Sci	Ph.D.	1.10
Balanda, Peter	Phy Sci	Ph.D.	1.09
Barkel, Karen	Biology	Ph.D.	1.29
Brennan, Thomas	Phy Sci	Ph.D.	1.10
Christafferson, Jeffrey	Phy Sci	M.S.	1.05
Colvert, Kim	Phy Sci	Ph.D.	1.07
Daubert, Daisy	Biology	Ph.D.	1.15
DeFraia, Christopher	Biology	Ph.D.	1.00
Di Raddo, Pasquale	Phy Sci	Ph.D.	1.26
Fadayome, Olekemi	Biology	Ph.D.	1.10
Franklund, Clifton	Biology	Ph.D.	1.27
Griffith, David	Biology	Ph.D.	1.18
Heck, Fred	Phy Sci	Ph.D.	1.07
Herron, Scott	Biology	Ph.D.	1.13
Isler, Bradley	Biology	Ph.D.	1.26
Kaltt, Paul	Biology	Ph.D.	1.20
Killian, William	Phy Sci	M.S.	1.15
Kollalpitiya, Yamuna	Phy Sci	Ph.D.	1.03
Lou, Bo	Phy Sci	Ph.D.	1.02
Mitchell, Roger	Biology	Ph.D.	1.07
Murnik, Mary	Biology	Ph.D.	1.04

Tenured/Tenure-Track Faculty in Biology and Physical Sciences			
Faculty	Department	Highest Degree	Average FTE
Partigianoni, Colleen	Phy Sci	Ph.D.	1.00
Rivera-Rivera, Luis	Phy Sci	Ph.D.	1.00
Ryan, Michael	Biology	Ph.D.	1.18
Scott, James	Biology	Ph.D.	1.10
Shetty, Prabhakara	Phy Sci	Ph.D.	1.00
Spain, Anne	Biology	Ph.D.	1.06
Thomson, Mark	Phy Sci	Ph.D.	1.05
Westerkamp, Chris	Biology	Ph.D.	1.10
Zhu, Changqi	Biology	Ph.D.	1.06
Zimmer, Beth	Biology	Ph.D.	1.10

Listed in the next table are adjunct faculty in the Departments of Biological Sciences and Physical Sciences:

Non-Tenure-Track Faculty in Biology and Physical Sciences			
Faculty	Department	Highest Degree	Average FTE
Andrus, Kim	Biology	M.S.	0.78
Bacon, Mary	Phy Sci	M.S.	1.00
Calkins, Keith	Phy Sci	Ph.D.	1.05
Fitzwilliams-Heck, Cindy	Biology	M.S.	1.01
Johnson, John	Biology	M.S.	1.10
Miller, Elizabeth	Phy Sci	Ph.D.	1.09
Miller, Gary	Biology	Ph.D.	1.11
Pike, Schuyler	Biology	Ph.D.	1.00
Rizzo, Anna	Biology	B.S.	1.14
Weaver, James	Phy Sci	M.S.	1.10
Workman, Doug	Biology	Ph.D.	0.90

Collectively, the faculty from both departments serve on departmental committees, college-wide committees and university-wide committees. Many serve on advisory boards, such as the biotechnology and industrial chemistry boards. They are involved in college facilities open to the public, including the Card Wildlife Center and the Rawlinson Observatory. Other service/outreach, research and continuing education activities are documented in their attached resumés.

Stakeholder Perceptions of the Quality and Composition of Faculty

The current students who were surveyed had positive impressions about their courses, both the lecture and lab portions. This is shown by their responses to these items:

- Required course in the sciences helped me learn basic facts and information.
- Required courses in the sciences prepared me well for subsequent courses.
- Required courses in the science improved my ability to think critically.
- My lab experiences enhanced my understanding of science.
- My lab experience helped improve my lab skills.

Program Policies and Procedures

In the College of Arts and Sciences, departments are allocated professional development funds based on the number of tenured and tenure-track faculty in the department. Both the Biology and Physical Sciences Departments have faculty committees that oversee the distribution of these funds.

While advising of freshman students is handled by professional advisers, other students in the program go to faculty members for advising. Regular group meetings are held for adviser training; new faculty members are expected to attend a session, but all faculty members advising pre-pharmacy students are highly encouraged to attend to keep up with the latest information.

Hiring and Retention

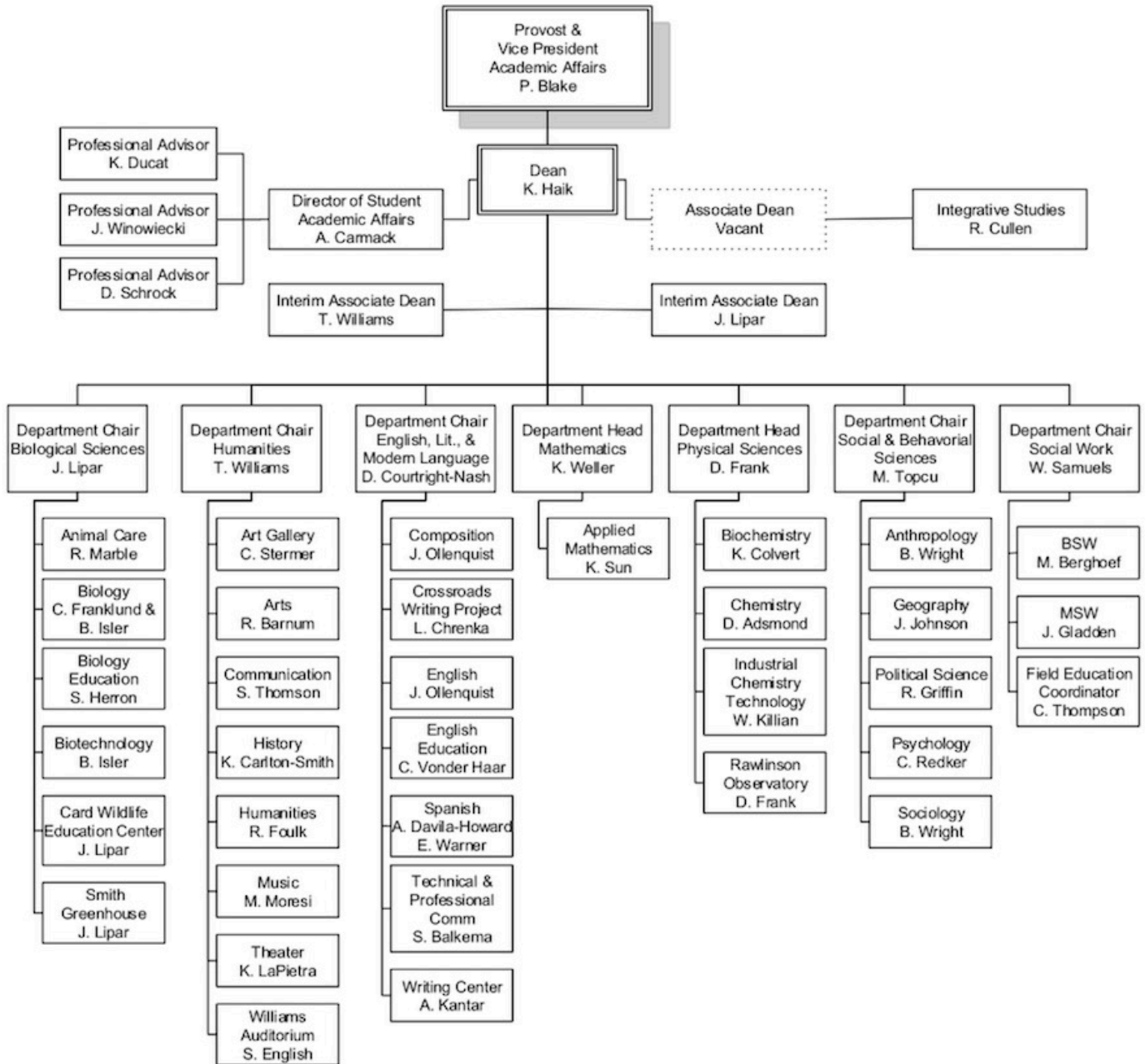
In the Physical Sciences Department, new tenure-track hires must have a Ph.D. in their subject area by the time of initial employment. At a minimum, newly hired adjunct faculty must have a master's degree. As seen in information provided earlier, half of the adjuncts possess a doctorate.

The Biology Department has similar guidelines for faculty. Tenure-track faculty must hold a Ph.D. in their subject area. It is strongly preferred that Level 1 adjuncts also hold a Ph.D. Adjunct faculty who teach the lecture portion of a majors-level biology class must hold a Ph.D; adjunct faculty who teach the lecture portion of a non-majors class may possess a master's degree. Faculty who primarily teach labs are not required to hold a doctorate.

New tenure-track faculty are assigned a review committee for tenure purposes. This committee oversees the work of the faculty member, attends lecture classes, reviews other information provided by the faculty member and provides annual written feedback regarding the faculty member's progress towards tenure. New faculty members are also assigned a mentor. The mentor serves as a go-to person who works with the new hire frequently, orienting the person to the department and providing advice about day-to-day issues that come up.

FERRIS STATE UNIVERSITY
ACADEMIC AFFAIRS DIVISION

COLLEGE OF ARTS & SCIENCES



Program Administration and Support

The most recent organizational structure for the College of Arts and Sciences (as of Fall 2016) is shown on the previous page.

Administrative Positions with Program Oversight

This program is primarily associated with the Biology and Physical Sciences Departments in the College of Arts and Sciences. Therefore, the administrative personnel responsible for the program are:

Kristi Haik, Ph.D., Dean of the College of Arts and Sciences

Trinity Williams, Associate Dean of the College of Arts and Sciences

Joe Lipar, Ph.D., Associate Dean of the College of Arts and Sciences

Beth Zimmer, Ph.D., Chair of the Department of Biological Sciences

David Frank, Ph.D., Head of the Department of Physical Sciences

Staff Positions

Several staff support, directly or indirectly, the functions of the the program. Most directly related to the program are two of the college's three professional advisors. While these two individuals advise freshmen and sophomores in all areas of science, pre-pharmacy students constitute a large portion of their advising load. The professional advisors report to the Director of Student Academic Affairs in the dean's office. (This position is currently vacant, hence, it was not listed above). Other support staff work for the two departments, enhancing the smooth functioning of the departments.

The professional advisors are:

Jenice Winowiecki, College of Arts and Sciences

Kim Ducat, College of Arts and Sciences

Other support staff include:

Patricia Bunce, Biology Department Secretary

Richard Marble, Animal Care Facility Coordinator

Frank Hartley, Biology Lab Coordinator

Lisa French, Biology Lab Coordinator

Jessica Parker, Assistant Biology Lab Coordinator (part-time)

Andrea Lodholtz, Greenhouse Manager (part-time)

Leona Royer, Physical Sciences Department Secretary

Janet Miller-Monfils, Physical Sciences Department Lab Manager

The contribution of the professional advisers cannot be over-emphasized. They initially meet students during orientation and registration. They participate in recruiting events for students, including Dawg Days. They help students with their progress through pre-pharmacy, and in some cases help students transition to another program better suited for their skills and abilities. Once the students seem to be well set on a degree pathway, they are moved to a faculty advisor in pre-pharmacy or another area, as appropriate.

A drawback of this program as it's currently constituted is that there isn't the degree of faculty oversight that is present in degrees. Most programs in Biology and Physical Sciences have a program coordinator, a person charged with the responsibility of the broad issues associated with the program (curriculum, students, graduation clearance, and so on).

Pre-pharmacy has had several organizational models in the past. One was a program coordinator who (pretty much) single-handedly oversaw the program. At that time the program was housed in the home department of the coordinator (including the Physical Sciences and Mathematics Departments). The program subsequently was housed in the dean's office, due to the cross-departmental nature of the program. Finally, with the hiring of the professional advisors, it would be fair to say that much of the day-to-day work associated with the programs was handled by the advisors and the Director of Student Academic Affairs.

Ad-hoc faculty committees have been formed, where necessary, to provide academic direction to the program. The most recent example was the formation of a committee to create a separate associate's degree in Pre-Pharmacy. This committee met last fall. They identified the courses that needed to be in the program, and they formulated outcomes for the program. They presented the programs to their respective departments, and both Biology and Physical Sciences provided their endorsement.

Support Services

Services that assist the program include:

Faculty Center for Teaching and Learning. Faculty have received mini-travel grants to support their professional work from the center. Faculty have attended workshops offered by the Center. Some faculty have requested the Center to conduct SGID observations in their classes, for the purpose of receiving feedback about their teaching from their students. Incoming faculty attend the sessions held for new faculty members.

FLITE. The library has adequate holdings to support the work of our students. For example, the library has access to all of the American Chemical Society (ACS) journals online; this is a plus to the research-oriented sections of the second semester of organic chemistry. Some faculty take advantage of rooms in FLITE to have students make presentations.

IT Services. We rely on IT services to keep our computers up and running. They provide assistance with computers in classrooms and faculty offices. In addition, some of the equipment in lab spaces has computer interfaces, and IT provides assistance to keep our equipment running.

Instrument Repair. Service technicians in this area also help us keep our (aging) equipment running.

Tutoring Services and SLA Workshops. The tutoring center offers a full array of support for students who need extra help with their science and math classes. Students at the freshman level, in particular, have many options at the center.

Several science and math classes also have SLA sections, providing weekly workshops tied directly to the classes students are taking.

Facilities and Equipment

Both the Biology and Physical Sciences Departments provided an in-depth review of their spaces in program reviews done two years ago. Both of those departments need well-equipped labs with specialized equipment to support the teaching and student research functions, particularly at the upper undergraduate levels.

The Pre-Pharmacy program does not directly use the spaces and equipment needed for upper-level coursework, as it consists primarily of lower-undergraduate courses.

Therefore, this section will be a brief overview of the lectures and labs used by the two departments.

Biology Department

Lecture rooms: SCI 120 (mornings), SCI 126, SCI 137, Str 136, IRC 120

Teaching labs: SCI 207, 208, 211, 212, 215, 216 222, 227, 228, 231, 232, 235

The Biology department uses the larger lecture halls for classes with the largest enrollments (75 students or more). The equipment in these lecture rooms is adequate. The labs are specialized for various areas; there is adequate space for the labs as well.

Physical Sciences Department

Lecture rooms: SCI 120 (afternoons), SCI 102, SCI 111, SCI 117, SCI 126 (late afternoons only), SCI 336, STR 233, IRC 120

Teaching labs (for courses with pre-pharmacy students): SCI 114, 328, 330, 332, 333, 335.

Lecture space and equipment in the lecture halls is adequate for the program courses in Physical Sciences. Labs in Physical Sciences are associated with general chemistry, organic chemistry, and general physics. There is no required lab for the biochemistry class taken by pre-pharmacy students. Lab facilities for these classes is generally adequate. This would be the case for general chemistry and organic chemistry, as there are two teaching labs for each area. PHYS 211 is constrained by having only one lab and one set of equipment. Thus, due to the numbers of students taking physics overall there are currently some physics labs running in the evening.

Perceptions of Overall Quality

Perception of Quality by David Frank. I would give this program an overall grade of 75 out of 100 (a “C” if we’re using the letter grading scale). There are some good points about the program and some points that need to be addressed.

Good points include:

- This program is tailored to the needs of a large and specific audience, namely, the pre-pharmacy students at Ferris State University. It spells out everything that a student needs to take to be admitted to the College of Pharmacy here; there is room for students to take additional courses (over a three-year period) to enhances their chances of admission at other institutions.
- The program is a natural tie-in for the College of Pharmacy.
- This program is flexible enough to allow students to complete all the requirements for admission to pharmacy within the confines of this associate’s degree. But if students decide that they want to obtain a bachelor’s degree (or if they’d like to work on a bachelor’s degree in conjunction with admission to pharmacy), it allows a smooth transition to other degree programs in the College of Arts and Sciences, including the Pre-Pharmacy Biology BS, other biology BS degrees, the chemistry BA and the biochemistry BA.
- This program is necessary for TIPS students. It makes it easy to demonstrate that a student with this state financial support is following a plan of classes that leads to a specific goal, namely, entrance into pharmacy.

Points to be addressed include:

- The program is not as far along as the college's bachelor degree programs in terms of assessment. There are program learning outcomes; however, there is no curriculum map nor a plan for assessing those outcomes. Individual course assessment is taking place for courses in the program, and this fall in the college there will be an emphasis on strengthening our course assessment.
- The program lacks sustained faculty input and direction. My recommendation would be that this program should follow the model of other college programs, and have a faculty program coordinator. In addition, due to the interdisciplinary nature of this program, there should also be a committee that brings together representatives from both departments as well as the professional advising staff.

Perception of Program Quality by Joe Lipar. Since Dr. Lipar will also be writing the dean's letter for this program review, his recommendations regarding the program will be submitted later.

Implementation of Findings

In order to strengthen the academic oversight of this program, these steps need to be taken to address the program's weaknesses:

- A mechanism for faculty oversight of the program will be established, namely, a faculty coordinator working in conjunction with an advisory committee of relevant academic stakeholders.
- One of the first tasks of this committee will be to bring the program assessment process to the same level as that of other programs in the college.

The findings of this report will be communicated with faculty teaching required courses in the program in the Biology and Physical Sciences, and will also be shared with Dean's office staff and professional advisers.

Appendix A: Program Checksheet



Pre-Pharmacy (PPHR) – 84-85 Credits

Associate of Science (AS)

College of Arts and Sciences

ADMISSION REQUIREMENTS

New Students

- First year student admission is open to high school graduates (or equivalent) who demonstrate appropriate academic preparedness, maturity and seriousness of purpose.
- High school courses and grade point average, ACT/SAT composite score, and ACT/SAT Mathematics and Reading subscores will be considered in the admission and course placement process.

Transfer Students

- Must have at least 12 credits at the time of application
- Minimum 2.0 GPA including an English and mathematics course

UNIVERSITY GENERAL EDUCATION REQUIREMENTS

Courses in this section are required to satisfy the university general education requirements for an AS degree.

Prefix ###	Course Title (Prerequisites shown in parenthesis)	Crs
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TIER 1: FOUNDATION COMPETENCIES

COMMUNICATION COMPETENCY – 9 Credits Required (or their equivalent)

CHOOSE ONE	COURSE	DESCRIPTION	Crs
	COMM 105 COMM 121	Interpersonal Communication Fundamentals of Public Speaking	3
ENGL	150	English 1 (SAT 370 OR ACT 14 OR TOEFL Reading T01 500 OR TOEFL Writing T02 173 OR ENGL 074 with C- or higher)	3
ENGL	250	English 2 (ENGL 150 C- or higher)	3

QUANTITATIVE LITERACY COMPETENCY

The Quantitative Literacy Competency requirement is met in the program major

TIER 2: DISTRIBUTION COMPETENCIES

NATURAL SCIENCES COMPETENCY

The Natural Sciences Competency requirement is met in the program major

CULTURE COMPETENCY – 9 Credits Required *; Courses in this category must come from two different disciplines

CHOOSE ONE	COURSE	DESCRIPTION	Crs
			(200+)

SELF AND SOCIETY COMPETENCY – 9 Credits Required *; Courses in this category must come from two different disciplines

CHOOSE ONE	COURSE	DESCRIPTION	Crs
	PSYC 150 SOCY 121	Introduction to Psychology (None) Introductory Sociology (None)	3
ECON	221	Principles of Macroeconomics (MATH 109 OR MATH 110 OR MATH 114 OR MATH 115 OR MATH 116 OR MATH 117 OR MATH 118 OR MATH 119 OR MATH 120 OR MATH 122 OR MATH 126 OR ACT MATH 19 OR SAT MATH 460)	3
		Any Self and Society elective	

*General Education Requirements - | must have a 200 level course in both Culture and Self and Society | The Self and Society Foundation course can be your 200+ course.

NOTE: All Bachelor Degrees at Ferris also require 1 course with Global Diversity and 1 course with the U.S. Diversity. For students wishing to continue to a Bachelor Degree, completion of these requirements within the Associate Degree is recommended. These requirements can be met without additional coursework because many Culture and Self and Society courses also meet the Diversity requirements.

Freshman Seminar Requirement, FSUS 100, is satisfied by:

Pre-Pharmacy - Associate of Science -84-85 Credits

Prefix	###	Course Title (Prerequisites shown in parenthesis)	Crs
MAJOR REQUIREMENTS – 51-52 Credits Required			
BIOL	121	General Biology 1 (CHEM 121 concurrent)	4
BIOL	122	General Biology 2 (BIOL 121, CHEM 121)	4
BIOL	286	General Microbiology (CHEM 122)	3
BIOL	321	Human Physiology-Anatomy 1 (BIOL 122, CHEM 122)	4
BIOL	322	Human Physiology-Anatomy 2 (BIOL 321)	4
BIOL	375	Principles of Genetics (BIOL 122)	3
CHEM	121	General Chemistry 1 (CHEM 103 C- or better, AND MATH 115 C- or higher, OR ACT MATH 24 OR SAT MATH 560)	5
CHEM	122	General Chemistry 2 (CHEM 121 C- or higher)	5
CHEM	321	Organic Chemistry 1 (CHEM 122 C- or higher)	5
CHEM	322	Organic Chemistry 2 (CHEM 321 C- or higher)	5
CHEM	364	Biochemistry (CHEM 322 C- or higher)	4
MATH	220	Analytical Geometry-Calculus 1 (MATH 126 C- or higher OR MATH 130 C- or higher OR ACT MATH 26 OR SAT MATH 590)	4
MATH	251	Stats for the Life Sciences (MATH 130 C- or higher OR ACT MATH 26 OR SAT MATH 590)	3
CHOOSE ONE	PHYS 211 PHYS 241	Introductory Physics (MATH 116 C- or higher OR MATH 120 C- or higher OR ACT MATH 26 OR SAT MATH 590 OR by placement)	4
		General Physics I (MATH 220 C- or higher OR by placement)	5

ADDITIONAL GRADUATION REQUIREMENTS

Students must

- maintain a 2.00 cumulative FSU GPA
- have 15 credits of Ferris classes (FSU Residency Requirement)
- earn 84 minimum credits including general education requirements.

Note: Students may earn an A.S. degree in Natural Sciences or an A.S. degree in Pre-Pharmacy, but they may not earn both.

DEGREE OUTCOMES

1.	Graduates will explain major concepts underpinning pharmacy, including those from biology, chemistry, physics and mathematics.
2.	Graduates will apply scientific theories and principles to analyze and solve problems.
3.	Graduates will perform laboratory experiments in a safe and appropriate manner.
4.	Graduates will apply the scientific method to the interpretation of experiments and experimental data.
5.	Graduates will clearly communicate scientific information in both oral and written forms.
6.	Graduates will collaborate in various team settings.



Appendix B: Course Syllabi

General Biology I

Biology 121

Fall 2016

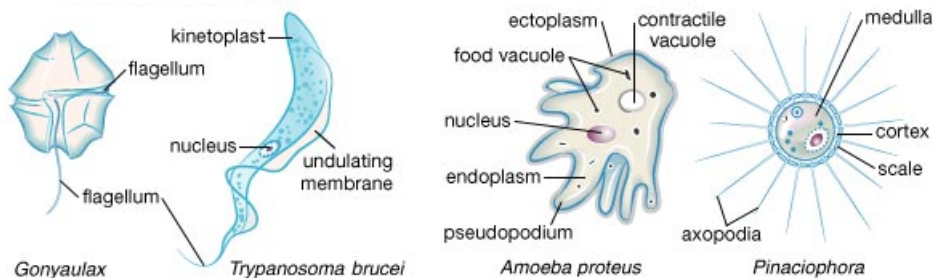
Paul H. Klatt
2114 ASC Building
591-2671
PaulKlatt@ferris.edu

Text: Biology, Campbell and Reece, 9th Edition
Lab Manual for General Biology 2016
Class: SCI 126, 8:00 am, MWF
Office hours: Thursday and Friday 3:00-5:00 pm

Grading Scale:

A (94% and up)	C (73-76.9%)	Exam I	100
A- (90-93.9%)	C- (70-72.9%)	Exam II	100
B+ (87-89.9%)	D+ (67-69.9%)	Exam III	100
B (83-86.9%)	D (63-66.9%)	<u>Exam IV</u>	<u>200</u>
B- (80-82.9%)	D- (60-62.9%)	Total	500
C+ (77-79.9%)	F (59.9% and below)		

Course Description: The first semester of a year-long sequence in introductory biology designed for the science major and as a prerequisite for advanced biology courses. The topics include an introduction to scientific thinking, ecology, cell division, Mendelian genetics, evolution, the diversity of the biological kingdoms (bacteria, Protista, Fungi, and Plantae), and plant structure and function. Laboratory exercises are designed to enhance the lecture material with hands-on experiences. Designed for students in science baccalaureate degree programs, this course meets General Education requirements: Scientific Understanding, Lab. 4 Credit Course that requires CHEM 121 or CHEM 114 as a pre- or co-requisite.



General Education Outcomes: This course may be used to help fulfill the general education requirement for Scientific Understanding. A student succeeding in this course should:

- 1) have a working knowledge of the fundamental principles of a natural science discipline;
- 2) be able to use appropriate scientific reasoning skills to interpret and analyze content in the natural sciences;
- 3) have a basic understanding of the scientific method, scientific concepts, and the evolution of scientific ideas;
- 4) have a more positive attitude toward science and an increased confidence in their ability to understand science.

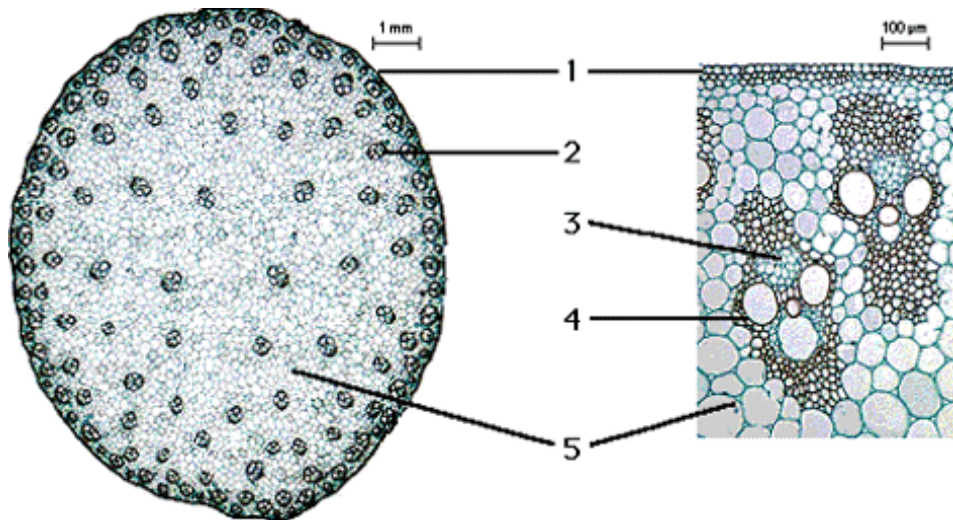
Specific Course Outcomes: This course is the first of a two part introductory biology sequence, thus it will lay the foundation for further study in biology. A student succeeding in this course should be able to:

- 1) demonstrate by examination a majors-level introductory knowledge in ecology, cell division, Mendelian genetics, evolution, diversity of bacteria, protists, fungi, and plants, and plant structure and function.
- 2) demonstrate the ability to use mathematics to solve problems in Biology and utilize graphs or tables to present data effectively.
- 3) use the scientific method to formulate hypotheses, design experiments, collect and analyze data, and draw conclusions.
- 4) show an ability to utilize equipment (such as a microscope) safely and effectively to complete lab assignments.

Other Materials Required: You are required to bring to class on exam days, a #2 pencil, and a Scantron Form 882 sheet.

Exams: Half of the final exam will be comprehensive. Lecture Exams cannot be made up. Students who are absent on exam day, and do not have a legitimate excuse, will receive a zero on that exam. Students who must be absent on the day of the exam, for a legitimate reason, may use the comprehensive portion of the final exam to replace the missed exam. **Cheating** will result in failure of the course. Additional action may be taken by the University.

Electronic Devices must be turned off in the lecture hall.



Tentative Schedule:

<u>Date</u>	<u>Lecture</u>	<u>Chapter</u>
Aug. 29	Introduction	01
31	Ecology	52
Sept. 02	Animal Behavior	51

Sept.	05	[Labor Day Holiday]	
	07	cont.	
—	09	Population Ecology	53
	12	cont.	
	14	Community Ecology	54
—	16	Ecosystems	55
	19	Exam I - 100 points	
	21	Conservation Biology	56
—	23	The Cell Cycle	12
	26	Meiosis and Sexual Life Cycles	13
	28	cont.	
—	30	Mendel and the Gene Idea	14
Oct.	03	cont.	
	05	The Chromosomal Basis of Inheritance	15
—	07	cont.	
	10	Descent with Modification	22
	12	cont.	
—	14	Exam II - 100 points	
	17	The Evolution of Populations	23
	19	cont.	
—	21	The Origin of Species	24
	24	cont.	
	26	Phylogeny and Systematics	26
—	28	cont.	
	31	The History of Life on Earth	25
Nov.	02	cont.	
—	04	Viruses (P. 381-390)	19
	07	Prokaryotes	27
	09	cont.	
—	11	Exam III - 100 points	
	14	Protists	28
	16	cont.	
—	18	Fungi	31
	21	cont.	
	23	Plant Diversity I	29
—	25	[Thanksgiving Holiday]	
	28	cont.	
	30	Plant Diversity II	30
Dec.	02	cont.	
	05	Plant Structure and Growth	35
	07	cont.	
—	09	Plant Transport	36
	14	Exam IV - 200 points, 8:00 am - 9:40 am	

Final Note: Enjoy the course and take pride in your work. The University experience is what you make it. This syllabus is subject to change at any time.

Lab Information

Lab Quizzes: There will a quiz given each week covering the material from the previous week (150 points in total). Labs cannot be made up. If you have a legitimate reason for missing your section, you may request to attend another lab section in its place (within the same week) and still get credit for that lab. Bring the lab make up form to the instructor of the replacement lab and request their permission to attend that section. You will be allowed to do this only twice during the semester.

Tentative Schedule:

<u>Week of</u>	<u>Topic</u>
1) 29 Aug.	The Scientific Method: Pill Bug Lab
2) 05 Sept.	[Labor Day Holiday]
3) 12 Sept.	Population Growth
4) 19 Sept.	Environment and Macroinvertebrates
5) 26 Sept.	Microscope and Cell Division
6) 03 Oct.	Mendelian Genetics I
7) 10 Oct.	Mendelian Genetics II and ABO, Rh Blood Types
8) 17 Oct.	Mendelian Genetics III, Adaptive Mutants in Yeast, and Biochemical Evidence of Evolution
9) 24 Oct.	Bacteria
10) 31 Oct.	Protista
11) 07 Nov.	Fungi
12) 14 Nov.	Survey of Plants
13) 21 Nov.	[Thanksgiving Holiday]
14) 28 Nov.	Plant Anatomy
15) 05 Dec.	Plant Physiology

Biology 122

General Biology 2

Fall 2016

4 Credits

Instructor Office

Dr. Brad Isler

ASC 2113

Phone: 591-2641

E-mail: BradleyIsler@ferris.edu

Class Hours

MWF 10-10:50 AM

Science 120

Office Hours

MW 11-12 PM

MW 2-3 PM

Laboratory Hours

R 12:00-2:50 PM

Science 216

SLA Hours

MW 6-7:15

Science 137

Course Description

The second semester of a year-long sequence in introductory biology. The topics covered include molecular biology, cell biology (including bioenergetics and metabolism), molecular genetics, diversity of the Kingdom Animalia, and animal structure and function. Laboratory exercises are designed to enhance the lecture material with hands-on experiences. Designed for students in science baccalaureate programs. Pre-Requisites: BIOL 121 with a C- grade or better and CHEM 121 with a C- grade or better.

Course Outcomes

1. General Education

This course may be used to help fulfill the general education requirement for Scientific Understanding. A student succeeding in this course should:

- Have a working knowledge of the fundamental principles of a natural science discipline.
- Be able to use appropriate scientific reasoning skills to interpret and analyze content in the natural sciences.
- Have a basic understanding of the scientific method, scientific concepts, and the evolution of scientific ideas.
- Have a more positive attitude toward science and an increased confidence in their ability to understand science.

2. Specific Outcomes

This course is the second of a two part introductory biology sequence, thus it will continue to lay the foundation for further study in biology. A student succeeding in this course should be able to:

- **Demonstrate** by examination a majors-level introductory knowledge in molecular biology, cell biology (including bioenergetics and metabolism), molecular genetics, the diversity of Kingdom Animalia, and animal structure and function.
- **Demonstrate** the ability to use mathematics to solve problems in Biology and utilize graphs or tables to present data effectively.
- **Use** the scientific method to formulate hypotheses, design experiments, collect and analyze data, and draw conclusions.
- **Show** an ability to utilize equipment (such as a microscope) safely and effectively to complete lab assignments.

Required Materials

- Campbell Biology, Reece et al., 9th edition, Benjamin Cummings, 2012
- Biology 122 General Biology Lab Manual (Available at the Great Lakes Bookstore)

Grading

Final grades will be based on points earned on lecture exams (75% of total grade) and laboratory quizzes (25% of total grade).

	<u>Maximum possible points</u>
<i>Lecture – 75%</i>	
Exam 1	100
Exam 2	100
Exam 3	100
Final Exam	200
<i>Laboratory – 25%</i>	
Quizzes	130

There will be three **exams** during the semester worth 100 points each.

The **final exam** is worth 200 points and will contain a mix of 50% “new” and 50% “old” material.

Attendance Policy

Attendance will not be taken in lectures. However, pop quizzes will be administered at the beginning of selected lecture sessions.

Students arriving late for class on the days on which pop quizzes are administered will receive a zero for that quiz. No make-up pop quizzes will be given.

Students who have a legitimate reason for missing an exam may use the score from the cumulative portion of the final exam to replace the missed exam. Legitimate excuses include a suitable statement from a physician, a bail bond ticket, evidence of a funeral, etc. Students who are absent on an exam day and do not have a legitimate excuse will receive a zero for that exam. No exceptions are allowed.

Class Decorum

The College of Arts and Sciences strives to maintain a positive learning environment and educational opportunity for all students. Patterns of behavior which obstruct or disrupt the learning environment in the classroom will be dealt with under the College *Disruptive Behavior Policy*. **Cell phones, iPads, iPods, and laptop computers must be turned off, and interpersonal conversations cease, during the class period.**

Cheating

Cheating on exams or quizzes will result in a zero and subsequent failure of the course. Additional action may be taken by the University.

Class Participation

Class participation is not mandatory but will be considered when your final grade is determined. A student that is actively involved in a course will always perform at a higher level than a student that spends lecture periods sleeping, chatting with their friends, playing with their electronic devices, or not paying attention.

Blackboard

Blackboard will be used throughout the course to post grades, articles, and animations. Fill-in-the-blank lecture notes will be posted on Blackboard before each chapter is covered in lecture.

Structured Learning Assistance (SLA)

SLA sections of courses at Ferris State are designed to give students extra assistance in courses via participation in regular SLA sessions. At these SLA sessions, your SLA facilitator (Tiffany Newman) will lead a variety of activities that will help students better understand lecture and laboratory material.

SLA sessions for Biology 122 will be held on Mondays and Wednesdays from 6-7:15 PM in Science 137. Attendance policies for SLA students are as follows:

- Until exam 1 (September 30), all students must attend SLA sessions.
- From exam 1 to the end of the semester (September 30 - December 9), SLA students are only required to attend SLA sessions if they scored less than 80% on the previous exam. For example, let's say a student scores an 82% on exam 1. Because they scored greater than 80% on exam 1, they are now not required to attend SLA sessions. However, because the student didn't attend SLA sessions and didn't study quite as much as they should have, they subsequently score a 77% on exam 2. Because their exam 2 score was less than 80%, they are now required to attend SLA sessions until at least exam 3.
- When attending SLA sessions, students must arrive on time by 6 PM and must stay until the SLA session is completed at 7:15 PM.

A student that has five unexcused SLA absences (when they are required to attend) will fail the entire course.

Students are strongly encouraged to attend SLA sessions, even when they are not required to do so. The SLA sessions are there to help you improve your grades in the course, so please attend the sessions to maximize your grade!

Help!

Dr. Isler will be happy to help you during office hours or other available times. Stop by the office for help during office hours or contact Dr. Isler to arrange an appointment.

Tutoring is also available at the tutoring center in ASC 1017. Go to <http://www.ferris.edu/HTMLS/colleges/university/ASC/tutor-trac.htm> to arrange a tutoring session.

Grading Scale

93 – 100%	A
90 – 92.9%	A-
87 – 89.9%	B+
83 – 86.9%	B
80 – 82.9%	B-
77 – 79.9%	C+
73 – 76.9%	C
70 – 72.9%	C-
67 – 69.9%	D+
63 – 66.9%	D
60 – 62.9%	D-
< 60%	F

The grading scale may be adjusted depending upon class performance.

Tentative Lecture Schedule

Date	Topic	Chapter
Aug 29	The Chemical Context of Life	2
Aug 31	The Chemical Context of Life	2
Sept 2	Water and Life	3
Sept 5	NO CLASS	-
Sept 7	Carbon and the Molecular Diversity of Life	4
Sept 9	The Structure and Function of Large Biological Molecules	5
Sept 12	The Structure and Function of Large Biological Molecules	5
Sept 14	The Structure and Function of Large Biological Molecules	5
Sept 16	A Tour of the Cell	6
Sept 19	A Tour of the Cell	6
Sept 21	A Tour of the Cell	6
Sept 23	Membrane Structure and Function	7
Sept 26	Membrane Structure and Function	7
Sept 28	Introduction to Metabolism	8
Sept 30	Exam 1	-
Oct 3	Introduction to Metabolism	8
Oct 5	Cellular Respiration and Fermentation	9
Oct 7	Cellular Respiration and Fermentation	9
Oct 10	Cellular Respiration and Fermentation	9
Oct 12	Photosynthesis	10
Oct 14	Photosynthesis	10
Oct 17	Photosynthesis	10
Oct 19	The Molecular Basis of Inheritance	16
Oct 21	Exam 2	-
Oct 24	The Molecular Basis of Inheritance	16
Oct 26	From Gene to Protein	17
Oct 28	From Gene to Protein	17
Oct 31	An Overview of Animal Diversity	32
Nov 2	An Introduction to Invertebrates	33
Nov 5	An Introduction to Invertebrates	33
Nov 7	An Introduction to Invertebrates	33
Nov 9	An Introduction to Invertebrates	33
Nov 11	The Origin and Evolution of Vertebrates	34
Nov 14	The Origin and Evolution of Vertebrates	34
Nov 16	The Origin and Evolution of Vertebrates	34
Nov 18	Exam 3	-
Nov 21	Basic Principles of Animal Form and Function	40
Nov 23	Basic Principles of Animal Form and Function	40
Nov 25	NO CLASS	-
Nov 28	Animal Nutrition	41
Nov 30	Animal Nutrition	41
Dec 2	Animal Nutrition	41
Dec 5	Circulation and Gas Exchange	42
Dec 7	Circulation and Gas Exchange	42
Dec 9	Circulation and Gas Exchange	42
Dec 13 Tuesday	Final Exam 10-11:40 AM Science 120	

Laboratory Information

Lab Quizzes

A quiz will be administered at the beginning of each lab period covering the material from the previous lab. If a student is tardy for lab, two points will be deducted from their lab quiz score.

There are no “make up” labs. If you have a legitimate reason for missing your lab, please contact Dr. Isler (before your missed lab, if possible).

Three unexcused lab absences will result in a failing grade for the course.

Lab Manual

Biology 122 General Biology Lab Manual, Kemi Fadayomi, Roger Mitchell, David Stewart, and Karen Barkel.

This manual is available **only** at **Great Lakes Book & Supply**, 840 Clark St., Big Rapids.

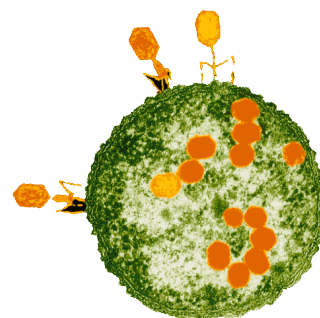
Students are required to bring a clean, unused copy of their laboratory manual to lab every week. If you forget to bring your manual to lab, you will be supplied with a copy of that week’s lab, but you will receive a three point deduction from your lab score for the week.

Lab Schedule

Date	Topic	Lab Manual Pages
Sept 1	NO LAB	-
Sept 8	Macromolecules	1-10
Sept 15	Diffusion and Osmosis	11-20
Sept 22	Enzymes I	21-30
Sept 29	Enzymes II	31-39
Oct 6	Energy	40-47
Oct 13	DNA DNA Electrophoresis 1 Transformation 1	48-51 52 52-54
Oct 20	DNA Electrophoresis 2 Transformation 2 Properties of DNA	55 55 56-57
Oct 27	Transformation 3 Transcription and Translation	56 65-78
Nov 3	Invertebrates 1	79-93
Nov 10	Invertebrates 2	94-105
Nov 17	Vertebrate Anatomy Vertebrate Adaptation	121-125 106-109
Nov 24	NO LAB	-
Dec 1	Vertebrate Histology	110-120
Dec 8	Chordate Diversity	126-137

BIOL 286: General Microbiology

Course Syllabus, Spring 2016



In order to optimize student learning, the standards and requirements set forth in this syllabus may be modified during the semester. Notice of any such changes will be announced in class and posted on our Blackboard course welcome page.

Class location and meeting time

Lectures will be held on Mondays and Wednesdays from **4:00 to 4:50 pm** in **SCI-126**. The laboratory sessions will meet on Tuesdays and Thursdays at either **9:30 to 10:45 am**, **12:00 to 1:15 pm**, or **1:30 to 2:45 pm** in **SCI-215**. You are responsible for all announcements, assignments, handouts, etc., even if you are late or absent (see the attendance policy for more details).

Contact information

Instructor name:	Dr. Clifton Franklund	Ms. Kim Andrus
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Contacting Dr. Franklund

Office hours: [M | W | F] from 2:00 to 3:00 pm

I will maintain official office hours as indicated above. These are first come, first served – you are encouraged to make appointments but walk-ins are welcome and will be accommodated whenever possible. You can sign up times online at <http://cliftonfranklund.youcanbook.me>. In addition, I have posted my schedule outside of my office door. **All** of my “free” time is available to you as office hours. Simply find the day that works for you and sign up for a meeting (in 15-minute increments).

Email: You can expect me to reply to your email questions within 24 hours during the work week and within 48 hours on weekends and holidays.

I offer bonus points for office hours following each exam to briefly to discuss your recent performance. Bring your completed feedback email report, your exam, and your notes. We will work together to try to find strategies to improve your performance over time.

Prerequisites

CHEM 122: General Chemistry 2 or consent of the instructor

Course description

Introduction to the microbial world including microbial structure, function, metabolism, classification, genetics, control of microbial growth and immunity. The laboratory provides practical experience with fundamental concepts, techniques and instrumentation. This course is designed for students in the clinical laboratory science program and is open to other students by permission of the professor.

Required texts and materials

Textbook: *Microbiology: An Evolving Science 2nd edition* by Slonczewski and Foster. 2011 (ISBN 0-393-93447-0)

Lab notebook: We will be using the hardcover *Student Laboratory Notebook* published by the American Society for Microbiology Press, 2005. (ISBN 1-55581-358-5)

Required materials: We will be using Turning Technologies ResponseCard NXT clickers in class this semester. These will be required for in-class review questions, bonus quizzes and for taking lecture and lab exams.

A cloth lab coat, a Sharpie™, access to a digital camera (e.g. iPhone, android phone), and colored pencils (pink, red, green, blue, yellow, and black are needed) will be required for lab.

Optional materials: You should seriously consider getting a 3-inch D-ring binder for your class notes. Other optional materials include a scientific calculator, a USB flash drive, and a wax pencil for the laboratory. A copy of *A Student Handbook for Writing in Biology 3rd edition* by Knisely. 2009 is potentially useful, but completely optional.



Learning outcomes

I have several specific learning objectives for you in this course and they are listed below. Some of these will be covered in lab, others in lecture, and many in both. By the conclusion of this course, you should be able to:

A. Microbial Diversity - Give examples of and compare and contrast different types of microbial cells (including viruses, bacteria, fungi, and protozoa). Identify cell structures and define their functions.

Assessed via laboratory and online quizzes or reports, questions from lecture exams 1, 2 and 3, the laboratory practical, and the comprehensive final exam.

B. *Microbial Metabolism* - Explain the various metabolic strategies employed by microbes. Provide specific examples of how metabolism is linked to environmental cycling of elements and pathogenesis.

Assessed via laboratory and online quizzes or reports, questions from lecture exams 2, and 3, the laboratory practical, and the comprehensive final exam.

C. *Microbial Genetics* - Describe basic concepts involving how genetic information flows in microbial cells. Detail the importance of mutation, recombination, and lateral genetic exchange in virulence.

Assessed laboratory and online quizzes or reports, questions from lecture exam 3, the laboratory practical, and the comprehensive final exam.

D. *Host-Microbe Interactions* - Differentiate between the innate, humoral, and cellular defenses and identify points of interaction. Explain how inappropriate immune responses can result in host damage. Compare the different interactions possible between host and microbial cells. Describe several different molecular strategies employed by microbial pathogens and give several specific examples of each.

Assessed via laboratory and online quizzes or reports, the laboratory practical, and the comprehensive final exam.

E. *Laboratory Techniques* - Correctly perform proper laboratory skills and display a habit of good laboratory practices that extend to your everyday life. Perform simple and differential stains on isolates and properly use compound light microscopes to visualize and describe microbial cell morphologies.

Assessed via laboratory quizzes and notebook entries, and the laboratory practical.

F. *Critical Thinking* - Accurately follow instructions and collect data based upon observations from laboratory exercises or clinical case studies. Plot data when appropriate and interpret any trends. Make inferences and predictions based upon the interpretations.

Assessed via laboratory and online quizzes, laboratory notebook entries, and the laboratory practical.

G. *Communication* - Demonstrate an ability to work in group settings and exchange ideas concerning course-related topics. Read, write, and speak about Microbiology with classmates and members of the community.

Assessed via short microbiology papers.

H. *Metacognition* - Articulate preferences and dislikes (strengths and weaknesses) for learning new and complex information. Adopt new learning strategies to improve retention of information and comprehension of the course materials.

Assessed via post-exam bonus assignments, feedback during office hours, and occasional class surveys.

A taxonomy of Microbiology skills

Each of the graded course activities will correspond to one or more of our six course outcomes. In addition, these activities can be involved different levels of cognitive skill or ability. These skills and their relative contribution to course assignments are described below.

Content Knowledge

IDENTIFYING – You will be expected to remember and correctly use appropriate scientific terms and concepts. This skill is assessed by measuring the ability to recall information in the same context in which it was presented during instruction. Approximately 15% of the course points will correspond to this skill.

CATEGORIZING – You will be expected to classify or provide examples of specific scientific concepts or constructs. This skill is assessed by measuring the ability to conceptually organize information in contexts different from those presented during instruction. Approximately 30% of the course points will correspond to this skill.

Critical Thinking

CALCULATING – You will be expected to correctly solve a variety of problems using mathematical reasoning. This skill is assessed by measuring the ability to select and apply appropriate formulae to solve novel problems. Approximately 10% of the course points will correspond to this skill.

INTERPRETING – You will be expected to analyze data provided in tables, images, or case studies to answer specific questions. This skill is assessed by measuring the ability to identify relevant facts and interpret them to address specific scientific problems or case studies. Approximately 15% of the course points will correspond to this skill.

PREDICTING – You will be expected to make sound inferences based upon their understanding of the interactions that make up a natural system. This skill is assessed by measuring the ability to make reasonable forecasts of the behavior of a specified system following a specified perturbation. Approximately 10% of the course points will correspond to this skill.

JUDGING – You will be expected to evaluate the validity of scientific statements or potential courses of action. This skill is assessed by measuring the ability to detect errors or inconsistencies in such statements. Approximately 5% of the course points will correspond to this skill.

Lab Skills

PERFORMING – You will be expected to use the scientific method to safely and correctly execute scientific exercises in the laboratory or field. This skill is assessed by measuring the ability to execute the exercises, record and interpret the observations, and report the results in an appropriate manner. Approximately 15% of the course points will correspond to this skill.

Instructional methods

BIOL 286: General Microbiology will be taught as a blended delivery class. The primary form of instruction for this course will be most likely be lecture. The material covered in lecture will be amplified and applied in a variety of required laboratory exercises. In addition, a number of important and required materials will be presented online via our Blackboard site. A complete online laboratory manual will be available during the semester. A moderate amount of out-of-class work will be required for this class. You will be expected to bring your clicker to every class session and participate in group discussions (both in class and online). We will regularly use the clickers to gather feedback, take concept check quizzes, and work collaboratively on case studies or problems. Your clicker responses *may* be included as part of your course score in the form of occasional bonus points.

Grading policies

I use an objective point-based system to grade all assigned work. The nature and relative point values of all assignments are explained in the following section. I have designed this course to be worth a total of **1,400 points**. Mid-term grades will be posted by **March 7, 2016** so that you may assess your class standing. Final grades for the course will be assigned based upon your total earned score as indicated

Breakpoints are not negotiable.

The bonus points should give you more than adequate buffer against any poor assignment performances.

Point Range	Grade	Percent
1,302 to 1,400 points	A	93-100%
1,260 to 1,301 points	A-	90-92.9%
1,218 to 1,259 points	B+	87-89.9%
1,162 to 1,217 points	B	83-86.9%
1,120 to 1,161 points	B-	80-82.9%
1,078 to 1,119 points	C+	77-79.9%
1,022 to 1,077 points	C	73-76.9%
980 to 1,021 points	C-	70-72.9%
938 to 979 points	D+	67-69.9%
882 to 937 points	D	63-66.9%
840 to 881 points	D-	60-62.9%
0 to 839 points	F	0-59.9%

Graded assignments

Lecture exams – There will be three 160-point comprehensive lecture exams (see the lecture schedule for dates). They will consist of multiple choice (four options) questions. The exam items will assess your comprehension of course materials at several different cognitive levels. They may be based upon diagrams, problems, data sets, or material drawn from the textbook or assigned readings.

- 480 points (34.3% of your final grade)

Laboratory quizzes – There will also be twelve 10-point laboratory quizzes (see the lab syllabus for dates). These will cover the prior lab's material as well as the assigned readings for the current lab period. Questions may include matching, multiple-choice, and problem solving.

- *120 points (8.6% of your final grade)*

Laboratory notebook – You will be required to record your observations from laboratory exercises and analyze these data in a bound lab notebook. Your notebook entries will be periodically evaluated using a set of simple scoring rules. Your notebook scores will be entered into the Blackboard grade book several during the semester. Keep up-to-date in your notebooks to ensure that you score all of these points!

- *150 points (10.7% of your final grade)*

Online Quizzes – A series of online quizzes will be made available on Blackboard. There will be one 10-point quiz for each lecture in the course. You may take these as many times as you wish – your highest score will count toward your final course grade. I have found that too many students procrastinate on these assignments. They are there to provide you with an opportunity to study and review over time – rather than cramming before the exams. Therefore, there will be weekly deadlines for completing this this semester. After the deadline, the quizzes will be available for practice and review – but not for course points.

- *240 points (17.1% of your final grade)*

Short Microbiology Papers – During the semester, you will be asked to write four short (2-page) papers to address specific prompts about microbiological issues. Their purpose is to stimulate creative and critical thinking on your part with regard to the application of what we are covering in class to your everyday lives. More precise instructions about these papers, a grading rubric, and paper deadlines can be found on our Blackboard site.

- *100 points 7.1% of your final grade)*

Laboratory Practical – At the end of the semester, there will be one 150-point laboratory practical. This will consist of twenty-five timed stations covering the materials seen and worked with over the course of the semester. Each station will have three multiple-choice questions. The penultimate lab session will be devoted to reviewing the materials for this exam.

- *150 points 10.7% of your final grade)*

Final Exam – There will be a comprehensive lecture exam. Its content drawn from material on in our four lecture modules (approximately half new material and half review questions). Like the lecture exams, it will consist of multiple-choice (four options) questions.

- *160 points (11.4% of your final grade)*

Bonus – At various points during the semester, bonus assignments may be given. The nature of the assignments, their due dates, and point values will be announced during the semester.

- *70 points (up to an extra 5% added back onto your final grade)*

Due dates for graded work				
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Your grade will be based upon many different assignments this semester. The following is a chronological compilation of the due dates (last acceptable date) for each assignment. These due dates can also be found in our Blackboard course calendar online.

Assignment	Due Date	Points	Percent	Cumulative
Online quiz [1]	1/17/16	10	0.71%	0.71%
Lab quiz 1	1/19/16	10	0.71%	1.43%
Notebook [1,2]	1/21/16	10	0.71%	2.14%
Online quiz [2]	1/24/16	10	0.71%	2.86%
Lab quiz 2	1/26/16	10	0.71%	3.57%
Notebook [3,4,5]	1/28/16	15	1.07%	4.64%
Online quiz [3,4]	1/31/16	20	1.43%	6.07%
Lab quiz 3	2/2/16	10	0.71%	6.79%
Notebook [6,7,8,9]	2/4/16	20	1.43%	8.21%
Paper 1	2/5/16	25	1.79%	10.00%
Online quiz [5,6]	2/7/16	20	1.43%	11.43%
Exam 1	2/8/16	160	11.43%	22.86%
Lab quiz 4	2/9/16	10	0.71%	23.57%
Notebook [10,11,12]	2/11/16	15	1.07%	24.64%
Online quiz [7]	2/14/16	10	0.71%	25.36%
Lab quiz 5	2/16/16	10	0.71%	26.07%
Notebook [13,14]	2/18/16	10	0.71%	26.79%
Online quiz [8,9]	2/21/16	20	1.43%	28.21%
Lab quiz 6	2/23/16	10	0.71%	28.93%
Notebook [15,16,17]	2/25/16	15	1.07%	30.00%
Paper 2	2/26/16	25	1.79%	31.79%
Online quiz [10,11]	2/28/16	20	1.43%	33.21%
Lab quiz 7	3/1/16	10	0.71%	33.93%
Exam 2	3/2/16	160	11.43%	45.36%
Online quiz [12]	3/6/16	10	0.71%	46.07%
Notebook [18,19]	3/17/16	10	0.71%	46.79%
Online quiz [13,14]	3/20/16	20	1.43%	48.21%
Lab quiz 8	3/22/16	10	0.71%	48.93%
Online quiz [15,16]	3/27/16	20	1.43%	50.36%
Lab quiz 9	3/29/16	10	0.71%	51.07%

Notebook [20,21,22]	3/31/16	15	1.07%	52.14%
Paper 3	4/1/16	25	1.79%	53.93%
Online quiz [17,18]	4/3/16	20	1.43%	55.36%
Exam 3	4/4/16	160	11.43%	66.79%
Lab quiz 10	4/5/16	10	0.71%	67.50%
Notebook [23,24,26]	4/7/16	15	1.07%	68.57%
Online quiz [19]	4/10/16	10	0.71%	69.29%
Lab quiz 11	4/12/16	10	0.83%	70.00%
Online quiz [20,21]	4/17/16	20	1.43%	71.43%
Lab quiz 12	4/19/16	10	0.83%	72.14%
Notebook [25,27,28,29,30]	4/21/16	25	1.79%	73.93%
Online quiz [22,23]	4/24/16	20	1.43%	75.36%
Laboratory practical	4/28/16	150	10.71%	86.07%
Paper 4	4/29/16	25	1.79%	87.86%
Online quiz [24]	5/1/16	10	0.71%	88.57%
Final exam	5/2/16	160	11.43%	100.00%
Total		1,400	100.00%	100.00%

Class attendance, late assignments, and make-up policies

You are expected to attend class regularly. I have noted a direct correlation in my prior classes between student attendance and class performance. However, it is ultimately up to you to show up for class. You will be responsible for all reading, discussions, and lecture materials. The lab is an essential component of this course. **Therefore, anyone with more than two (2) unexcused absences from lab will receive an 'F' for the course.**

All graded materials must be completed on time. Make up exams will be provided only in the case of an excused absence. You must contact me within one week of the missed exam and provide written evidence to explain your absence. If you know in advance that you will be absent for an exam, please contact me immediately. I will attempt to arrange to accommodate you (within reason) with no penalty. You may always turn in assignments before their due dates. If you miss a lab, you may attend a different section in order to participate in graded work.

The following are instances of excused absences:

1. Hospitalization, with documentation from your physician
2. Severe illness, with documentation from your physician
3. Jury duty, with a copy of your court summons
4. Bereavement, with a letter from a family member

5. Ferris-sponsored sporting event, with a letter from your coach

The following are **NOT** instances of excused absences:

1. Oversleeping – get a better alarm clock
2. Work – You agreed to the class schedule when you signed up for the course
3. Appointments – see number two
4. Traveling – see number two
5. Other classes conflict – see number two
6. Jail or prison time – you have bigger problems than a missed deadline
7. Illness without documentation – you must have a physician's note
8. Forgot deadlines – they are your responsibility
9. Bad weather – if Ferris is open, our classes will meet as scheduled
10. Confusion – ask questions earlier rather than later!
11. Computer problems – there are over 100 computers available in the library alone

Blackboard

This semester, we will be extensively using Blackboard Learn in our course. Our site will contain a variety of materials to supplement, but not replace, class attendance and reading. I am always interested in comments, corrections, or suggestions with regard to the electronically delivered course content! This semester, the site will contain the following:

1. A PDF copy of this syllabus.
2. Links to many different resources to help you to succeed in this class.
3. All course announcements pertaining to this class.
4. A calendar of all course assignments and deadlines.
5. Online communication tools for you to contact me or your classmates.
6. On-line access to your course grades.
7. Ancillary lecture materials including: 1) assigned readings with links to the e-textbook, 2) PDF copies of the lecture slides for your note-taking convenience, 3) a link to a Tegrity recording of the lecture (if Tegrity actually works that day), and 3) links to additional information on the internet offered by our textbook publisher (for review only).
8. Online quizzes and bonus materials – these **do count** toward your final grade in the course.
9. A completely online laboratory manual. This will consist of about 30 modules – one for each laboratory activity this semester.
10. Additional information about me, my background, and my interests.

I hope that you find this material to be helpful in preparing for exams and pursuing your interests. Please feel free to offer constructive criticism.

Registering your Turning Technologies clicker

To complete this process, you will need the following: a Turning Technologies clicker (NXT) and a computer with Internet access.

1. Turn on your computer.
2. Connect to the Internet using your favorite browser.
3. Go to the MyFSU website and log in. (<http://myfsu.ferris.edu/>)
4. Click on the Blackboard “Bb” icon at the top of the screen.
5. Click on the “Courses” icon at the top of the page.
6. Select “BIOL286: General Microbiology, Spring 2016” from the list of online courses.
7. Click on “Start Here (please)” in the left navigation menu
8. Click on the link called “Register Clicker”
9. Enter your clicker’s serial number.

If you are experiencing difficulty registering your clicker, please come to my office hours.

Statement of disability services at FSU

Ferris State University is committed to following the requirements of the Americans with Disabilities Act Amendments Act and Section 504 of the Rehabilitation Act. If you are a student with a disability or think you may have a disability, contact the Disabilities Services office at 231.591.3057 (voice), or email <mailto:ecds@ferris.edu> to discuss your request further. More information can be found on the web at <http://www.ferris.edu/htmls/colleges/university/disability/>.

Any student registered with Disabilities Services should contact the instructor as soon as possible for assistance with classroom accommodations.

Academic misconduct policies at FSU

The university may discipline a student for academic misconduct, which is defined as any activity that tends to undermine the academic integrity of the institution. Academic misconduct includes, but is not limited to, the following:

Cheating - A student may not use unauthorized assistance, materials, information, or study aids in any academic exercise, nor should a student give assistance, materials, information, or study aids to another student in any academic exercise.

Fabrication - A student must not falsify or invent any information or data in an academic exercise including, but not limited to, records or reports, laboratory results, and citations of the sources of information.

Facilitating Academic Dishonesty - A student must not intentionally or knowingly help or attempt to help another student to commit an act of academic misconduct. A student is

responsible for taking reasonable precautions to ensure his or her work is not accessed by or transferred to another individual wherein it may then be used to commit an act of academic misconduct.

Interference - A student must not steal, change, destroy, or impede another student's work. Impeding another student's work includes, but is not limited to, the theft, defacement, or mutilation of resources so as to deprive others of the information they contain. A student must not give or offer a bribe, promise favors, or make threats with the intention of affecting a grade or the evaluation of academic performance.

Plagiarism - A student must not adopt or reproduce ideas, words, or statements of another person without appropriate acknowledgment. A student must give credit to the originality of others and acknowledge indebtedness whenever he or she quotes or paraphrases another person's words, either oral or written and whenever he or she borrows facts, statistics, or other illustrative material, unless the information is common knowledge.

Violation of Course Rules - A student must not violate course rules as contained in a course syllabus which are rationally related to the content of the course or to the enhancement of the learning process in the course.

Violation of Professional Standards and Ethics - A student must not violate the professional standards or ethical code related to one's intended profession as defined by the academic program or department.

Communication courtesy policy

All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions and other online communication. If I deem any of them to be inappropriate or offensive, I will first contact the persons involved. For chronic problems, I will forward the messages to the chair of the department and appropriate action will be taken, not excluding expulsion from the course. The same rules apply online as they do in person. Be respectful of other students. Foul or inappropriate discourse will not be tolerated. Please take a moment and read the following link concerning the four hallmarks of "FerrisConnetiquette". <http://www.ferris.edu/HTMLS/administration/academicaffairs/online/FerrisConnetiquette.pdf>

Preparing for this course

This course will cover a diverse range of topics and will require you to possess some fundamental skills and knowledge. These will include a basic background in biology, chemistry, and math. In addition, you will need to have a working understanding of the metric system, common laboratory practices, and good study skills. Because of these demands, many students claim that this is a challenging class. I want you to succeed this semester! Take a little time right now to find out if your background in these fundamental topics is sufficient. Simply go to this site: http://www.mhhe.com/micro_prep/ and complete the online quizzes there. This site will

help you to identify any weaknesses early on and will also give you some study suggestions as you begin the class. In addition, go to our Bonus Work folder and complete the pre-course test. I want to see what your preexisting knowledge of microbiology is like. Thanks.

Lecture Schedule

	Date	Topic	Chapters	Pages
	<i>M Jan 11</i>	<i>Course introduction and orientation</i>		<i>see syllabus</i>
Microbial Diversity	W Jan 13	Scope and History of Microbiology	1	2-38
	M Jan 18	<i>Martin Luther King Holiday - No classes!</i>		
	W Jan 20	Observing Microbes	2	39-72
	M Jan 25	Microbial Cells	3	73-114
	W Jan 27	Prokaryotic Diversity	18,19	675-754
	M Feb 01	Eukaryotic Diversity	20	755-792
	W Feb 03	Virus Structure and Function	6	181-217
M Feb 08	LECTURE EXAM ONE			
Microbial Metabolism	W Feb 10	Bacterial Growth	4	115-148
	M Feb 15	Environmental Influences on Growth	5	149-180
	W Feb 17	Catabolism	13	458-504
	M Feb 22	Respiration, Lithotrophy, and Photolysis	14	505-546
	W Feb 24	Food and Industrial Microbiology	16	583-619
	M Feb 29	Microbial Ecology	21,22	793-859
	W Mar 02	LECTURE EXAM TWO		15% OLD MATERIAL
M Mar 07	<i>Spring Break - No classes!</i>			
W Mar 09	<i>Spring Break - No classes!</i>			
Microbial Genetics	M Mar 14	Microbial Genomes	7	218-256
	W Mar 16	Gene Expression	8	257-302
	M Mar 21	Molecular Regulation 1	10	341-384
	W Mar 23	Molecular Regulation 2	10	341-384
	M Mar 28	Gene Transfer and Mutagenesis	9	301-340
	W Mar 30	Viruses and the Mobilome	11	385-426
M Apr 04	LECTURE EXAM THREE		30% OLD MATERIAL	
Host-Microbe	W Apr 06	Chemotherapy	27	1029-1062
	M Apr 11	Innate Immune Defenses	23	860-894
	W Apr 13	Adaptive Immune Defenses	24	895-936
	M Apr 18	Hypersensitivities and Vaccines	24	893-934
	W Apr 20	Microbial Pathogenesis	25	937-978
	M Apr 25	Microbial Diseases 1	26	979-1028
	W Apr 27	Microbial Diseases 2	26	979-1028
M May 02	COMPREHENSIVE FINAL EXAM		45% PRIOR MATERIAL	

Laboratory Schedule

Date	Graded Work	Topic
T Jan 12		(1) Laboratory safety
R Jan 14		(2) Microscopy
T Jan 19	Quiz 1	(3) Cell morphology & (4) Aseptic technique <continuing>
R Jan 21	Notebook 1	(5) Gram stain & Complete aseptic technique
T Jan 26	Quiz 2	(6) Capsule stain & (7) Endospore stain
R Jan 28	Notebook 2	(8) Acid-fast stain & (9) Bacterial motility
T Feb 02	Quiz 3	(10) Protozoa & (11) Fungal slide culture <continuing>
R Feb 04	Notebook 3	(12) Viable bacteria counts <continuing>
T Feb 09	Quiz 4	(13) Bacteriophage & Complete viable bacteria counts & Fungal slide culture
R Feb 11	Notebook 4	(14) Bacterial growth curve & Complete bacteriophage
T Feb 16	Quiz 5	(15) Environmental conditions <continuing> & (16) Anaerobes <continuing>
R Feb 18	Notebook 5	(17) Antimicrobial compounds <continuing> & Complete anaerobes
T Feb 23	Quiz 6	Complete antimicrobial compounds & Environmental conditions
R Feb 25	Notebook 6	(18) Thermal death curves <continuing>
T Mar 01	Quiz 7	(19) Ultraviolet light & Complete thermal death curves
R Mar 03		Complete ultraviolet light
T Mar 08		Spring Recess - No Class!
R Mar 10		Spring Recess - No Class!
T Mar 15		(20) Water quality testing <continuing> & (21) Transformation <continuing>
R Mar 17	Notebook 7	(22) Lactose regulation <continuing> & Continue transformation & Complete water quality testing
T Mar 22	Quiz 8	(23) Enterobacteriaceae & Complete transformation
R Mar 24		Mid-Semester Recess - No Class!
T Mar 29	Quiz 9	(24) Gram positive cocci & (25) Bacterial unknown streaking <continuing>
R Mar 31	Notebook 8	(26) Symbioses <continuing> & Bacterial unknown staining <continuing>
T Apr 05	Quiz 10	(27) Exoenzymes <continuing> & Complete symbioses & Bacterial unknown <continuing>
R Apr 07	Notebook 9	Complete exoenzymes & Bacterial unknown characterization <continuing>
T Apr 12	Quiz 11	Bacterial unknown identification <continuing>
R Apr 14		(28) Wastewater treatment plant tour < -- field trip -- >
T Apr 19	Quiz 12	(29) Lysozyme <continuing> & Complete bacterial unknowns
R Apr 21	Notebook 10	(30) White blood cells & Complete lysozyme
T Apr 26		Laboratory practical review session
R Apr 28		LABORATORY PRACTICAL EXAM

SYLLABUS ATTACHMENT
FERRIS STATE UNIVERSITY – COLLEGE OF ARTS AND SCIENCES
Spring 2016

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IMPORTANT DATES		
Late registration	Wed. – Fri	Jan 6 – 8
First day of classes	Monday	Jan 11
Last day for Drop/Add	Thursday	Jan 14
Martin Luther King Day (no classes)	Monday	Jan 18
Last Day for Online Grad Application	Friday	Feb 26
Mid-term grades due	Monday	Mar 7
Spring recess (no classes)	Sat, Mar 5 – Sun, Mar 13	Mar 5 – Mar 13
Last day for "W" grades (full semester)	Wednesday	Mar 23
Mid-term recess (no classes)	Thurs - Sun	Mar 24 - 27
Last day of classes	Friday	April 29
Examination Week	Mon – Fri	May 2 – May 6
Commencement	Friday, Saturday	May 6, 7
Final grades due by 1:00 pm	Monday	May 9

DEPARTMENT OFFICES

Biology	ASC 2004	591-2550
Humanities	JOH 119	591-3675
Lang/Lit	ASC 3080	591-3988
Mathematics	ASC 2021	591-2565
Physical Sciences	ASC 3021	591-2580
Social Sciences	ASC 2108	591-2735
Social Work	ASC 2108	591-2737
Dean's Office	ASC 3052	591-3660

Sessions	Dates	Last Day to Withdraw
Full Session	Jan 11 – April 29	Mar 23
Session A	Jan 11 – Mar 1	Feb 11
Session B	Mar 2 – April 29	Apr 12
Session D	Jan 11 – Feb 12	Feb 1
Session E	Feb 15 – Mar 24	Mar 4
Session F	Mar 28 – April 29	Apr 18

WHAT YOU NEED TO KNOW

E-MAIL

All registered FSU students have a Ferris Gmail account. This is the only email to which all official University information about registration, financial aid, student activities, and class cancellations will be sent. Please check your account at least once a week. E-mail is our primary communication resource for students.

CLASS ATTENDANCE IS IMPORTANT!

Attendance usually has a high correlation with how well you do in a course. Many instructors have mandatory attendance policies by which your grade will be affected by absences. Some instructors also have policies about class tardiness to encourage students to be present for the full class period. Check your course syllabus or talk to your instructor about his/her policies.

HOW TO CONTACT A FACULTY MEMBER OR ADVISOR

If you have questions or need help, talk to your instructor. Faculty office locations, phone numbers, and office hours may be obtained from the class syllabus or department office, through the College of Arts and Sciences web page at <http://www.ferris.edu/htmls/colleges/artsands/>, or through the Directories & Maps link on the FSU home page.

DROPPING CLASSES OR WITHDRAWING

Dropping and adding only occurs during the first four days of the term. You can adjust your schedule **online during the first four days** or in person at the Timme Center (from 8-5 except for the last day when it is 12-5). *If you add a class you must pay for your additional charges by the fourth day or your schedule will be dropped.*

If you need to withdraw from a class after the official drop/add period, you must do so **OFFICIALLY**, through your dean's office, in order to avoid receiving an "F" grade in the course. **You may not withdraw online after the first four days of the term.** You will receive a "W" for the course. *You will not receive a refund.* If you need to totally withdraw from the University, you must do so **officially** at Admissions and Records in CSS 101. The last day to withdraw or drop a class may be different for different classes. **CHECK THE SESSIONS DATES SECTION ABOVE OR THE REGISTRATION AND ACADEMIC GUIDE FOR THE WITHDRAWAL DEADLINES FOR THE SEMESTER.** In cases of extenuating circumstances (e.g., a serious illness requiring you to withdraw from school), contact Birkam Health Center at 591-2614.

INCOMPLETES

The "I" is only considered for extenuating circumstances that have led to a student missing a portion of the course. The intent and appropriate use of the "I" grade is NOT to avoid student probation, dismissal, or unacceptable grades, nor should it be considered as an extended alternative to withdraw from a class (W). Extenuating circumstances are generally defined as those situations over which a student has little or no control—e.g., illness, birth, jury duty, death of a parent, serious injury. Instructors may require suitable documentation.

Students must have completed at least 75% of the coursework at passing levels before an "I" will be considered, and they may be required to sign an agreement regarding course completion. An "I" grade automatically changes to an "F" after one semester (not counting summer) unless the faculty member files another grade or extends the incomplete.

GRADUATION – ONLINE APPLICATION DEADLINE for participation in Spring Commencement Ceremony: **February 26, 2016**

Students should apply for their degree the semester prior to the degree completion term. To obtain a degree audit for either associate in arts degree, contact Dr. Roxanne Cullen (cullenr@ferris.edu) or Dave Schrock (daveschrock@ferris.edu), or associate in science degree, contact Kim Ducat (ducatk@ferris.edu). For a degree audit and clearance for bachelor degrees, contact your program coordinator. Online graduation application is REQUIRED and deadlines will be ENFORCED per the Provost’s Office and Records Office. Apply for your degree by logging into your MyFSU, (click on Student tab, My Records link, Degree Progress and Graduation, Apply to Graduate link). For more information, contact the Dean’s Office.

INCLEMENT WEATHER CONDITIONS

Only during the most severe weather conditions – which could potentially endanger the safety of students or staff – will the Big Rapids campus consider cancelling classes. The decision to cancel classes due to weather conditions at the Big Rapids site will be made as early as possible. In the event it is necessary to cancel classes, periodic announcements will be made on area radio and television stations. It is the student’s responsibility to listen for these announcements. A student may also call the Ferris Information Line at 231-591-5602 or check the Ferris website.

ACADEMIC MISCONDUCT

Academic misconduct refers to dishonesty or misrepresentation with respect to assignments, tests, quizzes, written work, oral presentations, class projects, internship experience, or computer usage; violation of computer licenses, programs, or data bases; or unauthorized acquisition or distribution of tests or other academic material belonging to someone else. It includes such behaviors as cheating, copying materials from the internet without documentation, presenting another person’s ideas or work as your own, taking someone else’s exam for them, violating computer software licenses or program/data ownership, etc. It is the expectation of the College of Arts and Sciences that all work you turn in is your own and is original for the course in which it is being submitted. If you are uncertain about whether a particular behavior might represent academic misconduct, be sure to ask your professor for clarification. Penalties for academic misconduct can include **FAILURE** of the assignment or the course, and/or disciplinary action up to and including probation or dismissal from the University.

DISRUPTIVE BEHAVIOR

The College of Arts and Sciences strives to maintain a positive learning environment and educational opportunity for all students. Consequently, patterns of behaviors which obstruct or disrupt the teaching/learning environment will be addressed. The instructor is in charge of his or her course (e.g., assignments, due dates, attendance policy) and classroom (e.g., behaviors allowed, tardiness). Harassment, in any form, will not be tolerated. Penalties for disruptive behavior can include involuntary withdrawal from the course and/or disciplinary action up to and including probation or dismissal from the University. The full Disruptive Behavior Policy is available on the College of Arts and Sciences website at <http://www.ferris.edu/HTMLS/colleges/artsands/student-resources/CAS-disruptive-behavior-policy-final.pdf>

For additional policies and helpful information, check out the College of Arts & Sciences Student Resources page at <http://www.ferris.edu/HTMLS/colleges/artsands/student-resources/>

WHERE TO GO FOR HELP

The following services are available to any Ferris student, free of charge. They are designed to help you succeed in your courses, in your career planning, and in meeting the challenges of university life. Don’t hesitate to explore and use these services at Ferris.

ACADEMIC ADVISING

All students have an assigned advisor and should confer with that advisor regularly. Students who have declared a major should see an advisor in that major. To find out who your advisor is, login to MyFSU, (click on the Student tab, My Registration, Advisor Information, Select Term, Submit).

ACADEMIC SUPPORT CENTER.....ASC 1017 – 591-3543
THE WRITING CENTER.....ASC 1017 – 591-2534

The Academic Support Center, Tutoring Services, and Writing Center join together to offer FSU students an array of academic support services. Tutors are available to answer questions for many courses. The Writing Center helps writers individually and in workshops with skills and assignments. There is also study skills assistance to help with note-taking, memory and reading strategies, and time management.

DISABILITIES SERVICES.....STR 313 591-3057

According to the Americans with Disabilities Act, each student with a disability is responsible for notifying the University of his/her disability and requesting accommodations. Students requiring a classroom accommodation due to a physical, learning, mental or emotional disability should contact the Disabilities Services Office.

SCHOLAR PROGRAM.....ASC 1021 591-5976

SCHOLAR is an academic support program that aids in the student’s successful progression by offering a Peer Mentor Program, a Student Retention Program, and an Academic Student Advisory Committee.

PERSONAL COUNSELING, SEXUAL ASSAULT, SUBSTANCE ABUSE BIRKAM HEALTH CENTER 2nd Floor - 591-5968

Personal counseling is available confidentially and free of charge. Counselors are available to assist with personal and stress-related problems, family and relationship issues, substance abuse, sexual assault, depression, or other similar problems. Call or stop by to obtain an appointment.

If you or a friend is in immediate crisis, call 911.

EDUCATIONAL & CAREER COUNSELING.....STR 313 591-3057

Students wanting to examine their choice of major or career choice, learning styles or strategies can make one-on-one appointments with licensed counselors.

SAFETY

Please observe the posted shelter and evacuation routes in the hallway nearest your classroom.

OTHER RESOURCES

BIRKAM HEALTH CENTER.....1st Floor 231-591-2614

The Birkam Health Center provides fee-for-service medical care including evaluation and treatment for illness and injury anytime during the year. Patients are seen on a walk-in and by appointment basis.

FLITE LIBRARY.....231-591-2669

Regular hours for FLITE:

Monday – Thursday 7:30 am – Midnight
Friday 7:30 am – 6:00 pm
Saturday NOON – 5:00 pm
Sunday 1:00 pm – Midnight

Extended Studies Court will begin late night hours January 19, 2016

*Sunday-Thursday/MIDNIGHT to 7:30 a.m.

*Friday-Saturday/6 p.m. to MIDNIGHT

FSU BOOKSTORE.....UNIVERSITY CENTER 231 - 591-2607

Regular hours for Bookstore (*subject to change*):

Monday – Thursday 9:00 am – 6:00 pm
Friday 9:00 am – 5:00 pm
Saturday NOON – 4:00 pm
Sunday CLOSED

HELPFUL NUMBERS

Admissions	2100	Inst. Testing	3628
Business Office	2125	Public Safety	5000
Financial Aid	2110	Records	2792
Housing	3745	TAC	4822

When calling from off campus, extensions can be called by using the prefix 231-591-_____.

Biology 321 - Human Physiology and Anatomy 1

Course Syllabus

Fall Semester 2016

Course Description: First of two semesters of a comprehensive, integrated course in anatomy-physiology, developing logical correlations between structures and their functions with emphasis on the molecular and cellular basis of organ system structure and function. Topics: cell physiology; control mechanisms; nervous, muscle, and endocrine systems. Laboratories include cadavers in anatomical studies and animal experimentation demonstrating physiological principles. Designed for students in science baccalaureate degree programs.

Instructor: Dr. M. Beth Zimmer, PhD
Office: 2120 Arts and Science Commons
Phone: (231) 591-5022
Email: zimmerm4@ferris.edu

Office hours: M 10:00-11:50am;
R: 10:00 – 10:50am
F: 2:00 – 2:50pm
By appointment

Lectures: M, W, F, 1:00-1:50pm IRC 120
Labs: Monday 3:00-5:50pm SCI 228
Tuesday 12:00-2:50pm SCI 228
Tuesday 3:00-5:50pm SCI 228
Wednesday 3:00-5:50pm SCI 228
Thursday 6:00-8:50pm SCI 228JJ

Course Prerequisites: BIOL 122 and CHEM 122

Required Texts:

1. **Lecture Material:** Fundamentals of Human Physiology: A Comparative Examination, Preliminary Edition, Zimmer MB, Cognella, San Diego, CA.
2. **Lab Material:** Seeley's Lab Manual, McGraw Hill, Note: Older/newer editions of the lab book will be

sufficient; however, chapter and page numbers will not match those listed on the syllabus.

Course Learning Outcomes: By the end of this course, students will be able to meet the following learning outcomes:

1. Students will be able to use a microscope effectively to identify the 4 tissue types (epithelial, connective, nervous, and muscular) within any human tissue.
2. Students will be able to identify and name designated anatomical structures (both histological and gross) within the following organ systems: integumentary system, the muscular system, the nervous system, the skeletal system, and the endocrine system.
3. Students will be able to explain physiological functions and mechanisms within the following organ systems: integumentary system, the muscular system, the nervous system, the skeletal system, and the endocrine system.
4. Students will be able to apply their knowledge of anatomy and physiology to think critically about the application of anatomical and physiologic concepts to specific situations.
5. Students will be able to carry out experimental procedures, evaluate experimental data and interpret their data based on the anatomy and physiology that they have learned.

Lecture and Lab NOTES - Blackboard and the Internet:

All lecture and lab notes will be made available via Blackboard.

Although the internet has become a major source of scientific information, one should remember that, unlike scientific papers or textbooks, web sites do not undergo the process of peer review. Consequently, never assume that absolutely everything posted on the web is correct, actually assume the opposite. When surfing the net, choose web sites that belong to well-established institutions such as colleges and universities. I will attach some sites that may become useful for study. If you find any sites that you'd like to share, please let me know and we can attach the links to the course site.

Evaluation:

The lecture mark is based on: (500pts total)

- Four lecture exams – 100 pts each
- Final cumulative exam – 100 pts

The lab mark is based on: (250pts total)

- Lab quizzes – 6 @ 25 pts each = 150
- Lab Final exam – 100 pts

Total points for class: 750

Lecture exams: will be given approximately every 4 weeks. They will consist of questions that pertain to the previous ~4 week's information (you will be told which subject areas are on a particular exam). More specific details will be given out prior to each exam.

Final Lecture Exam: A Comprehensive exam covering all of the material taught throughout the semester will be given.

Weekly quizzes: a short quiz will be given at the beginning of most labs and cover the material from the previous lab (anatomy labs only)

Lab Final: a comprehensive lab final will be given. Material from all anatomy labs will be covered on this exam.

YOU MUST PASS BOTH LECTURE AND LAB TO PASS THE COURSE

Course Policies

Grading:

93 – 100 = A	73 – 76.99 = C
90 – 92.99 = A-	70 – 72.99 = C-
87 - 89.99 = B+	67 – 69.99 = D+
83 – 86.99 = B	63 – 66.99 = D
80 – 82.99 = B-	60 – 62.99 = D-
77 – 79.99 = C+	Below 60 = F

Attendance: Attendance at lectures is expected. There is a positive correlation between students who attend lecture regularly and good grades. I will not take attendance, but there will be opportunity for extra credit for attendance in lecture!

Lab attendance is MANDATORY.

There will be no make-up labs. If you have a valid excuse for missing lab, please see me ***immediately***. Otherwise, you may not take the quiz for that lab and thus the missed lab will be recorded as a “0”. Two missed labs for ANY reason will result in a failing grade.

Academic Integrity: Cheating of any kind will NOT be tolerated. Any reports of cheating or plagiarism will be forwarded to the Office of Student Conduct and be treated accordingly.

It is not hard to succeed in Biology 321/322 as long as you approach this course with a certain degree of maturity and proper attitude. The few points suggest some strategies that you may find helpful in your study of the lecture material.

1. Always read/skim chapter material BEFORE coming to lecture. You are responsible for the entire content of lecture material. Because there is not enough time to discuss everything in detail, we will concentrate on those concepts that are either more difficult or critically important for the comprehension of the entire topic. Therefore, you must read the material ahead of time in order to place each lecture in proper context. Take notes!!!

2. Study consistently. DO NOT wait with studying until the last 48 hours before the exam! The amount of information will overwhelm you! It is much more effective to spend a short amount of time (even 15-20 minutes) in the evening following each lecture trying to *understand* the material. This way you should establish good comprehension of each individual concept and can concentrate on "putting the pieces together" during the week before the exam.

3. Ask questions. Many aspects of physiology are complex - DO NOT HESITATE TO ASK QUESTIONS each time you run into a problem. You can see me in my office hours or make an appointment to see me. Or simply ask other student in the class or your study group. This can be done in small study groups (see #4) or over individually.

4. Study in small groups. I strongly encourage students to study in small groups. It won't be long before you will get to know other students in the class, you may know some already. Try to establish a small study group and try to get together once a week to reinforce each other's comprehension of the material. Ask and answer questions aloud. If you can explain a concept aloud then you will have mastered the concept, try it! Such interactions will help you to assess your knowledge and point the areas that you overlooked in studying on your own.

Biology 321/322 Word and Prefix list

Sooner or later (probably sooner) you will come across the following words and prefixes listed below in the course of anatomy and physiology. They signify location or direction.

Superior (Cranial, rostral)	= toward the head or on top
Inferior (Caudal)	= toward the tail or at the bottom
Anterior	= toward the front
Posterior	= toward the back
Medial	= toward the midline
Lateral	= away from midline of the body
Intermediate	= between a medial and a lateral structure
Proximal	= closer to the origin of the body
Distal	= farther from the origin of the body
Superficial	= toward or at the body surface
Deep	= more internal, away from the body surface
Apical	= at the top (apex)
Basal	= at the bottom (base)
Afferent	= leading toward
Efferent	= leading away
Supra-	= on top
Infra-	= under
Extra-	= outside
Intra-	= inside, within
Inter-	= between
Para-	= to the side of
Exo-	= to the outside
Endo-	= to the inside
Epi-	= on top of
Peri-	= around
Ento-	= inner
Ecto-	= outer
Meso-	= middle
Centro-	= center
Ad-	= to or toward
Ab-	= away from

Week	Day		Lecture	Reading
1	M	Aug 29	Introduction to Anatomy and Physiology	Chap 1
	W	Aug 31	Cell structure and function	Chap 2
	F	Sep 2	Movement of molecules across cell	Chap 2
2	M	Sep 5	Labor Day – No classes	
	W	Sep 7	Movement of molecules across cell	Chap 2
	F	Sep 9	Nervous System	Chap 3, Section 1
3	M	Sep 12	Nervous – Resting membrane potential	Chap 3, Section 1
	W	Sep 14	Nervous – Action Potential	Chap 3, Section 1
	F	Sep 16	Synaptic Transmission (ONLINE lecture)	Chap 3, Section 1
4	M	Sep 19	Synaptic Transmission	Chap 3, Section 1
	W	Sep 21	Synaptic Transmission	Chap 3, Section 1
	F	Sep 23	Exam 1	
5	M	Sep 26	Post-synaptic potentials; EPSP, IPSP	Chap 3, Section 1
	W	Sep 28	Synaptic integration and strength	Chap 3, Section 1
	F	Sep 30	Neurotransmitters and Receptors	Chap 3, Section 2
6	M	Oct 3	Structure of Nervous system	Chap 3,
	W	Oct 5	Autonomic Nervous System	Chap 3, Section 3
	F	Oct 7	Brain and spinal cord	Chap 3, Section 4
7	M	Oct 10	Sensory physiology – receptors	Chap 4, Section 1
	W	Oct 12	Somatic sensory	Chap 4, Section 2
	F	Oct 14	Special senses – Vision	Chap 4, Section 3
8	M	Oct 17	Special senses – Vision	Chap 4, Section 3
	W	Oct 19	Special senses – Hearing	Chap 4, Section 3
	F	Oct 21	Exam 2	
9	M	Oct 24	Special senses – Vestibular system	Chap 4, Section 3
	W	Oct 26	Special senses – Taste and smell	Chap 4, Section 3
	F	Oct 38	Learning/Memory and Language	
10	M	Oct 31	Skeletal Muscle – structure	Chap 5, Section 1
	W	Nov 2	Skeletal Muscle – contraction/relaxation	Chap 5, Section 1
	F	Nov 4	Skeletal Muscle – NMJ and mechanics	Chap 5, Section 1
11	M	Nov 7	Skeletal Muscle – metabolism and fatigue	Chap 5, Section 1
	W	Nov 9	Skeletal Muscle – fibers - whole muscle	Chap 5, Section 1
	F	Nov 11	Smooth Muscle	Chap 5, Section 1
12	M	Nov 14	Control of body movement	Chap 5, Section 2
	W	Nov 16	Descending motor pathways	Chap 5, Section 2
	F	Nov 18	Exam 3	
13	M	Nov 21	The Endocrine System	Chap 10
	W	Nov 23	Thanksgiving – No class	
	F	Nov 25	Thanksgiving – No class	
14	M	Nov 28	Hypothalamus and Pituitary	Chap 10
	W	Nov 30	Hypothalamus and Pituitary	Chap 10
	F	Dec 2	Thyroid gland	Chap 10
15	M	Dec 5	Pancreas	Chap 10
	W	Dec 7	Adrenal gland	Chap 10
	F	Dec 9	Review	

Final Exam - Wednesday, December 14, 2010 12:00pm-1:40pm

BIOLOGY 321 Human Anatomy and Physiology
LAB Schedule
Fall Semester 2016

Week	Dates	Subject
1	Aug 29- Sep 1	<i>Chapter 1</i> – Human Anatomy – pg 1-10 <i>Chapter 3</i> – Histology: Epithelial, Connective – pg 19-28
2	Sep 5-8	No Labs
3	Sep 12-15 Quiz	<i>Chapter 3</i> – Histology: Muscle (10), Nerve (13) – pg 19-28 <i>Chapter 4</i> - Integumentary System – pg 29-32
4 Exam 1	Sep 19-22	**Cell membrane permeability – Handout
5	Sep 26-29 Quiz	Peripheral nervous system - Central nervous system – spinal cord
6	Oct 3-6 Quiz	<i>Chapter 9</i> - Central nervous system, Brain – pg 102-112 PNS - Cranial nerves
7	Oct 10-13 Quiz	**Compound action potential – Handout
8 Exam 2	Oct 17-20	Special senses – Anatomy and Physiology – Handout Sensory Taste Vision Hearing
9	Oct 24-27– In SCI 222	<i>Chapter 5, 6</i> - Skeletal system – Bones – pg 33-57
10	Oct 31-Nov 3 Quiz	<i>Chapter 8</i> - Skeletal muscle anatomy – pg 68-101
11	Nov 7-10 Quiz	**Skeletal muscle physiology – Handout
12 Exam 3	Nov 14-17	**Neural – Smooth muscle physiology – Handout
13	Nov 21-24	Thanksgiving – No labs
14	Nov 28-Dec 1	Open Lab for Review
15	Dec 5-8	Comprehensive lab final

** - Physiology labs

Biology 322
Human Anatomy and Physiology
Course Syllabus
Spring 2017

Course Description: Second of two semesters of a comprehensive, integrated course in anatomy-physiology developing logical correlations between structures and their function. Topics: respiratory, digestive, metabolic, cardiovascular, excretory and reproductive systems. Designed for students in science baccalaureate degree programs.

Instructor: Dr. Daisy Daubert
Office: 2012 Arts and Science Commons
Phone: (231) 591-2554
Email: dauberd@ferris.edu (best way to contact me)

Office hours:

Monday	10:00-11:00 am	ASC 2012
Tuesday	1:20-2:50 pm	ASC 2012
Thursday	1:20-2:50 pm	ASC 2012
	By appointment	

Lectures: Tu, Th 12:00-1:15 pm Sci 120
Labs: Tu 6:00-8:50 pm Sci 228
W 12:00-2:50 pm Sci 228
Th 6:00-8:50 pm Sci 228

Course Prerequisites: BIOL 122, 321 and CHEM 122 each with a grade of C- or better

Required Materials:

1. M. Beth Zimmer. Fundamentals of Human Physiology: A Comparative Examination Preliminary Edition. Cognella Academic Publishing. San Diego, CA.
<https://students.universityreaders.com/store/>
2. Turning Technologies clicker

Lab Material:

1. OpenStax Anatomy and Physiology
<https://cnx.org/contents/FPtK1z mh@8.47:zMTtFGyH@4/Introduction>
or any human anatomy lab manual

Course Outcomes:

1. Students will be able to identify and name designated anatomical structures (both histological and gross) within the following organ systems: the digestive system, the respiratory system, the cardiovascular system, the male and female reproductive system, and the renal system.
2. Students will be able to explain physiological functions and mechanisms within the following organ systems: the digestive system, the respiratory system, the cardiovascular system, the male and female reproductive system, and the renal system.

3. Students will be able to apply their knowledge of anatomy and physiology to think critically about the application of anatomical and physiologic concepts: analyze the specific situation and predict the outcome and the possible consequences of additional changes.
4. Students will be able to carry out experimental procedures, evaluate experimental data and form an understanding of the process that comes from the results of the experiment.

Lecture and Lab NOTES - Blackboard and the Internet:

All lecture and lab notes will be made available via Blackboard either before or after the class period. Most lectures will also be recorded via Tegrety for later viewing/listening through Blackboard. Tegrety has not always been reliable so you should not count on it being available for any given lecture.

Some lectures or lab lectures will be online only. On these days you will be responsible for watching the lectures before attending lecture. In class we will do activities that require you to have read the book and/or watched the lectures online.

Although the internet has become a major source of scientific information, one should remember that, unlike scientific papers or textbooks, web sites do not undergo the process of peer review. Consequently, never assume that absolutely everything posted on the web is correct, actually assume the opposite. When surfing the net, choose web sites that belong to well-established institutions such as colleges and universities. I will attach some sites that may become useful for study. If you find any sites that you'd like to share, please let me know and we can attach the links to the course site.

Communications:

Important information may be communicated through email. It is in your best interest to check your email frequently. Email is the best way to contact me.

Evaluation:

- Four lecture exams – 100 pts each
- Final cumulative lecture exam – 100 pts
- Lab worksheets, in-class assignments, lecture quizzes, post-labs – 160 points
- Lab quizzes – 6 @ 40 pts each
- Lab final exam – 100 pts

Total points for class: 1000

Lecture Exams: Lecture exams will be given according to the attached schedule. Exams may be multiple choice/short answer/fill in the blank. We will vote on the format. All exams are cumulative from the beginning of the semester.

Lecture Quizzes: There will be a quiz at the start of lecture each day. All quizzes are cumulative from the beginning of the semester. These quizzes will be done with your clicker and you will be able to work together but will not be able to use your notes, book, or any technology other than your clicker. Time will be limited to 6 minutes for a 5 question or less quiz. If you forget your clicker, after the first exam, I will grade your quiz by hand up to 3 times but you will lose one point if I do grade it by hand. If you forget your clicker more than 3 times you will no longer get any credit for the quiz.

Lab Worksheets: There will be lab worksheets due at the beginning of all anatomical labs except the first one, where it will be due at the end of lab. These worksheets require you to label many (but not necessarily all) of the anatomical structures you need to know for the next quiz. There are videos in Blackboard that cover everything you will need to know for the anatomy quizzes. You should watch the videos and fill out the worksheets before coming to lab so that lab time can be spent reviewing the structures on actual histological slides, models and cadavers. Also, if you have reviewed before lab and are unclear on a particular structure you can ask me in lab to clarify it for you.

Post-Labs: There will be online assignments in Blackboard for the physiology labs. Post-labs are due the Tuesday following your lab on that topic at 5pm. There are postlabs for all physiology labs.

About Lecture Quizzes, Lab Worksheets, In-Class Assignments and Post-labs: There will be more than 160 points worth of quizzes, lab worksheets, in-class assignments and post-labs. Your lowest individual scores will be dropped to give a total of 160 points. Because several quizzes/worksheets/assignments/post-labs will be dropped, there will be no ability to make them up, even if you have an excused absence.

Final Lecture Exam: A comprehensive exam covering all of the material taught throughout the semester/session will be given. The format for this exam will be set by the instructor and may be any percentage of multiple choice, short answer and fill in the blank.

Lab Quizzes: will be given at the start of lab according to the attached schedule and consist primarily of anatomical identification, designed to test students' comprehension of lab material. All quizzes are cumulative from the beginning of the semester/session. Physiology labs will not be quizzed in lab, but material learned in physiology labs may appear on lecture exams.

Comprehensive Lab Exam: A comprehensive lab exam will be given on the last day of scheduled lab. This will include only material covered in the anatomy labs. This exam is worth 100 points or, if you do well, can be used as your lab grade (340 points).

About Spelling and Legibility: On all exams and quizzes improperly spelled words will not result in missed points per se. However, if a word is not spelled correctly, I will sound out what you spelled phonetically. If it does not sound as it should be pronounced, you will lose points. You will lose points in every instance where the word is inaccurate in either spelling or phonetic pronunciation. Inaccurate pronunciation could come from missing letters, the wrong letters, or extra letters so be careful and check your answers, even for everyday words. If I can't read your writing you will also lose points, so be as neat as possible. If you spell everything correctly on a lab quiz you will earn one point extra credit on that quiz.

Course Policies

Grading:

93 – 100 = A	73 – 76 = C
90 – 92 = A-	70 – 72 = C-
87 - 89 = B+	67 – 69 = D+
83 – 86 = B	63 – 66 = D
80 – 82 = B-	60 – 62 = D-
77 – 79 = C+	Below 60 = F

I will round up if you are within 0.5 percentage points of a grade. This is to make up for any errors in grading and is a strict cut off.

Your grade is a reflection of what you have demonstrated learning. It is my responsibility to anyone who will see your transcript in the future to report what knowledge you have demonstrated learning from this class.

Class Attendance Policy: There will be quizzes and/or questions in lecture on most days. In order to get the points for these questions you must be present. If you take a lecture quiz, but then leave class early you will receive a 0 on the quiz for that day. If you are late and miss a quiz you will not be able to make it up.

Anyone who misses a lecture exam must notify me in person, by phone, or email **prior** to that class and must arrange with me to take a make-up exam.

Since persons who take exams late have additional time to prepare for the exam, to be fair to the rest of the class, I will deduct 10% of the total points available from the score for each day the exam is delayed. The first 10% will be taken off even if the exam is taken later than the scheduled time on the same day. If you have an excused absence, such as for a sports competition, you must take the exam before you leave.

Lab attendance is MANDATORY. There will be no make-up labs. If you have a valid excuse for missing lab, please see me *immediately*. Otherwise, you may not take the quiz for that lab and thus the missed lab will be recorded as a “0”. If you have a reason for missing your assigned lab time you may be able to attend another lab in that week. Again, contact me as early as possible so we can try to reschedule you. Two missed labs for ANY reason will result in a failing grade.

Academic Integrity: Cheating of any kind will NOT be tolerated. Any reports of cheating or plagiarism will be forwarded to the Office of Student Conduct and may result in failing the assignment/exam or the course.

I reserve the right to make needed and appropriate adjustments in this syllabus.

BIOLOGY 322 Human Physiology and Anatomy-2
Lecture Schedule
Spring 2017

(Subject to change)

Day		Topic	Book Section
Tu	Jan 10	Intro to cardiovascular system/Cardiac Anatomy	Chapter 6 Section 1
Th	Jan 12	Heartbeat Coordination	Chapter 6 Section 1
Tu	Jan 17	Mechanical Events of the Cardiac Cycle	Chapter 6 Section 1
Th	Jan 19	The Cardiac Output	Chapter 6 Section 1
Tu	Jan 24	Arteries and Arterioles	Chapter 6 Section 2
Th	Jan 26	Capillaries and Veins	Chapter 6 Section 2
Tu	Jan 31	Cardiovascular regulation	Chapter 6 Section 3
Th	Feb 2	EXAM	
Tu	Feb 7	Hypotension, Upright Posture, Exercise	Chapter 6 Section 3
Th	Feb 9	Blood	Chapter 6 Section 4
Tu	Feb 14	Hemostasis	Chapter 6 Section 4
Th	Feb 16	Respiratory Anatomy/Intro to Ventilation	Chapter 7 Section 1
Tu	Feb 21	Ventilation	Chapter 7 Section 1
Th	Feb 23	Gas Exchange	Chapter 7 Section 2
Tu	Feb 28	Gas Transport	Chapter 7 Section 2
Th	Mar 2	EXAM	
Tu	Mar 7	HOLIDAY	
Th	Mar 9	HOLIDAY	
Tu	Mar 14	Control of Respiration	Chapter 7 Section 2
Th	Mar 16	Renal Structure, Functions and Basic Processes	Chapter 8
Tu	Mar 21	Basic Processes Cont./Renal Clearance/Micturition	Chapter 8
Th	Mar 23	Regulation of Ion and Water Balance	Chapter 8
Tu	Mar 28	Regulation of Ion and Water Balance Continued	Chapter 8
Th	Mar 30	Hydrogen Ion Regulation	Chapter 8
Tu	Apr 4	Digestive System Introduction	Chapter 9
Th	Apr 6	EXAM	
Tu	Apr 11	Digestive System Continued	Chapter 9
Th	Apr 13	HOLIDAY	
Tu	Apr 18	Digestive System Continued	Chapter 9
Th	Apr 20	The Liver	Chapter 9
Tu	Apr 25	Reproductive Physiology	Chapter 10 Gonadal Hormones
Th	Apr 27	Reproductive Physiology Continued	Chapter 10 Gonadal Hormones

Final Exam: Tuesday May 2nd 12:00-1:40pm

BIOLOGY 322 Human Physiology and Anatomy-2
LAB Schedule
Spring Semester 2017

(subject to change)

Week	Dates	Quizzes	Subject	Section in OpenStax
1	Jan 10-12		Heart Anatomy	19.1
2	Jan 17-19		NO LABS	
3	Jan 24-26	Quiz	Cardiac Physiology	
4	Jan 31- Feb 2		Functions of the heart ECG and Blood pressure	
5	Feb 7-9		Blood vessels Lymphatic System	20.1 20.5 21.1
6	Feb 14-16	Quiz	Structures of the Respiratory System	22.1
7	Feb 21-23	Quiz	Respiratory Function	
8	Feb 28- Mar 2		NO LABS	
9	Mar 7-9		Spring Break - NO LABS	
10	Mar 14-16		Renal Anatomy	25.2 25.3 25.4
11	Mar 21-23	Quiz	Digestion Anatomy	23.1 23.3 23.4 23.5 23.6
12	Mar 28-30	Quiz	Digestion Physiology	
13	Apr 4-6		Reproductive Anatomy (LAB in SCI 222)	27.1 27.2
14	Apr 11-13		NO LABS	
15	Apr 18-20	Quiz	Open Lab for Review	
16	Apr 25-27		Comprehensive lab final	

Biology 375

Principles of Genetics

Fall 2016

3 Credits

Instructor Office

Dr. Bradley Isler

ASC 2113

Phone: 591-2641

E-mail: BradleyIsler@ferris.edu

Class Hours

MW 3:00-4:15 PM

Starr 136

Office Hours

MW 11-12 PM

MW 2-3 PM

Course Description

A comprehensive course in genetics including molecular aspects of gene structure, function, and control in prokaryotes and eukaryotes, transmission genetics and genes in populations. Designed for students in science baccalaureate programs. Prerequisite: BIOL 122.

Course Outcomes and Assessment

Upon completion of the course, a student will be able to:

- **Demonstrate** understanding of factual knowledge about genetics and, using critical thinking skills, be able to apply this knowledge to the study of inheritance patterns, the molecular mechanisms by which genes control cell metabolism, growth, and differentiation, and the evolutionary implications of genes in populations.
- **Analyze** inheritance patterns, probability, linkage relationships, genetic control mechanisms, quantitative genetics, molecular genetics, and gene frequencies and the impacts of population size, random mating, mutation, migration, and selection on gene frequencies.

These outcomes will be assessed using the following measures:

- Comparison of class performance on specific examinations questions.
- Student performance on quizzes and assignments provides timely assessment of mastery of specific concepts.
- Student responses to regular questioning in class indicates student understanding of current concepts and provides the opportunity to immediately revisit concepts, if necessary.

Required Materials

- Genetics: A Conceptual Approach, Fourth Edition, B. A. Pierce, W.H. Freeman and Company, 2011.

Grading

Your final grade will be determined from the total of all points earned on exams, class participation, pop quizzes, and homework assignments.

	<u>Maximum possible points</u>
Exams	450
Homework	175?
Pop quizzes	?

There will be three **exams** during the semester worth 100 points each and a final exam worth 150 points that will contain a mix of “new” and “old” material. Only standard, non-graphing calculators can be used on exams.

Homework assignments will be assigned after many lecture sessions and will serve to reinforce topics covered during lecture.

Pop quizzes will be administered at the beginning of selected lecture sessions and will cover information covered in previous lecture sessions.

Cheating

Cheating on exams, pop quizzes, or homework assignments will result in a zero on associated assignments and failure of the course. Additional action may be taken by the University.

Attendance Policy

Attendance will not be taken in lectures. However, since BIOL 375 is an upper level course, attendance is expected. Besides covering relevant material, lecture sessions will explore how to analyze and solve genetic problems. It will be very difficult to correctly solve genetic problems on exams, quizzes, and assignments if you are absent from lecture.

If you are absent from lecture, it is your responsibility to obtain information that was presented. It is also your responsibility to contact Dr. Isler to obtain any homework assignments you may have missed.

Late homework assignments that are turned in less than 24 hours late will automatically receive a 75% penalty. Homework assignments that are turned in more than 24 hours late will automatically receive a zero.

Students arriving late for class on the days on which pop quizzes are administered will receive a zero for that quiz. No make-up pop quizzes will be given.

Students who have a legitimate reason for missing an exam may use their score on the “old” portion of the final exam to replace the missed exam. Students who are absent on an exam day and do not have a legitimate excuse will receive a zero for that exam. No exceptions are allowed.

Class Participation

Class participation is not mandatory but will be considered when your final grade is determined. A student that is actively involved in a course will always perform at a higher level than a student that spends lecture periods sleeping, chatting with their friends, playing with their cell phone, or not paying attention.

Reading the Text

You should review the assigned sections of the text following lecture for increased understanding of the lecture material. Your text is an important part of this course and was chosen because it is the best available for explanations, reasoning, illustrations, problem solving, and connecting important topics.

Blackboard

Blackboard will be used throughout the course to post lecture notes, grades, articles, and animations. Lecture notes will be posted by chapter following the completion of an entire chapter.

In some cases, lectures will not be presented in class, but will be recorded using Tegrity and posted online. This will give us more time during class periods to work on problems and review important material. It is your responsibility to watch all Tegrity lectures and come prepared to class.

Class Decorum

The College of Arts and Sciences strives to maintain a positive learning environment and educational opportunity for all students. Patterns of behavior which obstruct or disrupt the learning environment in the classroom will be dealt with under the College *Disruptive Behavior Policy*. **Cell phones, iPods, and laptop computers must be turned off, and interpersonal conversations cease during the class period.**

Help!

Dr. Isler will be happy to help you during office hours or during any other available time. Please contact Dr. Isler for help or to arrange an appointment.

Tutoring is also available at the tutoring center in ASC 1017. Go to <http://www.ferris.edu/HTMLS/colleges/university/ASC/tutor-trac.htm> to arrange a tutoring session.

Grading Scale

93 – 100%	A
90 – 92.9%	A-
87 – 89.9%	B+
83 – 86.9%	B
80 – 82.9%	B-
77 – 79.9%	C+
73 – 76.9%	C
70 – 72.9%	C-
67 – 69.9%	D+
63 – 66.9%	D
60 – 62.9%	D-
< 60%	F

The grading scale may be adjusted depending upon class performance

Tentative Lecture Schedule

	Topic	Chapter
Aug 29	Introduction to genetics	1
	Chromosomes	2
	Mitosis and meiosis	2
Aug 31	Mitosis and meiosis	2
Sep 5	NO CLASS	-
Sept 7	Mitosis and meiosis	2
	Principles of segregation and independent assortment	3
Sept 12	Probability and chi-squared test	3
Sept 14	Probability and chi-squared test	3
	<i>Sex determination and the sex chromosomes</i>	4
	<i>Sex related traits</i>	4
Sept 19	Sex related traits	4
	Variations in Mendelian principles	5
Sept 21	Variations in Mendelian principles	5
Sept 26	Variations in Mendelian principles	5
Sept 28	Exam 1	-
Oct 3	Quantitative genetics	24
Oct 5	Quantitative genetics	24
	Population genetics	25
Oct 8	Population genetics	25
	<i>Inheritance Patterns</i>	6
	Pedigree analysis	6
Oct 10	Pedigree analysis	6
Oct 17	Pedigree analysis	6
	<i>Chromosome variation</i>	9
Oct 19	Chromosome variation	9
	Linkage and recombination	7
Oct 24	Eukaryotic gene mapping	7
	DNA	10
Oct 26	Exam 2	-
Oct 31	Chromosome structure	11
Nov 2	<i>Chromosome structure</i>	11
	DNA replication	12
Nov 7	DNA replication	12
Nov 9	Transcription	13
Nov 14	Transcription	13
	RNA Processing	14
Nov 16	Exam 3	-
Nov 21	RNA Processing	14
	Translation	15
Nov 23	NO CLASS	-
Nov 28	Control of gene expression in prokaryotes	16
Nov 30	Control of gene expression in prokaryotes	16
Dec 5	Control of gene expression in prokaryotes	16
Dec 7	Translation	15
Tuesday Dec 13	Final Exam 2:00-3:40 PM Starr 136	

CHEM 121 – General Chemistry I

Fall 2016

Instructor	Office	Phone	E-mail
Dr. Mark Thomson	ASC 3007	(231) 591-5895	MarkThomson@ferris.edu
Office Hours	MTR W and by appointment	1:00-2:00 11:00-11:50	

Lecture MTRF 12:00-12:50 SCI 102

Lab

Section 221	Friday	9:00 – 11:50	SCI 333		
Section 223	Wednesday	12:00 – 2:50	SCI 333		
Section 224	Wednesday	8:00 – 10:50	SCI 333		
Section 225	Monday	9:00 – 11:50	SCI 333		

Course Description: Fundamental principles, laws and theories of general chemistry, including stoichiometry, gas laws, thermochemistry, atomic structure, chemical bonding, periodicity, liquids and solids, solution chemistry, and theories of acids and bases. Concurrent laboratory/workshop sessions will include exercises illustrating the principles discussed in lecture. Students who anticipate enrolling in chemistry courses at the 200-level or higher should take this course. This course meets General Education requirements: Scientific Understanding, Lab.

Course Objectives: In this course, students will be expected to:

- apply the scientific method to solve chemical problems, interpret chemical phenomena and propose reasonable explanations.
- carry out unit and molar conversions in stoichiometric problems.
- use the periodic table to organize and correlate electronic structure, properties and reactivity of elements and compounds.
- name and identify simple inorganic molecules and draw their overall geometry.
- explain the nature and properties of matter, including the types of attractions, from a macroscopic and atomic perspective.
- identify different types of chemical reactions and write various forms of balanced equations for reactions in aqueous solution.
- calculate enthalpy changes of reactions using calorimetry data, standard enthalpies of formation, Hess's law, and bond energies.

General Education Course Outcomes: Upon completion of this course, a student will:

- have a working knowledge of the fundamental principles of chemistry.
- be able to use appropriate scientific reasoning skills to interpret and analyze content in the natural sciences.
- have a basic understanding of the scientific method, scientific concepts, and the evolution of scientific ideas.
- have a more positive attitude toward science and an increased confidence in their ability to understand science.
- will recognize that:
 - the natural world is understandable.
 - scientific ideas are not static, but rather dynamic and change over time.
 - scientific principles are testable.
 - scientific knowledge is based on a vast number of observations.

Materials Required:

Chemistry, The Molecular Nature of Matter and Change, 7th Ed., Sliberberg, M. S.; Amateis, P. G. McGraw Hill Education (ISBN 9781259686849) You must also have access to Connect and LearnSmart, an on-line homework and study system. You may obtain either a print or electronic copy of the textbook depending on your needs after considering the cost of each. There are significant advantages to the electronic copy of the text because it is integrated with the homework system. You may obtain access to Connect and LearnSmart with an access code obtained together with the purchase of a new textbook or you can purchase one separately from the Bookstore. You can also purchase access directly from McGraw Hill at their website when you initially sign up (this is likely a less expensive option so check prices and shop around). The site for Connect and LearnSmart for this course is <http://connect.mheducation.com/class/m-thomson-fall-2016-thomson>.

CHEM 121 LAB MANUAL, Thomson, Fall 2016 (v. 5). This manual will be available on-line on Blackboard.

Non-programmable Scientific Calculator – You will be expected to have a scientific calculator and to know how to use it (ask before the exam if you do not know how). Graphing calculators are almost always programmable as well and therefore not an appropriate choice for the exams. Make sure your calculator is in good working order before each exam. Calculators will NOT be shared during an exam for any reason.

Lab Notebook – You will be expected to keep a bound lab notebook where you will be expected to record your observations and lab work. This must be a bound composition book and NOT a spiral or 3-ring notebook.

Safety Goggles – You will be expected to bring a pair of safety goggles to class each and every lab period. Required features will be discussed during the first day of lab and safety glasses or other substitutes will not be accepted. If you are not prepared to perform the lab safely, you will not be allowed to complete the experiment. This includes the proper dress code that will also be discussed the first week of class.

Course Evaluation:

Preparation – LearnSmartPrep: This course has a prerequisite of a previous course in chemistry in high school or college. As a result, there is a body of information that is considered to be previously assumed knowledge that will lay an important foundation for this course but that we will not cover. To ensure that you are refreshed and ready to progress, on-line assignments will be selected in LearnSmart Prep that cover this background material. You may start to complete these assignments prior to the start of the course. They should be available starting in early July. All of the LearnSmart Prep assignments must be completed by the end of the first week of class, Monday September 5 at 11:59 pm. The assignments will be briefly discussed the first day of class and questions regarding their completion will be dealt with at that time. The Preparation portion will be totaled upon completion and scaled to a total possible value of 50 points.

Learning and Practice – LearnSmart: There will be an on-line set of questions for each chapter in LearnSmart. The number and difficulty for each chapter will vary. These are designed to cover individual learning concepts. Each chapter assignment will be available before we start the content in class so that you may begin to review the material ahead of time. Each assignment will also have a due date that comes close to when we start covering the material in class. The Learning and Practice portion will be totaled at the end of the semester and scaled to a total possible value of 125 points.

Homework Assignments – Connect: There will be regular on-line homework assignments posted on Connect. Each assignment will have a clear due date and it will be the student's responsibility to make sure that they access the website and complete the assignment before the deadline. Homework assignments will be totaled at the end of the semester and scaled to a total possible value of 125 points.

Lab Reports and Lab Notebooks: There will be a total of 13 experiments conducted in lab during the semester (see schedule). Each of these experiments will result in a lab report with a due date that will be announced in lab. Each Lab Report will be worth 10 points. The lab notebook will be worth an additional 5 points each week. Lab reports may be submitted late (up to one week late) for half credit. **The best 12 lab report and notebook grades will be recorded and included in the calculation of the final grade.** Attendance in lab is MANDATORY. If you miss more than two labs, you will AUTOMATICALLY FAIL. Make-up scheduling of missed labs may be available, based on space. If you know you will be missing a lab, notify the instructor as soon as possible.

Exams: There will be three exams worth 100 points each. The dates, which are tentatively listed in the schedule, are September 22, October 18, and November 15.

Final Exam: The Final Exam will be worth 200 points. The final exam will be **comprehensive**, including topics from previous exams as well as new material covered after Exam #3. It is scheduled for Tuesday, December 13, 2016 at 12:00 noon.

The Final Grade will be determined as follows, based on a total of 980 possible points.

A = average between 90.0% and 100%.

B = average between 80.0% and 89.9%.

C = average between 70.0% and 79.9%.

D = average between 60.0% and 69.9%.

F = average below 60%.

Course Requirements and Policies: Learning and teaching are both participatory actions that require your personal and frequent involvement. Attendance and active participation are expected and required in this course.

Lab Safety: Working with chemicals of any kind is hazardous. Lab safety is always a community issue and your safety in the lab is dependent on your actions as well as the actions of those around you. **The first key to lab safety is to come properly prepared. This includes proper eye protection as discussed above and on the first day of class. This also includes dressing properly. In a chemistry lab this means that you should not wear shorts, open-toed shoes, halter tops, or other clothing that does not offer sufficient protection.** The next key to a safe lab is to keep your work area free of clutter and obstruction. You will be sharing lab space with several other students and several other classes. Because of this, it is imperative that you clean your glassware and supplies and return them to their storage locations. Failure to do so will result in a grade penalty. Repeated failure to clean up will result in a grade of zero for the lab portion of the course.

Behavior Policy: Free discussion, inquiry, and expression are encouraged in this class. Classroom behavior that interferes with either (a) the instructor's ability to conduct the class or (b) the ability of students to benefit from the instruction is not acceptable. Examples may include routinely entering class late or departing early; use of beepers, cellular telephones, or other electronic devices; repeatedly talking in class without being recognized; talking while others are speaking; or arguing in a way that is perceived as "crossing the civility line." In the event of a situation where a student legitimately needs to carry a beeper/cellular telephone to class, prior notice and approval of the instructor is required.

Attendance Policy: Attendance is required and expected. In this course, a student will be considered absent if they miss more than half the scheduled class period. It is understood that emergencies might come up suddenly. If possible, let the instructor know beforehand that you will be missing class.

Students are allowed to miss up to 8 lecture classes without additional penalty for any reason, excused or unexcused. Be careful and try to avoid problems at the end of the semester. Each additional absence will result in a 5% reduction in your final overall grade. The instructor reserves the right to make allowances in the event of extreme cases involving extended hospitalization or more severe calamity.

Lab experiments are particularly participatory in nature and making up the material is not usually possible. Students are allowed to miss one lab without additional penalty as they are allowed to drop one lab report. An additional lab may be missed with a grade of zero for that report. Missing more than two labs will result in a failing grade for the course.

Tegrity Policy: When possible, lectures will be recorded and made available through Blackboard using Tegrity. Please be aware that this is NOT a substitute for coming to lecture but rather a study aid so that you can go back over material as you review it in your studies. Technical difficulties often arise so there is no guarantee that recordings will be available if you miss class.

E-mail and FerrisConnect Communication Policy: My policy is that the use of non-FSU e-mail addresses for communication with students is not appropriate. I will do my best to check my e-mail account regularly and often. During the week (Monday-Thursday), you should be able to expect a reply within 6-12 hours. On weekends, please recognize that I may be less connected to my accounts and a response may take 24 hours. You should be in the habit of checking Ferris Connect frequently. I will post general announcements there and you will be responsible for knowing about these announcements.

Inclement Weather Policy: The University remains open for classes unless decided otherwise by the president. Decisions regarding campus closure are posted on the University web page. If necessary, announcements will also be posted on FerrisConnect regarding work missed and rescheduled assignments or exams. Use your own best judgment if traveling from an off-campus site and let me know as soon as possible if weather conditions prevent you from attending class.

Students with Special Needs: I wish to provide all students in this course with the best opportunity to learn the material. Any student who feels they may need an accommodation based on the impact of a disability should contact me to discuss their specific needs. Any reasonable and appropriate accommodations should be discussed prior to the first exam. Please also contact the Disabilities Services Office, Arts and Sciences Commons, 1017k, (231)591-3772 to coordinate reasonable accommodations for documented disabilities.

The instructor reserves the right to modify this syllabus if necessary during the course of the semester. Any such changes will be discussed in class and posted in writing on FerrisConnect.

CHEM 121 –General Chemistry I
Tentative Topic Schedule

Fall 2016

Basic Concepts of Chemistry	Chapter 1
Measurement	
Unit conversions	
Significant figures	
Atoms/Elements/Molecules/Compounds	Chapter 2
Development of atomic theory	
Periodicity	
Chemical formulas and nomenclature	
Classification of matter	
Stoichiometry and Chemical Equations	Chapter 3
Mole Concept	
Empirical and Molecular Formulas	
Balancing Reactions	
Limiting Reagent and Yield Calculations	
Exam #1 – September 22, 2016	
Aqueous Reactions	Chapter 4
Solubility and electrolytes	
Solutions and concentrations	
Types of chemical reactions	
Molecular, ionic, and net ionic equations	
Gases and Gas Laws	Chapter 5
Ideal gas law	
Kinetic molecular theory of gases	
Thermochemistry	Chapter 6
Heat, specific heat, and calorimetry	
Stoichiometry and Enthalpy change	
Hess's Law and standard heats of formation	
Exam #2 – October 18, 2016	
The Electronic Structure of Atoms	Chapter 7 & 8
Bohr's model	
Quantum mechanics	
Electron configurations	
Periodicity	
Chemical Bonds between Atoms	Chapter 9, 10, & 11
Ionic, covalent, and metallic bonding	
VSEPR and Valence Bond theory	
Lewis Diagrams	
Geometry/Shape/Polarity	
Exam #3 – November 15, 2016	
Liquids and Solids	Chapter 12
Intermolecular forces	
Phase changes and phase diagrams	
Solutions and Colloids	Chapter 13
Units of concentration	
Colligative properties	
Final Exam – Tuesday December 13, 2016	

CHEM 121 – General Chemistry I
Tentative Laboratory Schedule

Fall 2016

Monday	Tuesday	Wednesday	Thursday	Friday
August 29	August 30	August 31	September 1	September 2
Experiment #1 & 2 – Introduction to the Chemistry Lab and Basic Lab Measurements				
September 5	September 6	September 7	September 8	September 9
Labor Day	Experiment #3 – Stoichiometry and Percent Yield			
September 12	September 13	September 14	September 15	September 16
(cont.)	Experiment #4 – Aqueous Reactions			
September 19	September 20	September 21	September 22	September 23
(cont.)	No lab scheduled			
September 26	September 27	September 28	September 29	September 30
Experiment #5 – Observations on Gases				
October 3	October 4	October 5	October 6	October 7
Experiment #6 – Calorimetry and Specific Heat				
October 10	October 11	October 12	October 13	October 14
Experiment #6b – Heat of Neutralization				
October 17	October 18	October 19	October 20	October 21
Experiment #7 – Emission Spectra and Electromagnetic Radiation				
October 24	October 25	October 26	October 27	October 28
Experiment #8 – Lewis Diagrams				
October 31	November 1	November 2	November 3	November 4
Experiment #9 – Determining Electronic Geometry and Molecular Shape				
November 7	November 8	November 9	November 10	November 11
Experiment #10 – Acid-Base Titrations				
November 14	November 15	November 16	November 17	November 18
Experiment #11 – Determining the Unknown Concentration of a Solution				
November 21	November 22	November 23	November 24	November 25
No lab scheduled		Thanksgiving Break		
November 28	November 29	November 30	December 1	December 2
Experiment #12 – Freezing Point Depression				
December 5	December 6	December 7	December 8	December 9
Experiment #13 – Chromatography				
December 12	December 13	December 14	December 15	December 16
Final Exam Week				

CHEM 122 COURSE SYLLABUS: Spring 2016

CHEM 122 Sections 231 & 232

General Chemistry (5 Credits)

Instructor: C. Partigianoni

Note: The instructor reserves the right to make needed and appropriate adjustments in the syllabus

<u>Contact Information and Office hours</u>	Section I, pg 1
<u>Course Description and Prerequisites:</u>	Section II, pg. 2
<u>Course Outcomes:</u>	Section II, pg. 2
<u>Required Texts & Materials:</u>	Section III, pg.3
<u>Course Requirements</u>	Section IV, pp. 3 &4
<u>Exam Dates</u>	Section IV, pg. 4
<u>Grading Scale:</u>	Section V, pg. 4
<u>Make-Up and Attendance Policies</u>	Section VI, pg 5,
<u>Lab Safety Rules</u>	Section VII, pp. 7 & 8
<u>Lecture and Lab Schedules:</u>	pp. 9 & 10
<u>College of Arts and Sciences Syllabus Attachment</u>	pp 11 & 12

I. General Course Information

Instructor: C. Partigianoni Office: ASC 3095 Phone: 591 – 5038
Email: partigic@ferris.edu

Office Hours: Mon, Tue, Thur, & Fri: 12:00– 1:00 pm

AND BY APPOINTMENT

If the designated office hours are not convenient for you, please feel welcome to make an appointment for any time that the instructor is available.

optional weekly question / answer sessions: Monday 7:00 – 8:00 pm (SCI 308)

Lecture: Mon, Tue, Thur, Fri: 2:00 – 2:50 PM: Starr 233

Labs (Rm SCI 335):

Sect 231: Wed: 12:00 – 2:50 pm

Sect 232: Tue: 3:00 – 5:50 pm

II. Course Description, Prerequisites and Outcomes

Course Description: Continuation of Chem 121 including oxidation-reduction reactions, electrochemistry, chemical equilibria, chemical kinetics, nuclear chemistry, thermodynamics, and acid-base and descriptive chemistry of metals and nonmetals. Laboratory will include some experiments illustrating topics discussed in lecture, along with several sessions devoted to qualitative analysis of common cations. This course meets General Education requirements: Scientific Understanding, Lab.

Course Prerequisites:

MATH 115 with a grade of C- or better (or ACT 1 MATH minimum score of 24 or SAT MATH minimum score of 560) AND successful completion of CHEM 121 with a grade of C- or better.

Course Outcomes:

General Education Outcomes: This course may be used to help fulfill the general education requirement for Scientific Understanding. A student succeeding in this course should:

- 1) demonstrate by examination a working knowledge of the most fundamental principles of chemical equilibrium, acid-base chemistry, chemical kinetics, redox chemistry and thermodynamics
- 2) be able to use appropriate scientific reasoning skills to interpret or analyze data and information given in POGIL (guided inquiry) activities and in laboratory experiments
- 3) have a basic understanding of the scientific method, scientific concepts, and the evolution of scientific ideas
- 4) have a more positive attitude towards science and an increased confidence in their ability to understand science

Specific Course Outcomes: In this course, students will be expected to :

- 1) Apply common theories of acids and bases to describe relevant species in acidic solutions, basic solutions, and buffers.
- 2) Integrate diverse concepts in chemical kinetics, redox reactions, and electrochemistry, and the chemistry of the elements and apply them to new and unknown problems.
- 3) Identify common radioactive particles and describe their roles in basic nuclear reactions
- 4) Apply appropriate thermodynamic factors to determine spontaneity of a process.
- 5) Apply theoretical models of reaction rates to use the rate laws and the description of possible reaction mechanisms
- 6) Describe at a molecular level what takes place when physical and chemical systems come to equilibrium, interpret diagrams of graphs representing such systems, and calculate concentrations of species in reactions that have come to equilibrium
- 7) design and perform lab experiments and interpret data

III. Text / Required Materials

1) (required): "Partigianoni's Chem 122 Course Packet" & 3- ring notebook(available only from Great Lakes Bookstore)

NOTE: the course packet includes all necessary laboratory materials, (you do NOT need to purchase any separate lab manuals)

2) (required): Connect and Learn Smart Access (on-line homework system)

3) Textbook: "Chemistry, The Molecular Nature of Matter and Change, by Silberberg and Amateis, 7th edition

Options: 1) e-book only (Smartbook):

may be purchased on-line (coupled with Connect & Learn Smart) from McGraw Hill for \$115

Bookstore price = \$142.85

or 2) Unbound 3-hole punched Looseleaf textbook:

may be purchased on-line from McGraw Hill for \$40

Bookstore price = \$184

or 3) bound hard copy of textbook coupled with Connect / LearnSmart: (bookstore = \$342.50)

or 4) Looseleaf textbook coupled with Connect / Learnsmart (Bookstore = \$221.45)

Supplements

ACS Study guide for final exam; (optional):

Miscellaneous:

Scientific calculator, (graphing calculators not allowed during exams)

Eye Protection: Safety **goggles** meeting current OSHA standards. **Contact Lenses and safety glasses are NOT permitted in Lab!!!!**

IV. Course Requirements:

Homework Assignments:

On-line homework: Connect: On-line homework will be counted for a grade. The total possible points at the end of the semester for on-line homework is 80 points.

Additional homework assignments are provided in the course packet. Although these will NOT be collected and graded they are the MOST IMPORTANT part of the learning process. PRACTICE MAKES PERFECT!! Answers to the assignments are provided in the coursepack at the end of the assignment. Step-by-step **SOLUTIONS to the assignments will be on reserve in the main library.**

Quizzes: A total of five 20 point quizzes will be administered. The quiz dates will be announced at least two days before the quiz. The lowest quiz grade will be dropped.

Exams: Exams will be administered on the dates provided below. Note that the point distribution varies for each exam. The final exam is prepared by the American Chemical Society. Study guides for the ACS final exam maybe purchased from ACS student affiliates or online, or from the bookstore.

Exam Dates:

Prelim I: Fri, Jan 29 (75 pts)

Prelim II: Thur & Fri Feb 25 & 26 (125 pts)

Prelim III: Thur (March 31) & Fri April 1 (125pts)

Prelim IV: Thur & Fri April 28 & 29 (125 pts)

Final Exam: Wed, May 4: 2:00 – 3:50 PM 150 pts: (ACS standardized)

V. Grading:

Lecture (quizzes, and exams): 80.0 % of total grade

Lab 20 % of total grade

Total grade = [(lecture % score) x 0.80] + [(lab % score) x 0.20]

Lecture pts:

On-line homework: 80 pts total

4 Prelim exams 450 pts total

Quizzes 80 pts total

Final Exam 150 pts total

GRADING SCALE: Grades will be based on the grading scale below. The instructor reserves the right to make minor adjustments (in the students' favor) based on natural demarcations in the grades

	A: 94.0 % or above	A- 90.0 – 93.9 %
B+: 87.0 – 89.9 %	B: 83.0 – 86.9 %	B- 80.0 – 82.9 %
C+ 77.0 – 79.9 %	C: 72.0 – 76.9%	C- 68.0 – 71.9%
D+ 65.0: 67.9%	D: 61.0 – 64.9%	D- 58:00 – 60.9%
	F: Below 58 %	

VI. Policies:

Attendance Policy:

Excused Absences: All excused absences, as defined below, must be confirmed with appropriate documentation;

- 1) illness (with appropriate documentation from health officials)
- 2) death in immediate family
- 3) approved university-related travel

Lab Attendance: ATTENDANCE IN LAB IS MANDATORY!!

MORE THAN 2 ABSENCES FROM LAB WILL RESULT IN FAILURE OF THE COURSE!! Those persons having excused absences from lab, as determined by the instructor, may possibly attend a different section during the same week, (if there is sufficient lab space.) A student must receive prior approval from the lab instructor in order to attend a different lab section. If you are unable to contact the instructor directly, you must leave a voice-mail PRIOR to the start of the missed lab in order to be excused.

Lab attendance for students repeating the course Students who have successfully COMPLETED Chem 122 and are repeating the course have the option of being excused from the five qualitative analysis labs outlined on the lab syllabus. Should a student choose this option, their overall lab grade will be based solely on all remaining experiments, (former grades on qualitative analysis labs will NOT be used.)

Lecture Attendance: Although attendance in lecture will not be recorded, attendance at lecture is strongly encouraged

Make-Up Policy: There will be NOT be make-ups for missed quizzes. Anyone who has an excused absence from a quiz will be excused and assigned a grade for the missed quiz equivalent to his/her average quiz grade at end of the term. Anyone who has an excused absence from a prelim exam will be given the opportunity to make-up the exam. **It is the student's responsibility to contact the instructor BEFORE the regularly scheduled quiz or exam date and receive prior approval for a make-up exam or excused absence from a quiz.**

Lab Safety Rules

1. Safety Goggles: Safety goggles are required in the laboratory, (even if you wear corrective lenses.) You must have safety goggles that fit snugly about your face; safety glasses are no longer permitted in lab. **Safety goggles must be worn at all times in the lab** because dangerous chemicals are stored in the lab at all times.. It is suggested that you do not wear contact lenses in the lab. Contacts can cause further damage to your eyes when chemicals get trapped beneath them.
2. Do NOT consume food or drink in the lab. (This includes gum, and cough drops.) Open food or beverage containers are forbidden in lab.
3. Dress appropriately for lab. Your legs, feet, and abdomen must be covered with proper attire. **Shorts, and open toed shoes such as sandals are NOT permitted in the lab.** Shirts must completely cover your abdomen, and your feet must be covered to avoid injury from split chemicals or broken glassware. Dress in older clothes or protect good clothes by wearing a lab coat.
4. Tie back long hair for safety, particularly when working with open flames.
5. **Report all accidents and injuries to your instructor.**
6. Report all chemical spills to your instructor; clean up minor spills, and have your teacher clean up major spills.
7. Know the location of the fire extinguisher, fire blanket, emergency shower, eye wash, and main gasswitch.
8. Thorough washing with water is the only first aid that the chemistry department can offer in cases of injury. If a student is need of more extensive aid he/she will need to seek assistance from the student health center or paramedics, at the student's expense.
9. Immediately flush any small chemical spills on persons, any cuts, or any burns with copious amounts of water.
10. Use extreme caution when working with concentrated acids or bases, as either can cause chemical burns on the skin. Strong bases such as hydroxides can also cause blindness. Bases will feel slippery on the skin, and must be thoroughly rinsed from skin. **It is also dangerous to breathe fumes of concentrated acids.** To avoid breathing fumes always work with concentrated acids in the hoods!!!
11. Do not touch chemicals directly with your fingers.
12. Rinse eyes immediately with water in the eye wash for a minimum of 15 minutes if any foreign substances get in them. Be sure to hold eyes open when using eye wash, and to remove contacts (which you should NOT be wearing.) See doctor immediately for potential damage to your eyes.

13. In the case of a large chemical spill on the body use the safety shower for at least 15 minutes. **Before using the shower it is important to first completely remove all clothing** to avoid more burning that can occur from the additional heat generated when the excess chemical and water combine.
14. Extinguish all small fires in containers by covering them. Let your teacher put out larger fires with the fire extinguisher.
15. Clothing fires can be extinguished using the safety shower or the fire blanket. When using the fire blanket: “stop, drop, and roll.”
16. Store book bags only in designated areas, not in isles where they can be tripped over. Keep lab drawers closed at all times to prevent others from tripping.
17. Keep bench tops clean. Be sure to wipe down benches before leaving lab, as a common courtesy, and, more importantly, to avoid other students from coming in contact with **unknown** chemicals.
18. To avoid coming in contact with unknown chemicals, never sit or kneel on benchtops or on the floor of the lab.
19. Dispose of glass wastes in the designated cardboard glass waste containers, NOT in the wastebasket!
20. Dispose of excess and / or waste chemicals as directed by the instructor. **Never dispose of chemicals in the water drain unless your professor has given you permission to do so.** If you are uncertain as to how to dispose of a chemical, **ASK YOUR INSTRUCTOR.**
21. To avoid cross-contamination of chemicals, use appropriately labeled spatulas, and never return unused portions of chemicals to reagent bottles. Dispose of excess chemicals appropriately; use waste boats when weighing compounds. Always replace tops on chemical reagent bottles to avoid “hygroscopic” chemicals from absorbing moisture in the atmosphere, and other sources of contamination.
22. Keep hoods closed at all times when not in use.
23. To avoid chemical spills on balances:
 - a) always crease the weighing paper before putting onto balance, (to avoid spills when removing paper containing solids)
 - b) always remove the weighing paper or boat from balance before adding or removing chemicals. Failure to do so will result in loss of credit on lab report!
24. Never move balances, as this can cause miscalibration, and do not place hot materials on balances. Close all doors on balances and tare to zero when finished using balances.
25. **Never leave lit Bunsen burners unattended!** You will lose credit on lab report if you do so!

Lab Schedule

Dates	Experiment
T (1/12) – W (1/13)	Safety, Check – In,
T (1/19) — W (1/20)	Kinetics Experiment
T (1/26) – W (1/27)	Beer's Law: Molar Absorptivity of $[\text{FeSCN}]^{2+}$
T (2/2) — W (2/3)	Equilibrium Constant of $[\text{FeSCN}]^{2+}$
T (2/9) — W (2/10)	Ksp Experiment
T (2/16) — W (2/17)	Qual; Group I
T (2/23) — W (2/24)	Qual; Group II
T (3/1) — W (3/2)	Qual; Group III
T (3/15) — W (3/16)	Acid / Base Titrations (Dry)
T (3/22) — W (3/23)	Titration of a Weak Acid
T (3/29) — W (3/30)	Qual: General Cation Design (dry)
T (4/5) – W (4/6)	Qual: General Cation
T (4/12) — W (4/13)	Balancing Redox Reactions (dry)
T (4/19) – W (4/20)	Copper Series
T(4/26) – W (4/27)	Check out

Lecture Schedule:

Week	Dates	Chapter	Topic
1	1/11 – 1/15	16	Kinetics
2	1/ 19– 1/22	16	Kinetics
3	1/25 – 1/29	17	Intro to Chemical Equilibria
4	2/1 – 2/5	17	Intro to Chemical Equilibria
5	2/8 – 2/12	20	Thermo: Entropy, Free Energy
6	2/15 – 2/19	20	Thermo: Entropy, Free Energy
7	2/22 – 2/26	18	Bronsted Acid / Base: Trends in Acid Strength, pH
8	2/29 – 3/4	18	Weak Acid / Base Equilibria
9	3/7 – 3/11	SPRING BREAK	
10	3/14 – 3/18	18, 19	Acidic/ Basic Salts; Buffers, Acid/ Base Titrations
11	3/21 – 3/23	19	Solubility Equilibria
12	3/28 – 4/1	21	
13	4/4 – 4/8	21	Electrochemistry / Thermal Redox Chemistry
14	4/11 – 4/15	24	Intro to Nuclear Chem
15	4/18 – 4/22	23	Intro to Coordination Chem
16	4/25 – 4/29		Exam 4 / review

**CHEMISTRY 321
ORGANIC CHEMISTRY 1
FALL 2016**

Instructor: Dan Adsmond adsmondd@ferris.edu
Office: 3009 Arts and Sciences Complex, Phone: 591-5867
Office Hours: Mon & Wed 11:00-11:50; and Thu 1:00-2:50
or by appointment or whenever the door is open.

Prerequisite: Chem 122 - General Chemistry 2 (grade of C- or higher)

Course Details: 5 credit hours

Lecture: SCI 102: Mon, Tue, Wed, Fri 10:00-10:50 AM

Laboratory: SCI 328: Sec 231 - Thu 8:00-10:50AM Sec 232 - Wed 3:00-5:50PM
 Sec 233 - Tue 12:00-2:50PM Sec 234 - Mon 3:00-5:50PM

Text: Organic Chemistry, Ninth Edition, loose leaf version of text with 24 month OWL access code
John McMurry, Cengage Learning, Boston. Bundle ISBN 9781305780170

Packet: Chem 321 Organic Chemistry 1 Handout Packet Fall 2016 - Prof Dan Adsmond
(available ONLY at Great Lakes Books)

Model Set: Molymod Organic Chemistry Molecular Model Set. (order from www.indigo.com SKU: 62053
(also available at the B&N book store on campus)

Course Description:

Modern bonding theory in organic molecules, theory of reactions, stereochemical principles, chemistry of alkanes, cycloalkanes, alkenes, dienes, alkynes, and aromatics with special emphasis on reaction mechanisms. Concurrent laboratory includes basic laboratory techniques, synthesis, TLC, GC, and IR spectroscopy.

Learning Outcomes for Organic Chemistry I (all instructors)

1. Demonstrate an understanding of the functionality and nomenclature of organic compounds by **identifying functional groups** in chemical structures, systematically **naming molecules** given their structures, and **drawing structures** given their names.
2. **Predict** relative physical and spectral **properties** of organic compounds based on chemical structures.
3. **Predict** chemical **reactivity** of organic compounds based on their chemical structure—functionality, size, shape, regio-, and stereochemistry—emphasis on the chemistry of hydrocarbons and haloalkanes.
4. Demonstrate a basic understanding of the energetic and mechanistic pathways of organic reactions by **drawing reaction energy profile diagrams** and **illustrating reaction mechanisms**.
5. **Develop the techniques** necessary to plan and execute the synthesis, **purification**, and **characterization** of organic compounds.

Two Additional Learning Outcomes

6. **Apply** the above knowledge **in effective problem solving** processes.
7. **Communicate** effectively **using the language** of organic chemistry.

Grading:	4 Exams (100 pts each)	400 pts
	Assignments (OWL and other)	~100 pts
	Laboratory	~200 pts
	Final Exam	<u>150 pts</u>
		850 pts

A	786-850
A-	765-785
B+	743-764
B	701-742
B-	680-700
C+	646-679
C	586-645
C-	552-585
D+	518-551
D	459-517
D-	425-458
F	below 425

Attendance: Regular attendance in lecture is expected. In-class assignments (announced and unannounced) may be given ranging in value from 4 to 20 points. Missed assignments will result in a zero grade. Attendance at exams and laboratory sessions is mandatory. Make a note of exam dates immediately! **NO MAKEUP EXAMS WILL BE GIVEN.** In the event of an excused absence on an exam the final exam score will be multiplied by 1.67.

Exam 1: Fri, Sep 23; Exam 2: Fri, Oct 14; Exam 3: Fri, Nov 4; Exam 4: Wed, Nov 23

AN ABSENCE IS EXCUSED IF: 1) you were ill and have a written doctor's excuse, 2) you need to attend a required university function (previous notification and permission from the Academic Vice Presidents Office required), 3) there is a death in the immediate family, or 4) you are required to serve on jury duty or are subpoenaed for court testimony (previous notification required).

Unexcused laboratory absences will dramatically lower your final grade in the course.

# of unexcused lab absences	1	2	3	4	5
points lost from final grade	20	40	80	160	200

Reading: Daily reading assignments are listed on the course schedule that follows. It is expected that students will have read the appropriate textbook pages and/or handouts before coming to lecture.

OWL: The OWL electronic homework is to be completed in preparation for class, as indicated on the course schedule, but will be accepted until 5:00 PM on Friday of the week during which it is due. All assignments for a given week should be released to you at 1:00AM the Monday of the preceding week.

Homework: Non-OWL homework problems will be assigned each class day and should be completed before the next class meeting. Some of the problems will relate to material already discussed in lecture and some will relate to the reading assignment that usually will not have been discussed. My expectation is that you will make a good attempt to solve each problem and that if you get stuck, you will write down a specific question that you need to have answered in order to complete the problem. Since exam questions will be similar to those seen in the homework, doing the homework regularly is a prerequisite to your success in the course.

Expectations: My expectations are that students arrive at class at 10:00AM sharp, prepared to THINK and PARTICIPATE. My teaching style requires that students participate in class by asking and answering questions, working in groups, solving problems at the board, and participating in class discussion. Students should feel free to ask questions at any time and are encouraged to do so. My job is to help you learn. Take advantage of the opportunity!

Classroom Ground Rules:

1. Address the instructor in an appropriate manner.
2. Respect the views and opinions of the other students.
3. Work only on material pertaining to the class.
4. No swearing or use of profanity.
5. No electronic communication devices.
6. No children allowed.

Final Exam: Tue, Dec 13, 10:00 – 11:40 AM

I reserve the right to make changes in the course that are appropriate within the context of the class.

Date	Chap	Reading and OWL Assignments (complete before class)	Topic
Aug 29			Course Intro
30	1	p 1-11 OWL Intro 1-4	Structure and Bonding - Lewis structures
31	2	p 28-40	Polar Covalent Bonds - Formal charge and resonance
Sep 2	1	p 12-20	Hybrid orbitals and molecular shape
5		NO CLASSES	LABOR DAY
6	3	p 60-65 CH1:MM 1-6, CH1:Ma 1-8	Organic Compounds - Functional groups
7	2&3	P 54-56, 78-79, Handout	Intermolecular attractions and physical properties
9			IA&PP cont'd
12	1&3	p 21-27, 66-72 OWL CH2:EOC 1-4, CH3:Ma 1-3, CH3:EOC 1,6	Drawing chemical structures, Alkanes
13	3	p 73-77 OWL CH3:EOC 2,4,7,8,15	Naming alkanes
14	3	p 80-88 OWL CH3:MM 1, CH3:Ma 4-5, CH3:EOC 5,9,10,11,12	Conformations & energy of alkanes
16	4	p 89-95 OWL CH3:MM 2-3, CH3:Ma 6, CH3:EOC 3,13,14	Cycloalkanes – naming cycloalkanes, cis & trans isomers
19	4	p 95-99 OWL CH4:MM 2, CH4:Mas 1-3, CH4:EOC 1,3,5	Heat of combustion, cycloalkane conformation
20	4	p 99-110 OWL CH4:MM 1, CH4:EOC 2,4,	Chair conformation of cyclohexane
21	4	p 110-114 OWL CH4:MM 3, CH4:EOC 6,7	Polycyclics
23		EXAM #1	
26	5	p 115-124	Stereochemistry – Symmetry, chirality, optical activity
27	5	p 124-130	Using the R & S designations
28	5	p 131-141, 145-148a OWL CH5:Mas 1-5 CH4:EOC 1,10	Diastereomers
30	6&2	p 42-53, 149-15 OWL CH5:Mas 6-9, CH4:EOC 2-4, 6,11,12,17	Acids & bases

Tentative 321 Lab Schedule F16

Week of	Experiment	Graded Assignments	pts
1 – 8/29	Check in,	<u>Preparation/technique points</u> 2 pts/wet lab day	20
2 – 9/5	Labor Day Week (no labs)		
3 – 9/12	Cooperative Unknown Week 1		
4 – 9/19	Cooperative Unknown Week 2: experiment continued		
5 – 9/26	Cooperative Unknown Week 3: Discussion. Group unknown identification and completion of report sheet.	Individual <u>report sheet</u> due at beginning of lab. Group <u>report sheet</u> due at end of lab.	08 14
6 – 10/3	TLC of Analgesics	Procedure, solvent choice, and prediction due as ticket to enter lab Cooperative unknown <u>quiz</u> in lecture	18
7 – 10/10	Distillation Week 1: Simple distillation experiment	TLC <u>formal report</u> due on lab day. (w/partner)	20
8 – 10/17	Distillation Week 2: Investigation of efficiencies of various distillation apparatus. GC demo.	Distillation <u>questions</u> due at beginning of lab.	08
9 – 10/24	Gas Chromatography of distillation products, identification of IR unknowns.	IR <u>identification sheet</u> due on lab day.	10
10 – 10/31	Acid/Base Extraction Week 1: acid/base extraction workshop. Individual flow diagram explanation.	Distillation <u>formal report</u> due on lab day (w/partner).	20
11 – 11/7	Acid/Base Extraction Week 2: Mixture separation by acid/base extraction	A/B <u>flow diagram</u> due as ticket to enter lab.	05
12 – 11/14	Acid/Base Extraction Week 3: Extraction experiment cont'd		
13 – 11/21	Thanksgiving Week (no labs)		
14 – 11/28	Synthesis and analysis of an organic compound. Weigh A/B products, calc % recovery, take melting points, and complete A/B report sheet.	A/B <u>report sheet</u> due on lab day <u>Flow diagram</u> and half <u>report</u> <u>sheet</u> due as ticket to enter lab A/B Quiz in lecture	12 08 18
15 – 12/5	Analyze product Cleanup & checkout	Organic synthesis <u>report sheet</u> due on lab day (w/partner). Written lab <u>final exam</u>	12 27

Syllabus - CHEM 322, Organic Chemistry 2, Spring 2016

Instructor: Dan Adsmond E-mail: adsmond@ferris.edu, Phone: 591-5867
Office: ASC 3009, Office Hours: Mon-Wed 9-9:50 AM, Thu 12-12:50 PM
or by appointment or whenever the door is open.

Prerequisite: Chem 321 – Organic Chemistry 1

Course Details: 5 credit hours

Lecture SCI 102: Mon, Tue, Wed, Fri 8:00-8:50 AM

Laboratory: SCI 328 Sec 211 - Thu 8:00-10:50 PM; Sec 212 – Wed 3:00-5:50 PM

Sec 213 – Tue 12:00-2:50 PM

Text: Organic Chemistry, Ninth Edition

John McMurry, Thomson Brooks/Cole Publishing Company, Boston.

packaged with OWL (OWL may be purchased separately)

Packet: Chem 322 Lecture Handout Packet Spring 2016 – Prof Dan Adsmond
(available ONLY at Great Lakes Books)

Lab: Composition book (for a lab notebook), NMR tube (at least one), Goggles

Course Description: Study of benzene compounds, alcohols and phenols, ethers and epoxides, carbonyl-containing compounds, aldehydes, ketones, carboxylic acids and their derivatives, carbanion chemistry, aliphatic and aromatic nitrogen-containing compounds. Concurrent laboratory includes synthesis, spectroscopic analysis, and identification of organic compounds with emphasis on chemical separation and purification techniques.

Course Outcomes: The six major outcomes of Chem 322 may be classified under the three headings listed below. A student successfully completing this course will:

FACTUAL KNOWLEDGE AND FUNDAMENTAL PRINCIPLES

- 1) become familiar with the structure, nomenclature, physical properties and chemical reactions of benzene compounds, alcohols, phenols, ethers, aldehydes, ketones, carboxylic acids, acid derivatives, and amines.
- 2) understand the relationship between the structure and physical properties as well as the relationship between structure and chemical reactivity of the aforementioned compounds.

THINKING AND PROBLEM SOLVING

- 3) be able to propose reasonable mechanisms for reactions of the aforementioned compounds.
- 4) be able to design multistep syntheses of organic compounds.
- 5) be able to understand, modify, and follow laboratory procedures for the synthesis, separation, purification, and analysis of organic compounds as well as being able to apply the underlying principles in developing and selecting appropriate procedures.

EFFECTIVE COMMUNICATION

- 6) learn to communicate effectively using the vocabulary of organic chemistry both orally and in written form.

Grading:	3 Exams (100 pts each)	300 pts
	Group Puzzles	036 pts
	Group Quizzes	060 pts
	OWL homework	070 pts
	Laboratory	184 pts
	Final Exam	<u>150 pts</u>
		800 pts

A	740-800
A-	720-739
B+	700-719
B	660-699
B-	640-659
C+	610-639
C	550-609
C-	520-549
D+	490-519
D	430-489
D-	400-529
F	below 400

Attendance: Regular attendance in lecture is expected. In-class assignments and quizzes will be given ranging in value from 4 to 15 points. Missed assignments and quizzes will result in a zero grade. Attendance at exams and laboratory sessions is mandatory. Make a note of exam dates immediately! **NO MAKEUP EXAMS WILL BE GIVEN.** In the event of an excused absence on an exam the final exam score will be multiplied by 1.67.

Exam 1: Fri, Feb 12; Exam 2: Fri, Mar 18; Exam 3: Fri, Apr 22

Unexcused **lab** absences will dramatically lower your final grade in the course.

# of unexcused lab absences	1	2	3	4	5
points lost from final grade	20	40	80	160	184

AN ABSENCE IS EXCUSED IF: 1) you were ill and have a written doctor's excuse, 2) you need to attend a required university function (previous notification and permission from the Academic Vice Presidents Office required), 3) there is a death in the immediate family, or 4) you are required to serve on jury duty or are subpoenaed for court testimony (previous notification required).

Reading: Daily reading assignments are listed on the course schedule which follows. It is expected that students will have read the appropriate textbook pages and/or handouts before coming to lecture.

OWL: The daily OWL homework is mastery based meaning that you will have up to 10 attempts to get the full points for each problem in an assignment. Each assignment will contain one of three possible types of problems: Multimedia (MM), Mastery (Mas), and End of Chapter (EOC). You may have up to three different assignments for a single day depending on the types of problems assigned. **The OWL electronic homework is to be completed in preparation for class**, as indicated on the course schedule, but will be accepted until 5:00 PM on Friday of the week during which it is due. Please contact me with any OWL issues you are having, **but do not expect extensions if you encounter OWL or computer issues while completing OWL after class on Friday.**

You may access OWL through Blackboard. There is a folder in our Blackboard Course that has instructions for getting started. Anyone who has purchased the 3-hole punched version of the 9th edition of McMurry textbook already has purchased an OWL access code. DO NOT PURCHASE another. If you have registered for the OWL Organic Chemistry 2 course before Jan 6 please see me ASAP.

Homework: Non-OWL homework problems will be assigned each class day and should be completed before the next class meeting. Some of the problems will relate to material already discussed in lecture and some will relate to the reading assignment that usually will not have been discussed. My expectation is that you will make a good attempt to solve each problem and that if you get stuck, you will write down a specific question that you need to have answered in order to complete the problem. Since exam questions will be similar to those seen in the homework, doing the homework regularly is a prerequisite to your success in the course.

Group work: During the second week of class you will be assigned to a group of 4. You will work together as a group on weekly Friday puzzles and group quizzes. Your experience working together on the Friday puzzles should greatly aid in your ability to perform on group quizzes.

My expectations are that students arrive at class at 8:00 AM sharp with textbook in hand, prepared to THINK and PARTICIPATE. My teaching style requires that students participate in class by asking and answering questions, working in groups, solving problems at the board, and participating in class discussion. Students should feel free to ask questions at any time and are encouraged to do so. My job is to help you learn. Take advantage of the opportunity!

Classroom Ground Rules:

1. Address the instructor in an appropriate manner.
2. Respect the views and opinions of the other students.
3. Work only on material/homework pertaining to the class.
4. No swearing or use of profanity.
5. No electronic devices.

Final Exam: Wed, May 4, 8:00 AM – 9:40 AM

Note: I reserve the right to make changes in the course that are appropriate within the context of the class.

Date	Chapt	Read/OWL Assignment (read/do before class)	Topic
January 11			Course Intro
12	16	478-493	Benzene: Electrophilic Aromatic Substitution
13	"	493-503 OWL MM16.1	Benzene: EAS substituent effects
15	"	503-505 OWL Mas16.1, EOC16.1	Benzene: additivity of substituent effects, synthesis
18		NO CLASSES	MARTIN LUTHER KING JR DAY
19	"	505-514 OWL Mas16.2, EOC16.2	Benzene: nucleophilic aromatic substitution, benzyne, oxidation, reduction
20	"	514-524 OWL MM16.2, EOC16.3	Benzene: synthesis
22		OWL EOC16.4	Friday Puzzle
25	17	525-534 OWL MM17.1	Alcohols and Phenols: naming, physical properties, acidity & basicity
26	"	535-543 OWL Mas17.1, EOC 17.1	A&P: alcohol preparation by addition and reduction (Grignards)
27	"	543-552 OWL MM17.2, Mas17.2, EOC17.2	A&P: alcohol reactions
29		OWL Mas17.3, EOC17.3	Friday Puzzle
February 1	"	553-555 OWL EOC17.4	A&P: multistep Grignard synthesis
2	"	555-567 OWL Mas17.4, EOC17.5	A&P: phenols, spectroscopy
3	18	568-573 OWL MM18.1	Ethers: naming, properties, & preparation
5		Mas18.1, EOC18.1	Friday Puzzle
8	"	573-575 OWL MM18.2	Ethers: synthesis and reactions
9		577-583 OWL EOC18.2	Ethers: epoxides
10	"	583-594 OWL Mas18.2, EOC18.3	Ethers: spectroscopy, thiols, sulfides, applications
12		EXAM #1	
15		Handout	Molecular Recognition
16			M.R. cont'd
17		595-603	Carbonyl Preview
19			Friday Puzzle
22	19	604-610	Aldehydes & Ketones: naming, preparation, &

		OWL	oxidation
23		610-619 OWL	A&K: nucleophilic addition of carbon, oxygen, and nitrogen nucleophiles
24	"	619-629 OWL	A&K: Wittig, Cannizzaro, and conjugate addition
26			Friday Puzzle
29	"	630-639 OWL	A&K: nuc add'n cont'd
March 1	"	640-648 OWL	A&K: Spectroscopy and synthesis
2	20	653-663 OWL	Carboxylic Acids & Nitriles: naming, physical properties, and acidity
4		OWL	Friday Puzzle
7-11		NO CLASSES	SPRING BREAK
14	"	664-666	Carboxylic Acids: synthesis
15	"	667-678 OWL	Carboxylic Acids: reactions, spectroscopy
16	21	679-688 OWL	Acid Derivatives: nomenclature, nucleophilic substitution (addition/elimination)
18		EXAM #2	
21	"	688-701 OWL	Acid Derivatives: nucleophilic substitution cont'd
22	"	701-712 OWL	Acid Derivatives: nucleophilic substitution cont'd
23			"Friday Puzzle"
24-25	"	NO CLASSES	EASTER BREAK
28		713-718 OWL	Acid Derivatives: thiol esters & polymers
29	"	718-726	Acid Derivatives: spectroscopy, synthesis
30	22	727-733	Carbonyl Alpha Substitution Reactions: enols
1	"	734-739 OWL	CASR: enolates
4			Friday Puzzle
5	"	739-752	CASR: malonic ester & acetoacetic ester syntheses
6	23	753-759 OWL	Carbonyl Condensation Reactions: aldols
8			Friday Puzzle
11	"	760-764	CCR: aldol syntheses
12	"	764-770 OWL	CCR: Claisens

13	“	770-783 OWL	CCR: Michaels, Storks, & Robinsons
15	“		Friday Puzzle
18			CCR: Enolate synthesis - putting it all together
19	24	787-797 OWL	Amines: naming physical properties, basicity
20	“	798-806 OWL	Amines: preparation
22		EXAM #3	
25	“	806-816 OWL	Amines: reactions
26	“	OWL	Amines: synthesis
27	“	816-831 OWL	Amines: heterocycles & spectroscopy
29			Final Study/Review Session

Syllabus**CHEM 364 Biochemistry*Z****4 credits****MTRF 8:00 – 8:50 Str 233**

A rigorous course in the chemistry of such biomolecules as amino acids, polypeptides, proteins and enzymes, carbohydrates, lipids and nucleic acids. The structure/function relationships of these biomolecules will be stressed and the biosynthetic and biodegradative pathways discussed. Credit will not be given for both CHEM 324 and CHEM 364. This course meets General Education requirements: Scientific Understanding.

Requires: CHEM 322

Instructor: Dr. Kim K. Colvert
colvertk@ferris.edu
Ext. 5851

ASC 3098 Office Hours: MTF 9-9:50
R 1-1:50
(other times by appointment)

Text: You may use any college level biochemistry text published within the last five years. This includes the text previously used for this class, "Principles of Biochemistry," Fifth Edition, Horton, Prentiss Hall. In addition you will need to purchase access to the homework for this class through Sapling Learning (Available from bookstore or on line. Instructions are at the end of the syllabus). A scientific calculator is also required. It cannot be a graphing or programmable calculator. If you expect to use the calculator for your exams I must approve its use. Much of our communication will be through the Ferris Connect page so be sure you can access the site. I will only communicate via the **message** function on this page and will not expect communication from you going to my regular Ferris e-mail. Use the blackboard message function or I might miss something you send me! You should also bring a red pen or pencil on group days.

Learning Outcomes: As demonstrated through examinations and performance on assignments, successful students will

- apply chemistry concepts and skills acquired in previous courses to living systems to reveal the molecular nature of life.
- master new concepts, facts and skills to support analysis and interpretation of biochemical processes
- relate chemical structures of biomolecules to biological function
- evaluate unfamiliar biochemical information in multiple formats and interpret by analogy to familiar information
- relate reductionist information into an integrated view of biomolecular behavior.

Attendance: <http://www.ferris.edu/HTMLS/colleges/artsands/student-resources/absence-policy.htm> There is no specific penalty for absences however in-class assignments cannot be made up. Late assignments will not be accepted. If possible, make arrangements for absences in advance. Excused absences must be documented. Special arrangements for excused absences must be made in person beforehand or as soon as possible after return and no later than the day after return to class. You are responsible for obtaining notes, etc. from classmates or from the web page. Handouts will be available on the web page or from me if not posted there. I will have

no sympathy if you choose not to come to class and miss important information or assignments (I warn you now, sometimes these assignments are very spontaneous).

Being late isn't a good idea. Get up early. If you are late come in quietly and avoid disrupting the class.

Class Department: See <http://www.ferris.edu/HTMLS/colleges/artsands/student-resources/disruptive-behavior.htm> We will strive to create a friendly, positive environment. If any of us happen to come into conflict these concerns must be addressed outside of class. Try to remember that education is a two-way street. You cannot be magically endowed with knowledge; you must come prepared and strive for understanding both in and out of class. I am a facilitator not a programmer so I must come prepared to help you in that process. There are two common questions I do not answer: 1) "Will this be on the test?" and 2) "I'll never use this, why do I have to know it?" In the first case assume that if it is covered in class or in the assigned reading it is fair game for an exam. In the second case assume there is a reason even if it is not immediately apparent. If it is keeping you up nights, come and ask; I probably have an answer. I'd rather you didn't eat in class and falling asleep could prove to be embarrassing. No cell phones are permitted!! Turn it OFF (not on vibrate) before class. No electronic devices are permitted unless approved in advance. If I let you bring a laptop (or surrogate) you'd better not be doing anything not class related.

Cheating : See <http://www.ferris.edu/admissions/registrar/schdbook/page16.htm> Penalty for a first offense will be a zero for that assignment. A second offense will result in failure of the course. Avoid even the appearance of cheating or plagiarism by doing your own work.

Grading: There will be four in-class exams worth 100 pts each. These exams will be short answer/essay/ problem combinations and will primarily test your ability to apply the specific knowledge you have accumulated rather than testing your ability to accumulate data. I do not make a point of providing old exams. This is because I feel quite strongly that if you study from an exam you will not "own" the information. By now you all have your own study techniques. Use what works best for you but feel free to ask for help. There will be a comprehensive final worth 100 pts. It is not optional. It can however replace your lowest test score and thus count twice. There will be approximately five group assignments or projects worth 20 pts. each. Graded homework assignments will be available through Sapling Learning and worth a total of 120 pts.

<u>Grading Scale</u>	<u>Cutoff Grade</u>
89%	A-
78%	B-
67%	C-
56%	D-

Expected Exam Schedule:

Exams will begin at 7:45 a.m. (optional, it's a chance for more time)

Exam 1 Sept. 22

Exam 2 Oct. 17

Exam 3 Nov. 10

Exam 4 Dec. 9

Final Dec. 17 7:40-9:40 a.m.

Review Sessions: (locations to be announced)

Tuesday, September 20 5:50-7:30 p.m.

Sunday, October 16 2:00-4:00 p.m.

Tuesday, November 8 5:50-7:30 p.m.

Wednesday, December 7 6:00-7:30 p.m.

Class Format: Read the appropriate material before you come to class. Ideally you should be able to take notes without any instructor provided aids. You should be able to split your attention between the presentation and taking those notes in such a way that you focus primarily on understanding the information as it is presented. Over the years students seem to have lost these skills so the power point lectures will be posted on Ferris Connect. Notes (outlines) will also be available. I strongly encourage you to listen and take notes to enhance your understanding without worrying about missing the critical. What won't be posted are the enhanced explanations and discussions in the lecture. Work on processing the information in class and be ready to answer and ask questions. Questions are encouraged. Be sure that if you didn't understand something you weren't the only one. By the way, use your text. They all will have something useful to offer—problems, special topics, reading lists. Remember the rule of thumb for study time: you must spend two to three hours outside of class for every hour in class. Study groups are encouraged. You learn a lot by explaining to others. If you do not spend the time reading and working problems you will not do well. Your homework assignments will be good practice for the exam but the more problems you work the better you will do on the exams. Note: I recommend that you do NOT print out all of the power point slides. They are not designed to be used this way. There are many that will not be useful and will waste paper. Many will be too small to read if you miniaturize them and many will be in your text in some form. Again, I personally would recommend that you work less on taking copious notes and more on understanding the explanation while in class. Take relevant notes with the understanding that you will have access to the slides. The only exceptions would be metabolic paths and mechanisms. It may be helpful to have these printed out full size. Of course you are free to ignore this advice if you find it more helpful to spend the paper but....

Group Assignments: You will be divided into groups of four. Each group will consist of an Alpha, Beta, Gamma, and Delta. One member will be assigned the role of moderator. The moderator will rotate and be responsible for submitting the group's results. The moderator will collect signatures from each participant on the final draft of the assignment and turn in the results. Each Greek letter will be assigned an individual problem that must be completed before class. Two copies of the individual problem should be prepared. Each individual will turn in one copy at the beginning of class to be graded for individual effort. The other will be used to

explain the problem to the group. If the group corrects the individual effort make those changes in red. The group will then work on a problem that will utilize the individual efforts in some way. After completion of the group problem the moderator will collect corrected individual problems, attach them to the completed group problem and submit the effort.

Tentative Timetable

Dates	Subject
8/29	Organization
8/30-9/2	Introduction: Setting the Stage
9/6-9	In an Aqueous Environment
9/ 12-20	It's Amino World Proteins: Structure and Function Proteins: In the Lab (expanded)*
9/23-27	Enzymes: Kinetics
9/29-10/3	Enzymes: Mechanisms/Coenzymes
10/4-10/11	Sugar (da da dit da dit da) Ahhh, Honey, Honey What Do You Mean It Won't Dissolve in Water?
10/13-14	The Wall Breaching the Wall Bioenergetics: The Paths to Power
10/18-21	Glycolysis: The Start of Something Big
10/24-25	Round and Round We Go : The TCA Cycle
10/27-31	The Rest of the Sugar Saga
11/1-11/8	Where's the Beef?: Ox-Phos
11/10-14	Butter Lovers Beware: The Catabolism of Lipids
11/15-18	Nitrogen, Amino Acids, and You Interlude: Nucleotides Nucleotide Metabolism: A Scavenger's Tale
11/ 21-22	Connections
11/28-12/8	Tinker to Evers to Chance: The Central Dogma Nucleic Acids Replication Transcription Translation In the Lab: Sequencing 'N Stuff

**Introductory Physics 1 (PHYS 211, 4cr.)
Fall Semester, 2015**

Instructor: Jeff Christafferson
email: christaj@ferris.edu
cell: 616-581-6499

Office & Phone: ASC 3015, Ext. 2585
Office Hours: Mon., Wed., & Fri.
10 – 11:30
(and by appointment)

Course Description: Basic concepts and applications of motion, force, energy, fluids, heat and sound. This course meets General Education requirements: Scientific Understanding, Lab.
Requires: MATH 116 or 120 with a grade of C- or better or 26 ACT or 590 SAT

Class/Lab Time: Class meets Tuesday & Thursday, 3:00 – 4:15, in SCI 102. Lab meets in SCI 114

Things You Will Need:

1. Subscription to MasteringPhysics.com (<http://www.masteringphysics.com>). When registering for Mastering Physics, select College Physics 7th ed. By Wilson, Buffa, & Lou as the textbook for this course and join my class: **MPCHRISTAFFERSON211**. New copies of the textbook should include a subscription key to the website. If you have a used copy, you will need to purchase a subscription separately.
 2. **Textbook:** COLLEGE PHYSICS (7th ed.) by Wilson, Buffa, & Lou. This book will also be used in PHYS 212.
 3. Laboratory Manual (available at Great Lakes Books & Supply).
 4. Scientific Calculator, Clear Plastic Ruler, and a Protractor
- Please Note:** You may have a calculator app on your smartphone that functions as a scientific calculator, but you may not use your phone during assessments.

General Education Outcomes: Physics 211 satisfies the scientific understanding component of the general education requirements at Ferris State University. Students who actively participate in and complete the requirements of PHYS 211 will

- gain a working knowledge of the fundamental concepts and principles of motion, force, energy, momentum, thermodynamics, and wave motion.
- be able to use appropriate scientific reasoning skills and content knowledge to interpret and analyze events that occur in the natural world;
- have a basic understanding of the scientific method and the evolution of scientific ideas;
- have a more positive attitude toward science and an increased confidence in their ability to understand science.

PHYS 211 Course Outcomes:

- Students will develop a good functional understanding of mechanics, thermodynamics, & wave motion (including sound).
- Students will begin developing expert-like problem solving skills.
- Students will develop lab skills.
- Students will improve their communications, interpersonal, and questioning skills.
- Students will develop attitudes and beliefs that are favorable to learning physics.

Student Learning Outcomes: Students who actively participate in and complete the requirements of PHYS 211 will be able to:

- Describe and explain physics concepts relevant to mechanics, thermodynamics, & wave motion (including sound).
- Solve standard textbook problems (including multi-step problems and multi-concept problems).
- Design, execute, analyze, and explain a scientific experiment to test a hypothesis.
- Discuss experimental observations and findings.
- Demonstrate an understanding of the principles of scientific inquiry.

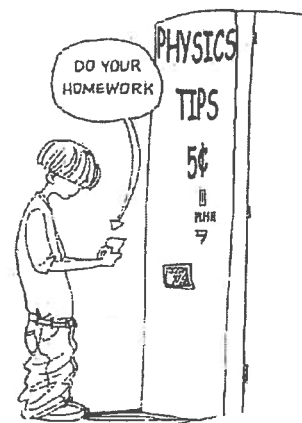
Making the Grade: The grade earned in this course is certainly an indication of how well you have mastered the subject material. But it will also reflect, in some measure, the *sweat equity* you have invested. The quizzes and examinations scheduled throughout the course measure your understanding of the material presented and the lion's share of your grade (70%) will be based on these performances. However, the effort you put into this class will also contribute significantly to your final grade. This *effort component* will be evaluated through attendance and participation in the lecture, homework assignments, and laboratory work.

Reading Quizzes (5% of your grade)

Each day you meet for class you will complete a small quiz over the reading assignment for that day. You must be present in class that day to participate in the quiz.

Homework (15% of your grade)

The homework assignments chosen for the class represent those concepts and applications (of the concepts) that I feel you need to know from each chapter. And by "knowing" I mean much more than simply memorizing the answer. You need to understand "why" the answer is what it is and "how" to construct solutions utilizing your own personal knowledge of the concepts involved. Remember, solutions do not miraculously appear but are carefully constructed from well understood principles and concepts. Reflect upon your own understanding while working on the assignments. If you are not satisfied that your understanding is adequate, be sure to ask questions and get the help you need to fully understand the physics involved. All homework for this class will be assigned through Mastering Physics, an online homework and tutorial system. To earn homework credit, your solutions must be submitted online at Mastering Physics before the specified due date. Late assignments will not be accepted.



When registering for Mastering Physics, select College Physics 7th ed. By Wilson, Buffa, & Lou as the textbook for this course and join my class: **MPCHRISTAFFERSON211**.

I recommend the following method to get the most out of the homework assignments:

- o Work cooperatively on assignments when possible. Giving and receiving help on homework is one of the best ways to learn physics.
- o Solve the problems on scrap paper first. Once you are confident of the solution, work the problem from the beginning (trying not to refer back to your previous attempts) to see if you can solve it correctly.
- o Copy a neat & legible solution into a notebook for reference. I recommend using one side of the notebook page for your homework solutions.

Laboratory (20% of your grade) The laboratory serves many functions for this class. It provides an opportunity to learn about, practice, and improve techniques utilized for scientific investigation, to apply the physical relationships presented in the lecture, and study new topics which are related to but not presented as part of the lecture. Active (and constructive) participation in each laboratory investigation is expected to earn full credit for this component of your grade. Due to the nature of a laboratory investigation, involving extensive use of equipment to gather data and cooperative work within a small group, laboratory assignments cannot be made-up if you miss a scheduled lab meeting. If you know you will be unable to attend your scheduled lab meeting time, try to attend the other lab section meeting that week. For those cases of excused absences, university rules apply.

Tests (60% of your grade): The examinations scheduled throughout the course measure your understanding of the material presented and the lion's share of your grade will be based on these scores. Much of what you see on the exams is derived from the homework assignments, so completing each homework will be critical to performing well on the exams. Each exam will be preceded by a *pretest* on Mastering Physics. Your two test scores will be combined in the following manner: Pretest - 30% of total, In-Class Exam: 70% of total. For example, if you score 90% on your pretest, and 78pts on your in-class exam, your final grade will be $(90 \times 0.3) + (78 \times 0.7) = 81.6$ pts. If you do not complete the pre-test, your final test score will be the total of the in-class exam score.

Grading Scale:	{100% - 95%} A	{89.9% - 86%} B+	{79.9% - 76%} C+	{69.9% - 66%} D+
	{94.9% - 90%} A-	{85.9% - 83%} B	{75.9% - 73%} C	{65.9% - 63%} D
		{82.9% - 80%} B-	{72.9% - 70%} C-	{62.9% - 60%} D-

Earning Less Than 60% Is a Failing Grade

Absences- Excused with Documentation:

- University-sponsored events in which an excused absence form from the University is presented to the instructor (i.e. sports travel, approved field trip with another class).
- Death in the family. Appropriate verification will be needed such as obituary in the newspaper, funeral card, or note from the funeral home.
- Extended hospitalization. Appropriate verification will be required from your physician and hospital. (This does not include emergency room visits or doctor appointments as excused).
- For students who are commuters-dangerous weather conditions in which driving is considered by local police authorities to be unsafe.
- Being called to testify in court case (but not for being arrested). Verification required.
- Jury duty. (Verification required.)
- Active military duty. (Verification required.)

General Classroom/Laboratory Policies

It is my intention to provide a constructive, comfortable, and respectful learning environment for each student enrolled in my classes. To that end, please read and follow the guidelines below:

- Cell phones **must be** set to silent put away.
- Participate fully and actively in classroom/laboratory activities. If you sleep, read the paper, listen to your music player, text your friends, etc., etc., etc. you will be asked to leave the classroom/laboratory.
- Work only on course material during the lecture/laboratory.
- Work with other students and/or individually when requested to do so and maintain a positive attitude about your own learning and that of others.
- Address the instructor in an appropriate and respectful manner and respect the views and opinions of the other students.
- Swearing, use of profanity, and personal (abusive) misconduct behavior will not be tolerated and may result in dismissal from the course.

Course Calendar

(Please note that this schedule is tentative and subject to change depending upon the progress of the class.)

<u>Date</u>	<u>Discussion Topic</u>	<u>Reading Quiz</u>
Sept 1 3	Intro. To the Course; Measurement Data Analysis and Significant Figures	pgs. 1-8
Sept 8	Describing Motion: Distance & Displacement Speed & Velocity, Acceleration	pgs. 34-39
Sept 10	Using Kinematic Equations	pgs. 50-52
Sept 15 Sept 17	Motion in 2-Dimensions Projectile Motion	pgs. 68-72 pgs. 80-83
Sept 22 Sept 24	Test #1 Explaining Motion: Dynamics and Newton's Laws of Motion	pgs. 104-108
Sept 29 Oct 1	Solving Problems using Newton's Laws Solving Problems using Newton's Laws	pgs. 121-125 pgs. 127-129
Oct 6 Oct 8	Work and Mechanical Energy Conservation of Mechanical Energy	pgs. 142-146 pgs. 157-163
Oct 13 Oct 15	Test #2 Impulse and Momentum	Pgs. 181-186
Oct 20 Oct 22	Conservation of Momentum Moving in Circles	pgs. 195-200 pgs. 230-234
Midterm Grades Available October 26st		
Oct 27 Oct 29	Torque and Stability Rotational Energy and Angular Momentum	pgs. 270-275 pgs. 291-298
Nov 3 Nov 5	Test #3 Thermal Energy and Thermal Expansion	pgs. 362-367
Last Day to Withdraw: November 5th		
Nov 10 Nov 12	Specific Heat & Calorimetry Phase Changes & Latent Heat	pgs. 388-392 pgs. 393-397
Nov 17 Nov 19	The 1 st Law of Thermodynamics The 2 nd Law of Thermodynamics	pgs. 420-429 pgs. 431-435
Nov 24 Nov 26	Test #4 Thanksgiving Holiday	
Dec 1 Dec 3	Simple Harmonic Motion Wave Motion	pgs. 456-459 pgs. 468-472
Dec 8 Dec 10	Sound Waves Sound Intensity and The Doppler Effect	pgs. 490-493 pgs. 507-513

Final Exam – Monday, December 14th, 2-3:40 in SCI 102

SYLLABUS ATTACHMENT
COLLEGE OF ARTS AND SCIENCES – FERRIS STATE UNIVERSITY
FALL 2015

ARE YOU CONSIDERING ADDING A MINOR OR MAJOR TO YOUR CURRENT PROGRAM?

Use My Degree to see what classes may already apply.
 For more information, stop by the Arts and Sciences Dean's Office!

IMPORTANT DATES		
Late registration	Wed. – Fri.	Aug. 26 – 28
First day of classes	Monday	Aug. 31
Last day for Drop/Add	Thursday	Sept. 3
Labor Day (no classes)	Monday	Sept. 7
Mid-term grades due	Monday	Oct. 26
Last day for "W" grades	Thursday	Nov. 5
Thanksgiving recess begins (no classes)	Wed (noon)	Nov. 25
Thanksgiving recess ends (classes resume)	Monday	Nov. 30
Last day of classes	Friday	Dec. 11
Examination Week	Mon – Fri	Dec. 14 - 18
Commencement	Saturday	Dec. 19
Final grades due by 1:00 pm	Monday	Dec. 21
Grades available to students on MyFSU	Tuesday (after 8AM)	Dec. 22

Sessions	Dates	Last Day to Withdraw
Full Session	Aug. 31 – Dec. 11	Nov. 5
Session A	Aug. 31 – Oct. 20	Oct. 1
Session B	Oct. 21 – Dec. 11	Nov. 20
Session D	Aug. 31 – Oct. 2	Sept. 21
Session E	Oct. 5 – Nov. 5	Oct. 23
Session F	Nov. 6 – Dec. 11	Nov. 30

DEPARTMENT OFFICES		
Biology	ASC 2004	591-2550
Humanities	JOH 119	591-3675
Languages & Literature	ASC 3080	591-3988
Mathematics	ASC 2021	591-2565
Physical Sciences	ASC 3021	591-2580
Social Sciences	ASC 2108	591-2735
Dean's Office	ASC 3052	591-3660

WHAT YOU NEED TO KNOW

E-MAIL

All registered FSU students have a Ferris Gmail account. This is the only e-mail to which all official University information about registration, financial aid, student activities, and class cancellations will be sent. Please check your account at least once a week. E-mail is our primary communication resource for students.

CLASS ATTENDANCE IS IMPORTANT!

Attendance usually has a high correlation with how well you do in a course. Many instructors have mandatory attendance policies by which your grade will be affected by absences. Some instructors also have policies about class tardiness to encourage students to be present for the full class period. Check your course syllabus or talk to your instructor about his/her policies.

HOW TO CONTACT A FACULTY MEMBER OR ADVISOR

If you have questions or need help, talk to your instructor. Faculty office locations, phone numbers, and office hours may be obtained from the class syllabus or department office, through the College of Arts and Sciences web page at <http://www.ferris.edu/htmls/colleges/artsands/>, or through the Directories & Maps link on the FSU home page.

DROPPING CLASSES OR WITHDRAWING */**

Dropping and adding only occurs during the first four days of the term. You can adjust your schedule **online during the first four days** or in person at the Timme Center (from 8-5 except for the last day when it is 12-5). *If you add a class you must pay for your additional charges by the fourth day or your schedule will be dropped.*

If you need to withdraw from a class after the official drop/add period, you must do so **OFFICIALLY**, through your dean's office, in order to avoid receiving an "F" grade in the course. **You may not withdraw online after the first four days of the term.** You will receive a "W" for the course. *You will not receive a refund.* If you need to totally withdraw from the University, you must do so **officially** at Admissions and Records in CSS 101. The last day to withdraw or drop a class may be different for different classes. **CHECK THE SESSIONS DATES SECTION ABOVE OR THE REGISTRATION AND ACADEMIC GUIDE FOR THE WITHDRAWAL DEADLINES FOR THE SEMESTER.**

In cases of extenuating circumstances (e.g., a serious illness requiring you to withdraw from school), contact Birkam Health Center at 591-2614.

INCOMPLETES

The "I" is only considered for extenuating circumstances that have led to a student missing a portion of the course. The intent and appropriate use of the "I" grade is NOT to avoid student probation, dismissal, or unacceptable grades, nor should it be considered as an extended alternative to withdraw from a class (W). Extenuating circumstances are generally defined as those situations over which a student has little or no control—e.g., illness, birth, jury duty, death of a parent, serious injury. Instructors may require suitable documentation.

Students must have completed at least 75% of the coursework at passing levels before an "I" will be considered, and they may be required to sign an agreement regarding course completion. An "I" grade automatically changes to an "F" after one semester (not counting summer) unless the faculty member files another grade or extends the incomplete.

GRADUATION – ONLINE APPLICATION DEADLINE for participation in Fall

Commencement Ceremony: **OCTOBER 1, 2015**

Students should apply for their degree the semester prior to the degree completion term. To obtain a degree audit for either associate in arts

degree, contact Dr. Roxanne Cullen (cullenr@ferris.edu) or Dave Schrock (daveschrock@ferris.edu), or associate in science degree, contact Jenice Winowlecki (winow2@ferris.edu) or Kim Ducat (ducatk@ferris.edu). For a degree audit and clearance for bachelor degrees, contact your program coordinator. Online graduation application is REQUIRED and deadlines will be ENFORCED per the Provost's Office and Records Office. Apply for your degree by logging into your MyFSU, (click on Student tab, My Records link, Degree Progress and Graduation, Apply to Graduate link). For more information, contact the Dean's Office.

INCLEMENT WEATHER CONDITIONS

Only during the most severe weather conditions – which could potentially endanger the safety of students or staff – will the Big Rapids campus consider cancelling classes. The decision to cancel classes due to weather conditions at the Big Rapids site will be made as early as possible. In the event it is necessary to cancel classes, periodic announcements will be made on area radio and television stations. It is the student's responsibility to listen for these announcements. A student may also call the Ferris Information Line at 231-591-5602 or check the Ferris website.

ACADEMIC MISCONDUCT

Academic misconduct refers to dishonesty or misrepresentation with respect to assignments, tests, quizzes, written work, oral presentations, class projects, internships, or computer usage; violation of computer licenses, programs, or data bases; or unauthorized acquisition or distribution of tests or other academic material belonging to someone else. It includes such behaviors as cheating, copying materials from the internet without documentation, presenting another person's ideas or work as your own, taking someone else's exam for them, violating computer software licenses or program/data ownership, etc. It is the expectation of the College of Arts and Sciences that all work you turn in is your own and is original for the course in which it is being submitted. If you are uncertain about whether a particular behavior might represent academic misconduct, be sure to ask your professor for clarification. Penalties for academic misconduct can include FAILURE of the assignment or the course, and/or disciplinary action up to and including probation or dismissal from the University.

DISRUPTIVE BEHAVIOR

The College of Arts and Sciences strives to maintain a positive learning environment and educational opportunity for all students. Consequently, patterns of behaviors which obstruct or disrupt the teaching/learning environment will be addressed. The instructor is in charge of his or her course (e.g., assignments, due dates, attendance policy) and classroom (e.g., behaviors allowed, tardiness). Harassment, in any form, will not be tolerated. Penalties for disruptive behavior can include involuntary withdrawal from the course and/or disciplinary action up to and including probation or dismissal from the University. The full Disruptive Behavior Policy is available on the College of Arts and Sciences website at <http://www.ferris.edu/HTMLS/colleges/artsands/student-resources/CAS-disruptive-behavior-policy-final.pdf>

For additional policies and helpful information, check out the College of Arts & Sciences Student Resources page at <http://www.ferris.edu/HTMLS/colleges/artsands/student-resources/>

WHERE TO GO FOR HELP

The following services are available to any Ferris student, free of charge. They are designed to help you succeed in your courses, in your career planning, and in meeting the challenges of university life. Don't hesitate to explore and use these services at Ferris.

ACADEMIC ADVISING

All students have an assigned advisor and should confer with that advisor regularly. Students who have declared a major should see an advisor in that major. To find out your advisor is, log in to MYFSU, (click on the Student tab, My Registration, Advisor Information, Select Term, Submit).

ACADEMIC SUPPORT CENTER.....ASC 1017 – 591-3543

THE WRITING CENTER.....ASC 1017 – 591-2534

The Academic Support Center, Tutoring Services, and Writing Center join together to offer FSU students an array of academic support services. Tut

are available to answer questions for many courses. The Writing Center helps writers individually and in workshops with skills and assignments. There is also study skills assistance to help with note-taking, test-taking, memory and reading strategies, and time management.

DISABILITIES SERVICES.....STR 313 – 591-3057

According to the Americans with Disabilities Act, each student with a disability is responsible for notifying the University of his/her disability an requesting accommodations. Students requiring a classroom accommodation due to a physical, learning, mental or emotional disability should contact the Disabilities Services Office.

SCHOLAR PROGRAM.....ASC 1021 – 591-5976

SCHOLAR is an academic support program that aids in the student's successful progression by offering a Peer Mentor Program, a Student Retention Program, and an Academic Student Advisory Committee.

PERSONAL COUNSELING, SEXUAL ASSAULT, SUBSTANCE ABUSE BIRKAM HEALTH CENTER2nd Floor - 591-5968

Personal counseling is available confidentially and free of charge. Counselors are available to assist with personal and stress-related problems, family and relationship issues, substance abuse, sexual assault, depression, or other similar problems. Call or stop by to obtain an appointment.

EDUCATIONAL & CAREER COUNSELINGSTR 313 – 591-3057

Students wanting to examine their choice of major or career choice, learning styles or strategies can make one-on-one appointments with licensed counselors.

SAFETY

Please observe the posted shelter and evacuation routes in the hallway nearest your classroom.

OTHER RESOURCES

BIRKAM HEALTH CENTER.....1st Floor - 591-2614

The Birkam Health Center provides fee-for-service medical care including evaluation and treatment for illness and injury anytime during the year. Patients are seen on a walk-in and by appointment basis.

FLITE LIBRARY.....591-2669

Regular hours for FLITE:
Monday – Thursday 7:30 a.m. – MIDNIGHT
Friday 7:30 a.m. – 6:00 p.m.
Saturday NOON – 5:00 p.m.
Sunday 1:00 p.m. – MIDNIGHT
Extended Studies Court will begin late night hours September 15, 2015
*Sunday-Thursday/MIDNIGHT to 7:30 a.m. *Friday/6 p.m. to MIDNIGHT
*Saturday/5 p.m. to MIDNIGHT)

FSU BOOKSTORE.....UNIVERSITY CENTER 231 591-2607

Regular on-campus hours for the Bookstore **:
Monday – Thursday 9:00 a.m. – 6:00 p.m.
Friday 9:00 a.m. – 5:00 p.m.
Saturday 12:00 p.m. – 4:00 p.m.
Sunday CLOSED

HELPFUL NUMBERS

Admissions	2100	Inst. Testing	3628
Business Office	2125	Public Safety	5000
Financial Aid	2110	Records	2792
Housing	3745	TAC	4822

When calling from off campus, extensions can be called by using the prefix 231-591-_____.

**General Physics 1 (PHYS 241, 5cr.)
Fall Semester, 2015**

Instructor: Jeff Christafferson
email: christaj@ferris.edu
cell: 616-581-6499

Office & Phone: ASC 3015, Ext. 2585
Office Hours: Mon., Wed., & Fri.
10 – 11:30
(and by appointment)

Class/Lab Time Class meets Mon – Thurs, 12-12:50, in SCI 117. Lab meets Friday in SCI 114 from 12 – 2:50.

- Required Materials**
1. Textbook: PHYSICS FOR SCIENTISTS & ENGINEERS with Modern Physics, 3rd edition, by Randall Knight
 2. Subscription to MasteringPhysics.com (<http://www.masteringphysics.com>). When registering for Mastering Physics, select PHYSICS FOR SCIENTISTS & ENGINEERS with Modern Physics, 3rd edition, by Randall Knight as the textbook for this course and join my class: **MPCHRISTAFFERSON241**. New copies of the textbook should include a subscription key to the website. If you have a used copy, you will need to purchase a subscription separately.
 3. Scientific Calculator, Clear Plastic Ruler, and a Protractor

Course Description: Principles and practical applications of motion, force, energy, fluids, heat and sound. Intended for science and engineering majors. Calculus is utilized. This course meets General Education Designation: Scientific Understanding Lab. **Requires:** MATH 220 with a grade of C- or better

General Education Outcomes: Physics 241 satisfies the scientific understanding component of the general education requirements at Ferris State University. Students who actively participate in and complete the requirements of PHYS 241 will

- gain a working knowledge of the fundamental concepts and principles of motion, force, energy, momentum, thermodynamics, and wave motion.
- be able to use appropriate scientific reasoning skills and content knowledge to interpret and analyze events that occur in the natural world;
- have a basic understanding of the scientific method and the evolution of scientific ideas;
- have a more positive attitude toward science and an increased confidence in their ability to understand science.

PHYS 241 Course Outcomes:

- Students will develop a good functional understanding of mechanics, thermodynamics, & wave motion (including sound).
- Students will begin developing expert-like problem solving skills.
- Students will develop lab skills.
- Students will improve their communications, interpersonal, and questioning skills.
- Students will develop attitudes and beliefs that are favorable to learning physics.

Student Learning Outcomes: Students who actively participate in and complete the requirements of PHYS 211 will be able to:

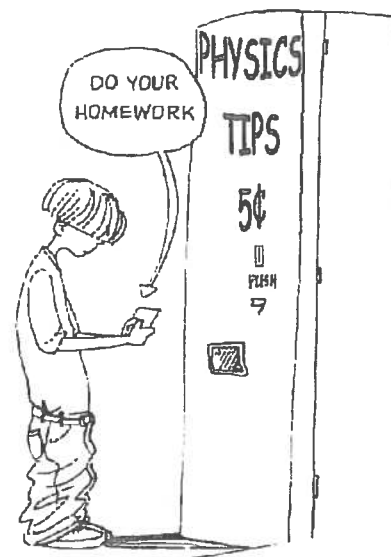
- Describe and explain physics concepts relevant to mechanics, thermodynamics, & wave motion (including sound).
- Solve challenging problems including multi-concept problems, multi-step problems, problems requiring qualitative reasoning, and context-rich ("real world") problems.
- Design, execute, analyze, and explain a scientific experiment to test a hypothesis.
- Discuss experimental observations and findings.
- Demonstrate an understanding of the principles of scientific inquiry.

Making the Grade: The grade earned in this course is certainly an indication of how well you have mastered the subject material. But it will also reflect, in some measure, the *sweat equity* you have invested. The quizzes and examinations scheduled throughout the course measure your understanding of the material presented and the lion's share of your grade (60%) will be based on these performances. However, the effort you put into this class will also contribute significantly to your final grade. This *effort component* will be evaluated through attendance and participation in the lecture, homework assignments, and laboratory work.

In-Class Activities For most students, attendance is critical for performing well in this class. Given the pace and structure of the class, a poor attendance record usually results in a lower grade than could have been earned otherwise. Most of you know this already. Yet despite this common knowledge, students are often tempted to skip class due to the weather, the demands of other classes, a sense of security (false or otherwise) of your academic standing in the class, etc., etc., etc. To encourage you to come to class *and participate*, you will have the opportunity to earn some extra credit through a variety of in-class activities. You must be present in class to participate and earn the extra credit.

Homework (15% of your grade) If preparing for and participating in each classroom discussion is important to learning, your own studying outside of class is almost certainly twice as important. Working independently or in a small group, you begin to construct your own *personal* understanding of the material by reflecting upon and applying the ideas presented in the classroom and textbook. You will also discover (more importantly) where your understanding is rather meager and in need of further support. This is the reason I require students to complete homework assignments in all of my classes.

The homework assignments chosen for the class represent those concepts and applications (of the concepts) that I feel you need to know from each chapter. And by "knowing" I mean much more than simply memorizing the answer. You need to understand "why" the answer is what it is and "how" to construct solutions utilizing your own personal knowledge of the concepts involved. Remember, solutions do not miraculously appear but are carefully constructed from well understood principles and concepts. Reflect upon your own understanding while working on the assignments. If you are not satisfied that your understanding is adequate, be sure to ask questions and get the help you need to fully understand the physics involved.



It will be in your best interests to create a permanent record of your work in this area as it will serve as a valuable resource for test preparation. I recommend the following method to get the most out of the homework assignments:

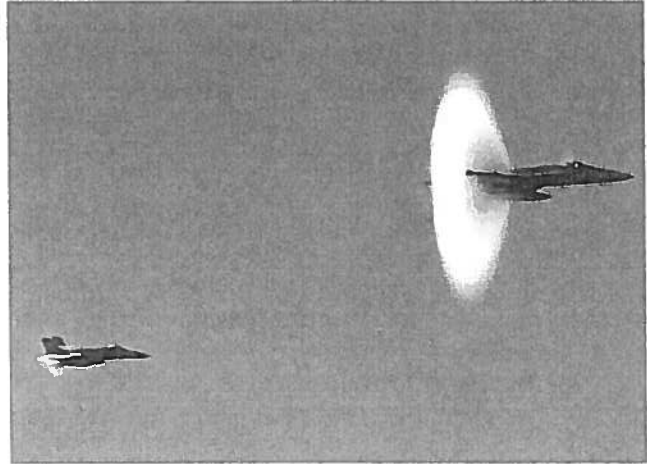
- Work cooperatively on assignments when possible. Giving and receiving help on homework is one of the best ways to learn physics.
- Solve the problems on scrap paper first. Once you are confident of the solution, work the problem from the beginning (trying not to refer back to your previous attempts) to see if you can solve it correctly.
- Copy a neat & legible solution into a notebook for reference. I recommend using one side of the notebook page for your homework solutions.

To earn credit for your completed homework assignments, your solutions must be submitted online at Mastering Physics before the specified due date. Late assignments will not be accepted.

Once logged in you will find this course using the following ID: **MPCHRISTAFFERSON241.**

“What’s In This Picture?”: A Real World Application of Physics (5% of your grade)

You may recall once or twice (hopefully more!) seeing a photograph and wondering, “What is going on here?” Often times the image represents a neat demonstration of physical concept (or several) that you may already understand or will learn about in this class. This photograph, for example, shows a jet fighter breaking the sound barrier. Questions that one may ask about the photo are “How fast is the jet moving?” or “Why does the cloud form around the jet?”



For this project I want you to find a picture of an event that takes place in the natural world and provide a sound physical explanation of the image. As in this photograph, several questions may be asked and answered. This modest project will give you an opportunity to apply the physical concepts learned to real world phenomena. Consequently, you may find that *science* can enhance both your understanding of and appreciation for the world we live in.

The guidelines for the picture project are as follows:

1. You are required to submit a hard copy of your picture no later than the end of the fourth week of class for approval. This will insure that your project is neither trivial nor too ambitious. Please note that often a seemingly simple picture can be used to demonstrate an important physical concept.

No pictures will be accepted after the fourth week of class (i.e., you will get 0% for this project if you have not submitted a picture for approval by the deadline).

2. Your photo must demonstrate concepts addressed as part of this class. It can be an event that occurs naturally or it may be contrived, but it cannot be an illustration.
3. You must submit a 2-4 page written report outlining the relevant physical concepts demonstrated by the image and how they can be applied to understand what the image depicts. Your report should be both engaging and understandable to your classmates. Project reports that are too complex to be understood by the average PHYS 241 student are not acceptable. (To help you to focus your energies in the right direction, be sure to read the scoring rubric for the project.)

My suggestion for these projects is to get started as soon as possible. If you have an idea by the end of the first week, great! If you do not have an idea by the end of the third week, ask for suggestions. Rough drafts may be submitted but are not required. I will make every effort to provide you with the necessary support to insure that your project is completed on time, but in the end the final result will depend on the time and effort you put into it.

***Please note that it is understood that several pictures may be submitted demonstrating the same concept. Each individual, however, is responsible for constructing their own explanation and composing their own paper. If it is clear that the paper submitted is based largely on the work of another, zero credit will be given. Furthermore, if a paper completely plagiarizes the work of another individual, zero credit will be given and the matter may be referred to the University for Disciplinary Action.

“What’s In A Picture?” Project Scoring Rubric

CATEGORY	3 points	2 points	1 point	0 points
Picture Relevance	Photograph clearly relates to the physical principles presented in PHYS 242 <i>and</i> includes an appropriate analysis.			Photograph does not relate to a topic in PHYS 242 <i>or</i> does not include an analysis.
Defining the Problem	More than one question is proposed by the author. Questions are relevant to the picture and meaningful in the context of the physical phenomena being demonstrated. A reasonable attempt was made to answer each question.	Only one question is proposed by the author. Question is relevant to the picture and meaningful in the context of the physical phenomena being demonstrated. A reasonable attempt was made to answer the question	Questions are proposed by the author. Questions are relevant to the picture but are trivial (easily answered; obvious) in the context of the physical phenomena being demonstrated. Answers are provided to the proposed questions.	No questions are proposed by the author <i>or</i> questions are presented with no attempt made to answer the questions.
Solution Plan	Supporting theory is clearly identified and appropriate for the physical situation depicted. Solution plan explicitly connects the theory presented to the physical phenomena depicted and explains (to the reader) how the theory will be used to answer the proposed questions.	Supporting theory is clearly identified and appropriate for the physical situation depicted. Solution plan explicitly connects the theory presented to the physical phenomena depicted but does not explain (to the reader) how the theory will be used to answer the proposed questions.	Supporting theory is clearly identified and appropriate for the physical situation depicted. Solution plan does not connect the theory presented to the physical phenomena depicted; explanation does not demonstrate how the theory will be used to answer the proposed questions.	Supporting theory is not presented <i>or</i> is not relevant to the physical situation depicted.
Solution	The solution to the proposed questions is presented in a logical sequence. The solution (1) includes a pictorial representation (motion diagram and a free-body diagram) consistent with the picture, (2) clearly identifies known, measured, and estimated quantities, (3) clearly outlines any approximations necessary to the solution, and (4) includes a mathematical representation consistent with the theory and pictorial representation. All physical quantities presented are expressed with appropriate units. Final result is clearly expressed.	The solution to the proposed questions is presented in a logical sequence. The solution (1) includes a pictorial representation (motion diagram and a free-body diagram) consistent with the picture, (2) clearly identifies known, measured, and estimated quantities, (3) includes a mathematical representation consistent with the theory and pictorial representation. All physical quantities presented are expressed with appropriate units. Final result is clearly expressed.	The solution to the proposed questions is presented in a logical sequence. The solution (1) includes a pictorial representation (motion diagram and a free-body diagram) consistent with the picture, (2) clearly identifies known, measured, and estimated quantities, (3) includes a mathematical representation consistent with the theory and pictorial representation. Some or all of the physical quantities presented are not expressed with appropriate units. Final result is clearly expressed.	Solution presented does not follow a logical sequence. It lacks one or more of the following: a pictorial representation, a listing of known and measured physical quantities, and a mathematical representation. Solution is incorrect.
Evaluation	A critical evaluation of the final result is presented: Is your final result reasonable? Are the units appropriate? Does the result make sense in the context of the picture?			Final result is not evaluated.
Mechanics	No grammatical, spelling or punctuation errors are present in the paper.	No more than 2 grammatical, spelling or punctuation errors are present in the paper.	2-4 grammatical spelling or punctuation errors are present in the paper.	More than 4 grammatical spelling or punctuation errors are present in the paper.

Laboratory (20%) The laboratory serves many functions for this class. It provides an opportunity to learn about, practice, and improve techniques utilized for scientific investigation, to apply the physical relationships presented in the lecture, and study new topics which are related to but not presented as part of the lecture. Active (and constructive) participation in each laboratory investigation is expected to earn full credit for this component of your grade.

Due to the nature of a laboratory investigation, involving extensive use of equipment to gather data and cooperative work within a small group, laboratory assignments cannot be made-up if you miss a scheduled lab meeting. If you know you will be unable to attend your scheduled lab meeting time, try to attend the other lab section meeting that week. For those cases of excused absences, university rules apply.

Absences- Excused with Documentation:

- University-sponsored events in which an excused absence form from the University is presented to the instructor (i.e. sports travel, approved field trip with another class).
- Death in the family. Appropriate verification will be needed such as obituary in the newspaper, funeral card, or note from the funeral home.
- Extended hospitalization. Appropriate verification will be required from your physician and hospital. (This does not include emergency room visits or doctor appointments as excused).
- For students who are commuters-dangerous weather conditions in which driving is considered by local police authorities to be unsafe.
- Being called to testify in court case. (but not for being arrested). Verification required.
- Jury duty. (Verification required.)
- Active military duty. (Verification required.)

Exams (60%): The examinations scheduled throughout the course measure your understanding of the material presented and the lion's share of your grade will be based on these scores. Much of what you see on the exams is derived from the homework assignments, so completing each homework will be critical to performing well on the exams. Each exam will be preceded by a *pretest* on Mastering Physics. Your two test scores will be combined in the following manner: Pretest - 30% of total, In-Class Exam: 70% of total. For example, if you score 90% on your pretest, and 70pts on your in-class exam, your final grade will be $(90 \times 0.3) + (78 \times 0.7) = 81.6$ pts. If you do not complete the pre-test, your final test score will be the total of the in-class exam score.

Grading Scale The grading scale is as follows:

{100% - 95%} A	{89.9% - 86%} B+	{79.9% - 76%} C+	{69.9% - 66%} D+
{94.9% - 90%} A-	{85.9% - 83%} B	{75.9% - 73%} C	{65.9% - 63%} D
	{82.9% - 80%} B-	{72.9% - 70%} C-	{62.9% - 60%} D-

General Classroom/Laboratory Policies

It is my intention to provide a constructive, comfortable, and respectful learning environment for each student enrolled in my classes. To that end, please read and follow the guidelines below:

- Cell phones **must be** set to silent put away.
- Participate fully and actively in classroom/laboratory activities. If you sleep, read the paper, listen to your music player, text your friends, etc., etc., etc. you will be asked to leave the classroom/laboratory.
- Work only on course material during the lecture/laboratory.
- Work with other students and/or individually when requested to do so and maintain a positive attitude about your own learning and that of others.
- Address the instructor in an appropriate and respectful manner and respect the views and opinions of the other students.
- Swearing, use of profanity, and personal (abusive) misconduct behavior will not be tolerated and may result in dismissal from the course.

Course Calendar

Please note that this schedule is tentative and subject to change depending upon the progress of the class. If the class gets off schedule, some of the chapter sections may be skipped. Please make sure you note these changes on the schedule as they occur.

<u>Date</u>	<u>Discussion Topic</u>
Aug 31	Intro to the Course
Sept 1	Concepts of Motion
Sept 2	Velocity & Acceleration
Sept 3	Kinematics: Mathematical Descriptions of Motion
Sept 7	Labor Day Holiday: No Class
Sept 8	Solving Motion Problems Using Kinematics
Sept 9	Solving Motion Problems Using Kinematics
Sept 10	Special Case: Free Fall & Inclines
Sept 14	Motion in Two Dimensions: Projectile Motion
Sept 15	Motion in Two Dimensions: Projectile Motion
Sept 16	Motion in Two Dimensions: Circular Motion
Sept 17	Test #1: Chapters 1, 2 & 4
Sept 21	Force: Newton's 1 st & 2 nd Laws
Sept 22	Force: Newton's 1 st & 2 nd Laws
Sept 23	Force Vectors & Free Body Diagrams
Sept 24	Force Vectors & Free Body Diagrams
Sept 28	Dynamics: Applying Newton's 2 nd Law
Sept 29	Dynamics: Applying Newton's 2 nd Law
Sept 30	Dynamics: Applying Newton's 2 nd Law
Oct 1	Newton's 3 rd Law & Force Interaction
Oct 5	Newton's 3 rd Law & Force Interaction
Oct 6	Dynamics & Circular Motion
Oct 7	Dynamics & Circular Motion
Oct 8	Test #2: Chapters 5, 6, 7 & 8
Oct 12	Impulse & Momentum
Oct 13	Momentum Conservation
Oct 14	Kinetic & Potential Energy
Oct 15	Mechanical Energy Conservation
Oct 19	Mechanical Work & Energy
Oct 20	Power
Oct 21	Torque and Rotational Dynamics
Oct 22	Static Equilibrium

Midterm Grades Available October 26th

<u>Date</u>	<u>Discussion Topic</u>
Oct 26	Rotational Inertia
Oct 27	Rotational Kinetic Energy & Angular Momentum
Oct 28	Rotational Kinetic Energy & Angular Momentum
Oct 29	Test #3: Chapters 9, 10, 11 & 12
<i>Last Date for "W" Grade is Thursday, November 5th</i>	
Nov 2	Pressure & Temperature in a Gas
Nov 3	Ideal Gases
Nov 4	Ideal Gas Processes
Nov 5	Ideal Gas Processes
Nov 9	Heat & The First Law of Thermodynamics
Nov 10	Specific Heat, Latent Heat, & Calorimetry
Nov 11	Specific Heat, Latent Heat, & Calorimetry
Nov 12	Heat Transfer Mechanisms
Nov 16	The Second Law of Thermodynamics
Nov 17	Turning Heat into Work
Nov 18	Heat Engines & Refrigerators
Nov 19	Test #4: Chapters 16, 17 & 19
Nov 23	Simple Harmonic Motion
Nov 24	Simple Harmonic Motion
Nov 25	<i>Thanksgiving Holiday Begins @ 12:00pm</i>
Nov 26	<i>Thanksgiving Holiday</i>
Nov 30	Traveling Waves
Dec 1	Sound & Light
Dec 2	Sound Intensity
Dec 3	The Doppler Effect
Dec 7	Standing Waves
Dec 8	Wave Interference
Dec 9	Wave Interference
Dec 10	Test #5: Chapters 14, 20 & 21
<i>Dec 15</i>	<i>Final Exam, 12-1:40pm</i>

SYLLABUS ATTACHMENT
COLLEGE OF ARTS AND SCIENCES – FERRIS STATE UNIVERSITY
FALL 2015

ARE YOU CONSIDERING ADDING A MINOR OR MAJOR TO YOUR CURRENT PROGRAM?

Use My Degree to see what classes may already apply.
 For more information, stop by the Arts and Sciences Dean's Office!

IMPORTANT DATES		
Late registration	Wed. – Fri.	Aug. 26 – 28
First day of classes	Monday	Aug. 31
Last day for Drop/Add	Thursday	Sept. 3
Labor Day (no classes)	Monday	Sept. 7
Mid-term grades due	Monday	Oct. 26
Last day for "W" grades	Thursday	Nov. 5
Thanksgiving recess begins (no classes)	Wed (noon)	Nov. 25
Thanksgiving recess ends (classes resume)	Monday	Nov. 30
Last day of classes	Friday	Dec. 11
Examination Week	Mon – Fri	Dec. 14 - 18
Commencement	Saturday	Dec. 19
Final grades due by 1:00 pm	Monday	Dec. 21
Grades available to students on MyFSU	Tuesday (after 8AM)	Dec. 22

Sessions	Dates	Last Day to Withdraw
Full Session	Aug. 31 – Dec. 11	Nov. 5
Session A	Aug. 31 – Oct. 20	Oct. 1
Session B	Oct. 21 – Dec. 11	Nov. 20
Session D	Aug. 31 – Oct. 2	Sept. 21
Session E	Oct. 5 – Nov. 5	Oct. 23
Session F	Nov. 6 – Dec. 11	Nov. 30

DEPARTMENT OFFICES		
Biology	ASC 2004	591-2550
Humanities	JOH 119	591-3675
Languages & Literature	ASC 3080	591-3988
Mathematics	ASC 2021	591-2565
Physical Sciences	ASC 3021	591-2580
Social Sciences	ASC 2108	591-2735
Dean's Office	ASC 3052	591-3660

WHAT YOU NEED TO KNOW

E-MAIL

All registered FSU students have a Ferris Gmail account. This is the only e-mail to which all official University information about registration, financial aid, student activities, and class cancellations will be sent. Please check your account at least once a week. E-mail is our primary communication resource for students.

CLASS ATTENDANCE IS IMPORTANT!

Attendance usually has a high correlation with how well you do in a course. Many instructors have mandatory attendance policies by which your grade will be affected by absences. Some instructors also have policies about class tardiness to encourage students to be present for the full class period. Check your course syllabus or talk to your instructor about his/her policies.

HOW TO CONTACT A FACULTY MEMBER OR ADVISOR

If you have questions or need help, talk to your instructor. Faculty office locations, phone numbers, and office hours may be obtained from the class syllabus or department office, through the College of Arts and Sciences web page at <http://www.ferris.edu/htmls/colleges/artsands/>, or through the Directories & Maps link on the FSU home page.

DROPPING CLASSES OR WITHDRAWING */**

Dropping and adding only occurs during the first four days of the term. You can adjust your schedule **online during the first four days** or in person at the Timme Center (from 8-5 except for the last day when it is 12-5). *If you add a class you must pay for your additional charges by the fourth day or your schedule will be dropped.*

If you need to withdraw from a class after the official drop/add period, you must do so **OFFICIALLY**, through your dean's office, in order to avoid receiving an "F" grade in the course. **You may not withdraw online after the first four days of the term.** You will receive a "W" for the course. *You will not receive a refund.* If you need to totally withdraw from the University, you must do so **officially** at Admissions and Records in CSS 101. The last day to withdraw or drop a class may be different for different classes. **CHECK THE SESSIONS DATES SECTION ABOVE OR THE REGISTRATION AND ACADEMIC GUIDE FOR THE WITHDRAWAL DEADLINES FOR THE SEMESTER.**

In cases of extenuating circumstances (e.g., a serious illness requiring you to withdraw from school), contact Birkam Health Center at 591-2614.

INCOMPLETES

The "I" is only considered for extenuating circumstances that have led to a student missing a portion of the course. The intent and appropriate use of the "I" grade is **NOT** to avoid student probation, dismissal, or unacceptable grades, nor should it be considered as an extended alternative to withdraw from a class (W). Extenuating circumstances are generally defined as those situations over which a student has little or no control—e.g., illness, birth, jury duty, death of a parent, serious injury. Instructors may require suitable documentation.

Students must have completed at least 75% of the coursework at passing levels before an "I" will be considered, and they may be required to sign an agreement regarding course completion. An "I" grade automatically changes to an "F" after one semester (not counting summer) unless the faculty member files another grade or extends the incomplete.

GRADUATION – ONLINE APPLICATION DEADLINE for participation in Fall Commencement Ceremony: OCTOBER 1, 2015

Students should apply for their degree the semester prior to the degree completion term. To obtain a degree audit for either associate in arts degree, contact Dr. Roxanne Cullen (cullenr@ferris.edu) or Dave Schrock (daveschrock@ferris.edu), or associate in science degree, contact Jenice Winowiecki (winow2@ferris.edu) or Kim Ducat (ducatk@ferris.edu). For a degree audit and clearance for bachelor degrees, contact your program coordinator. Online graduation application is REQUIRED and deadlines will be ENFORCED per the Provost's Office and Records Office. Apply for your degree by logging into your MYFSU, (click on Student tab, My Records link, Degree Progress and Graduation), Apply to Graduate link). For more information, contact the Dean's Office.

INCLEMENT WEATHER CONDITIONS

Only during the most severe weather conditions – which could potentially endanger the safety of students or staff – will the Big Rapids campus consider cancelling classes. The decision to cancel classes due to weather conditions at the Big Rapids site will be made as early as possible. In the event it is necessary to cancel classes, periodic announcements will be made on area radio and television stations. It is the student's responsibility to listen for these announcements. A student may also call the Ferris Information Line at 231-591-5602 or check the Ferris website.

ACADEMIC MISCONDUCT

Academic misconduct refers to dishonesty or misrepresentation with respect to assignments, tests, quizzes, written work, oral presentations, class projects, internships, or computer usage; violation of computer licenses, programs, or data bases; or unauthorized acquisition or distribution of tests or other academic material belonging to someone else. It includes such behaviors as cheating, copying materials from the internet without documentation, presenting another person's ideas or work as your own, taking someone else's exam for them, violating computer software licenses or program/data ownership, etc. It is the expectation of the College of Arts and Sciences that all work you turn in is your own and is original for the course in which it is being submitted. If you are uncertain about whether a particular behavior might represent academic misconduct, be sure to ask your professor for clarification. Penalties for academic misconduct can include FAILURE of the assignment or the course, and/or disciplinary action up to and including probation or dismissal from the University.

DISRUPTIVE BEHAVIOR

The College of Arts and Sciences strives to maintain a positive learning environment and educational opportunity for all students. Consequently, patterns of behaviors which obstruct or disrupt the teaching/learning environment will be addressed. The instructor is in charge of his or her course (e.g., assignments, due dates, attendance policy) and classroom (e.g., behaviors allowed, tardiness). Harassment, in any form, will not be tolerated. Penalties for disruptive behavior can include involuntary withdrawal from the course and/or disciplinary action up to and including probation or dismissal from the University. The full Disruptive Behavior Policy is available on the College of Arts and Sciences website at [http://www.ferris.edu/HTMLS/colleges/artsands/artsands-student-resources/CAS-](http://www.ferris.edu/HTMLS/colleges/artsands/artsands-student-resources/CAS-disruptive-behavior-policy-final.pdf)

WHERE TO GO FOR HELP

The following services are available to any Ferris student, free of charge. They are designed to help you succeed in your courses, in your career planning, and in meeting the challenges of university life. Don't hesitate to explore and use these services at Ferris.

ACADEMIC ADVISING

All students have an assigned advisor and should confer with that advisor regularly. Students who have declared a major should see an advisor in that major. To find out your advisor is, log in to MYFSU, (click on the Student tab, My Registration, Advisor Information, Select Term, Submit).

ACADEMIC SUPPORT CENTER.....ASC 1017 – 591-3543

The Academic Support Center, Tutoring Services, and Writing Center join together to offer FSU students an array of academic support services. Tut are available to answer questions for many courses. The Writing Center helps writers individually and in workshops with skills and assignments. There is also study skills assistance to help with note-taking, test-taking, memory and reading strategies, and time management.

DISABILITIES SERVICES.....STR 313 – 591-3057

According to the Americans with Disabilities Act, each student with a disability is responsible for notifying the University of his/her disability an requesting accommodations. Students requiring a classroom accommodation due to a physical, learning, mental or emotional disability should contact the Disabilities Services Office.

SCHOLAR PROGRAM.....ASC 1021 – 591-5976

SCHOLAR is an academic support program that aids in the student's successful progression by offering a Peer Mentor Program, a Student Retention Program, and an Academic Student Advisory Committee.

PERSONAL COUNSELING, SEXUAL ASSAULT, SUBSTANCE ABUSE BIRKAM HEALTH CENTER2nd Floor - 591-5968

Personal counseling is available confidentially and free of charge. Counselors are available to assist with personal and stress-related problems, family and relationship issues, substance abuse, sexual assault, depression, or other similar problems. Call or stop by to obtain an appointment.

EDUCATIONAL & CAREER COUNSELINGSTR 313 – 591-3057

Students wanting to examine their choice of major or career choice, learning styles or strategies can make one-on-one appointments with licensed counselors.

SAFETY

Please observe the posted shelter and evacuation routes in the hallway nearest your classroom.

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Housing	3745	TAC	4822

When calling from off campus, extensions can be called by using the prefix 231-591-_____.

17 SPRING MATH220-002 COURSE OUTLINE

COURSE	Math 220-003 9:00-9:50 AM, M, STARR 108 and 9:30-10:45 AM, TR, STARR 108
INSTRUCTOR	Dr. Hengli Jiao, Office 2028ASC, Contact: 591 – 2825, jiaoh@ferris.edu
OFFICE HOURS	2:00 PM - 2:50 PM MTWR or by appointment .
TEXTBOOK	Required to purchase Enhanced WebAssign Access to Calculus, Larson, Hostetler, & Edwards, by Cengage
CALCULATOR	A TI-83 or TI 84 is recommended. No TI 89, Nspire or more advanced calculator is allowed for the tests.
PREREQUISITE	Math130 with a grade of C- or better or equivalent.
GENERAL OVERVIEW	<p>Calculus is the branch of mathematics which studies quantities undergoing change. Calculus is used to study the change in the position of planets with respect to time or the change in demand for gas guzzling cars with respect to the price of gasoline. Since almost everything in the world changes, calculus has applications in every part of science and engineering. Yet, in its narrowest sense, calculus may be regarded as treating two geometric problems: computing the tangent lines to the graphs of functions and computing the area of regions bounded by the graphs of functions.</p> <p>The main delivery method of this course is lecturing. There are online quizzes and worksheets. You are encouraged to form a study or discussion group.</p>
COURSE OBJECTIVES	<ul style="list-style-type: none"> ❖ To become familiar with the major concepts and techniques of differential calculus. ❖ To be introduced to the major concepts of integral calculus. ❖ To develop skills in formulating, solving, and interpreting mathematical problems. ❖ To gain experience with applications of integral and differential calculus concepts. ❖ To learn to use a graphing calculator to explore concepts of calculus. ❖ To practice communicating mathematical ideas to others. ❖ To become a more independent learner and logical thinker.
ATTENDANCE POLICY	<p>Students are expected to be present for all classes. Attendance will be taken. This course is a 4 credit hour course. Therefore, students should plan to spend 4 hours in class and more than 16 hours outside of class every week in order to be successful in this course. If you are absent from class, you are responsible for the material covered; arrange to copy another student's notes and be informed of any announcements made during class. Athletes who anticipate missing class due to scheduled events must notify the instructor in advance in writing. In addition, athletes should provide a copy of their performance schedule to the instructor ASAP. If you are not in the room when attendance is taken, you may assume that you have been marked absent. If you walk in late, you must see the instructor after that class to be sure that your presence is noted. Students should realize that extreme or chronic tardiness and bad behavior are not acceptable and can be expected to affect the final grade.</p> <p>Each student will be allowed to miss up to FIVE classes without penalty. These absences may be for any reason. If the number of your absences is greater than or equal to SIX, you will be automatically assigned an F for your final grade.</p>
BEHAVIOR	<p>Do not interrupt the class unless you have a special reason and inform the instructor in advance. The following behaviors are absolutely not tolerated:</p> <ul style="list-style-type: none"> • Talking while the instructor is lecturing. • Using phone in class. • Regularly walking out and in the classroom while class is in session. • Leaving class early without approval from the instructor in advance.
	<p>Grades in the course are based on four tests, homework assignments, quizzes, and worksheets if any. The following grading scale can be used to estimate grades for individual quizzes and exams; however, course grades will be determined from a curve based on point totals, attendance,</p>

17 SPRING MATH220-002 COURSE OUTLINE

EVALUATION	<p>improvement, effort, attitude, and so on. No make-up exam will be given unless you have a reasonable excuse. No early or late make-up quiz and worksheet will be given for any reason. Late assignments will not be accepted.</p> <p>If you miss one of the four exams, you will be automatically assigned an “F” grade unless you are excused and make it up later.</p> <p>Tests 1-3: 100 points each and Test 4: 150 points Homework assignments and In-class Quizzes: 10 points each.</p> <p>Grading Scales</p> <p>A = 90%-100% A- =87%-89% B+ = 84%-86% B = 81%-83% B- =78%-80% C+ =75%-77% C = 72%-74% C- = 69%-71% D+= 66%-68% D =63%-65% D- = 60%-62% F=under 60%</p>
CONTENT AND PROBLEMS	<p>The following are sections of chapters we will cover. The problems in each section are for your own practice only. Remember the exam problems are similar to these problems, so practicing more problems will definitely help you get better grade. <i>DO THE PROBLEMS</i></p>
CHAPTER 1 Limits and Their Properties	<p>1.1 A Preview of Calculus: 1-9 1.2 Finding Limits Graphically and Numerically: 1-28, 49-56, 66-72 1.3 Evaluating Limits Analytically: 1-94, 101-104, 115-120 1.4 Continuity and One-Sided Limits: 1-84, 87-98, 103-106 1.5 Infinite Limits: 1-52, 61-68 Review : all</p>
CHAPTER 2 Differentiations	<p>2.1 The Derivative and the Tangent Line Problem: 1-54, 65-90, 93-97 2.2 Basic Differentiation Rules and Rates of Change: 1-68, 77-80, 87-100, 111-116 2.3 The Product and Quotient Rules and Higher-Order Derivatives: 1-86, 99-106, 125-134 2.4 The Chain Rule: 1-94, 101-104, 111-112, 117-122, 125-28 2.5 Implicit Differentiation: 1-64 2.6 Related Rate: 1-47 Review Exercise: all</p>
CHAPTER 3 Applications of Differentiation	<p>3.1 Extrema on an Interval: 1-44, 63-66 3.2 Rolle’s Theorem and the Mean Value Theorem: 1-52, 58-60, 65-79, 83-85 3.3 Increasing and Decreasing Functions and the First Derivative Test: 1-48, 57-62, 87-96 3.4 Concavity and the Second Derivative Test: 1-56, 61-63, 75-80 3.5 Limits at Infinity: 1-48, 59-74 3.6 A Summary of Curve Sketching: 1-34, 49-59 3.7 Optimization Problems: 1-47 3.8 Newton’s Method: 1-18, 23, 24 3.9 Differentials: 1-31, 37-42, 47-50 Review Exercise: all</p>
CHAPTER 4 Integration	<p>4.1 Antiderivatives and Indefinite Integration: 1-42, 51-74 4.2 Area: 1-64 4.3 Reimann Sums and Definite Integrals: 1-69 4.4 The Fundamental Theorem of Calculus: 1-56, 67-92, 95-104, 110 4.5 Integration by Substitution: 1-30, 33-76, 88-96 4.6 Numerical Integration: 1-30 odd, 42-44 Review Exercise: 1-12, 15-90</p>

17 SPRING MATH220-002 COURSE OUTLINE

CHAPTER 5 Logarithmic and Exponential Functions	5.1 The Natural Logarithmic Function: Differentiation: 1-94, 99-102 5.2 The Natural Logarithmic Function: Integration: 1-46, 49-74, 85-101, 103-106 5.4 Exponential Functions: Differentiation and Integration: 1-78, 91-118, 121-128 5.5 Bases Other Than e and Applications: 1-84, 87, 88 5.6 Inverse Trigonometric Functions: Differentiation 5.7 Inverse Trigonometric Functions: Integration
CHAPTER 6 Differential Equations (optional)	6.1 Slope Fields and Euler's Method: 1-52, 73-81 6.2 Differential Equations Growth and Decay: 1-12, 15-24, 29-58, 65-70 6.3 Separation of Variables and the Logistic Equation: 1-30, 38-40, 51-60, 67-80 6.4 First-Order Linear Differential Equations: 1-14, 17-24, 51-58
STUDY STRATEGIES	<ul style="list-style-type: none"> ❖ Attend all classes and come prepared. Have your homework completed. Bring the text, paper, pen or pencil, and a calculator (scientific or graphing) to each class. ❖ Read the section in the text that is to be covered before class. Make notes about any questions that you have and, if they are not answered during the lecture, ask them at the appropriate time. ❖ Participate in class. As mentioned above, ask questions. Also, do not be afraid to answer questions. ❖ Take notes on all definitions, concepts, rules, formulas and examples. After class, read your notes and fill in any gaps, or make notations of any questions that you have. ❖ DO THE PROBLEMS!!! You learn mathematics by doing it yourself. Allow at least two hours outside of each class for problems. Remember the methods of solving problems are more important than just getting correct answers. Do not fall behind. ❖ Seek help when needed. Visit your instructor during office hours and come prepared with specific questions; check with school's tutoring service; find a study partner in class; check additional books in the library for more examples if necessary - just do something before the problem becomes insurmountable. ❖ Do not cram for exams. Each chapter in the text contains a chapter review and this study guide contains a practice test at the end of each chapter. (The answers are at the back of the study guide). Work these problems many days before the exam and review any areas of weakness.
EXAM DATES	1st Test: TBA 2nd Test : TBA 3rd Test: TBA 4th Test:
REMARK	The instructor reserves the right to make reasonable changes for the above descriptions.

INSTRUCTOR'S SCHEDULE

	Monday	Tuesday	Wednesday	Thursday
9:00-9:50	Math 220-002 STARR 232			
9:30-10:45		Math 220-002 STARR 108		Math 220-002 STARR 108
11:00-11:50		Meeting		Meeting
12:00-12:50	Math 130-003 SCI 136	Math 130-003 SCI 136	Math 130-003 SCI 136	Math 130-003 SCI 136
2:00-2:50	Office Hour	Office Hour	Office Hour	Office Hour
3:00-3:50	Math 220-004 STARR 137	Math 220-004 STARR 137	Math 220-004 STARR 137	Math 220-004 STARR 137

Math 251: Statistics for the Life Sciences

3 credits • Spring 2017

Section 001: MWF 9-9:50 in SCI 136

Section 002: MWF 10-10:50 in SCI 136

Section 003: MWF 11-11:50 in SCI 136

INSTRUCTOR INFORMATION:

Professor: Holly Price, M.A.
Phone: (231) 591-3884 (email preferred)

Office: ASC 2032
Email: priceh@ferris.edu

OFFICE HOURS:

To best use the limited time during office hours, you are expected to have specific questions over the notes, homework, or tests. Office hours are not to be used as 'make-up lectures.' The following times are first-come, first-served (no appointments): **Mon. and Wed. from 12-1:50.** Other times are available but require an appointment.

COURSE DESCRIPTION:

The F.S.U. course catalog description say it is, "A first course in statistics, including a broad range of applications from science. Topics include: Data display, descriptive statistics, probability, estimation, inference, and regression."

Prerequisite: C- or better in Math 130 (Pre-Calculus) or placement based on testing.

Upon successful completion of this course, students should be able to...

- Define basic statistical terms.
- Interpret/create visual displays of data.
- Interpret/compute statistical summaries of data.
- Calculate probabilities by applying various methods (e.g. counting methods, probability distributions, central limit theorem).
- Compute/interpret point and interval estimates of the mean and proportion.
- Perform hypothesis tests for means and proportions and interpret the results.
- Identify linear relationships and describe the strength and significance of the relationship.

COURSE HOMEPAGE:

Important dates, the syllabus, grades, announcements, notes, et cetera can be found on BlackBoard. You should log in regularly to check for announcements or new postings (myfsu.ferris.edu).



Professor Price reserves the right to make changes to any part of this syllabus

REQUIRED MATERIALS:

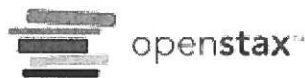
You are required to have a (Texas Instruments) TI-84 calculator.

1. You may use a TI-83 but there are 1 or 2 things the calculator cannot do so you will need to use handouts/formulas which I will teach. Also, this calculator cannot be updated.
2. You may instead use a TI-89 or TI-Nspire but I cannot assist you with these models! You will need to find the relevant tools/functions from the operator manual. In addition, the Nspire may require the TI-84 faceplate if you have the model with removable faceplates.



This course will be taught using lecture notes which will be provided. If you want to go deeper into a topic I recommend the following free textbook from OpenStax:

<https://openstax.org/details/books/introductory-statistics>



ATTENDANCE:

Attendance is strongly recommended but not included in your grade. I record attendance to satisfy federal financial aid requirements using a sign in sheet.

HOMEWORK:

There will be several homework assignments, each worth 5 points. These assignments will be graded holistically where 5=perfect, 4=a minor error, 3=a couple of minor errors or one major error, 2=one major error plus a minor error or two, 1=several major/minor errors, and 0=no work submitted.

At the end of the semester, I will drop your lowest homework assignment and determine the overall average homework percentage which will be used in your grade. **DO NOT ADD HOMEWORK POINTS TO TEST POINTS, THEY ARE NOT EQUAL IN WEIGHT.**

Make-up homework assignments will not be given but if you miss an assignment due to an excused absence, then that assignment will be excluded/excused from your grade (it will not be included in the average).

F.S.U. policy states, “Excused absences are defined as those associated with University related travel.” I will also excuse absences for jury duty, hospital admittance, or extenuating circumstances that are beyond your control.

Being ‘sick’ is not excused without a doctor’s note.

TESTS:

There will be five tests and a cumulative final exam. Old exams will be provided on BlackBoard for you to study.

- Test 1 is Friday 1/27
- Test 2 is Wednesday 2/15
- Test 3 is Wednesday 3/15
- Test 4 is Wednesday 4/5
- Test 5 is Wednesday 4/26

On the cumulative final exam you may use one sheet of paper for notes (8.5 by 11 inch, both sides).

- Sect. 001 takes the final Monday 5/1 from 8-9:40
- Sect. 002 takes the final Tuesday 5/2 from 10-11:40
- Sect. 003 takes the final Thursday 5/4 from 10-11:40

Make-up tests are only allowed for excused absences (see definition in the “HOMEWORK” section above). There is very little partial credit given on make-up tests and Prof. Price reserves the right to forgo a make-up test and use the final exam score twice in the grading formula.

GRADING:

$$\text{Overall Course Average} = \frac{\text{Average HW\%} + T1\% + T2\% + T3\% + T4\% + T5\% + \text{Final\%}}{7}$$

Your average is rounded to the nearest whole number and letter grades will be recorded as:

A	93% or higher
A-	90-92%
B+	87-89%
B	83-86%
B-	80-82%
C+	77-79%
C	73-76%
C-	70-72%
D+	67-69%
D	63-66%
D-	60-62%
F	59% or lower

GRADES ARE NOT NEGOTIABLE!!!

At the end of the course you will not get a grade bump, there will not be anything 'extra' you can do, and I'm sorry if you are 'close' to the next grade. **If you attempt to negotiate your grade with me at the end of the semester, I will deduct 5% from your overall grade.** Entitlement is becoming a big problem, each year I have more and more students asking for exceptions and hand-outs which simply isn't fair to the other students in the class.

My advice is to be proactive. If you find your grade slipping or you are struggling with the material, meet with a tutor and come to office hours. This policy does not apply to mistakes in my record keeping. You should keep all of your returned work in the event that a score is incorrectly entered and notify me of errors as soon as possible.

OTHER IMPORTANT INFORMATION:

Class Disruption Policy: If you are habitually distracting the class (tardy or leaving the class, cell-phone noises, talking to classmates during lecture, etc.) and it distracts other students (which means I received a complaint) then you will get one warning. If the problem reoccurs after your first warning, then you will no longer receive partial credit on your homework or tests. If the problem further persists, you will be removed from the class permanently.

Cheating Policy: If you are caught cheating on a test, you will receive an F in the course.

Appendix C: Faculty CV's

DANIEL A. ADSMOND – Curriculum Vitae

Education

B.S. Chemistry, Northern Michigan University, Cum Laude, 4/82

Ph.D., Chemistry, University of Minnesota, 4/91 Advisor: Margaret C. Etter, Thesis title: “Designing and Synthesizing Organic Crystals with Aminopyrimidine Building Blocks”

Employment History

Aldrich Chemical Company, Synthetic Organic Chemist 1983-1985
University of Minnesota, Graduate Teaching Assistant, Department of Chemistry 1985-1987
University of Minnesota, Graduate Research Assistant, Department of Chemistry 1987-1991
University of Minnesota, Postdoctoral Research Associate, Department of Pharmaceutics 1991-1992
Morehead State University, Assistant Professor of Chemistry 1992-97
Morehead State University, Associate Professor of Chemistry 1997-98
Ferris State University, Assistant Professor of Chemistry 1998- 2001
Ferris State University, Associate Professor of Chemistry 2001 - 2006
Ben Gurion University of the Negev, Beer Sheva, Israel, Visiting Research Scientist, 2006-2007
Ferris State University, Professor of Chemistry 2006 – present
University College Cork, Cork, Ireland, Visiting Research Scientist, September-December 2014

Scholarly and Professional Activities

Sabbatical

2014 Fall semester, research in ternary cocrystallization, University College Cork, Cork, Ireland

2006-2007 academic year spent carrying out research in solid-state organic chemistry at Ben Gurion University of the Negev, Beer Sheva, Israel.

Refereed Publications

“Polymorphic Co-crystals from Polymorphic Co-crystal Formers: Competition between Carboxylic Acid-Pyridine and Phenol-Pyridine Hydrogen Bonds,” A. Lemmerer, D. Adsmund, C. Esterhuysen, J. Bernstein, *Crystal Growth & Design*, **2013**, 13 (9), 3935–3952.

“Maximizing Scientific Thought through the Design of a Collaborative Research-Based Organic Chemistry 2 Laboratory Course,” D. Adsmund, *Chemica nella Scuola, Rivista CnS: Speciale n. 3* -**2012**.

“An Investigation of the Hydrogen-Bond Preferences and Co-crystallization Behavior of Three Didonor Compounds,” A. Lemmerer, D. Adsmund, J. Bernstein, *Crystal Growth & Design*, **2011**, 11 (5), 2011–2019.

“Hydrogen Bonding in Sulfonamides,” D. Adsmund, D. Grant, *J. Pharm. Sci.*, **2001**, 90, 2058-2077.

“Relationships Between Solution Thermodynamics and Hydrogen-Bond Patterns of Crystalline Dialkylhydroxypyridone Iron Chelators and their Formic Acid Solvates,” S. Ghosh, D. Adsmund, D. Grant, *J. Pharm. Sci.*, **1995**, 84, 568-574.

“Hydrogen-Bond Patterns of Dialkylpyridone Iron Chelators and their Formic Acid Solvates: Description, Prediction, and Role in Crystal Packing,” S. Ghosh, D. Adsmund, J. Huotari, D. Grant, *J. Pharm. Sci.*, **1993**, 82, 901-911.

“The Use of Cocrystallization as a Method of Studying Hydrogen-Bond Preferences of 2-Aminopyrimidine,” M. Etter, D. Adsmund, *J. Chem Soc., Chemical Communications*, **1990**, 8, 589-591.

“Using Hydrogen Bonds to Design Acentric Organic Materials for Nonlinear Optical Users,” M. Etter, G. Frankenbach, D. Adsmund, *Mol Cryst. Liq. Cryst.*, **1990**, 187, 25-39.

“2-Aminopyrimidine-Succinic Acid (1/1) Cocrystal,” M. Etter, D. Adsmund, D. Britton, *Acta Cryst.*, **1990**, C46, 933-934.

Submitted Manuscript

“Design and Synthesis of Ternary Cocrystals Using Carboxyphenols and Two Complementary Acceptor Compounds,” D. Adsmund, A. Sinha, U. Khandaville, A. Maguire, S. Lawrence, submitted to *Crystal Growth and Design*, July 2015.

Invited Plenary Presentations

“Design and Goals of the FSU Chemistry BA Program,” European Chemistry Thematic Network Association, International Scientific School, Association Kazan National Research Technological University, Kazan, Russia, Oct 27-31, 2014.

“Chemistry Lecture and Laboratory Goals and Course Design,” European Chemistry Thematic Network Association, International Scientific School, Kazan National Research Technological University, Kazan, Russia, Oct 27-31, 2014.

“A Collaborative Research-based Organic Chemistry 2 Laboratory Course,” European Chemistry Thematic Network Association, International Scientific School, Kazan National Research Technological University, Kazan, Russia, Oct 27-31, 2014.

“Techniques for Increasing Student Involvement in the Chemistry Lecture,” European Chemistry Thematic Network Association, International Scientific School, Kazan National Research Technological University, Kazan, Russia, Oct 27-31, 2014.

Conference Sessions Organized and Chaired

Organized and chaired session entitled “Molecular Modeling in the Classroom,” at the American Chemical Society National Meeting, Anaheim, California, , March 21-25, 1999.

Conference Presentations

“An Investigation of the Ability of Sulfisomidine to form Cocrystals with with Carboxylic Acids,” S. Douglas, D. Adsmund, American Chemical Society National Meeting, Denver, CO, March 2015.

“An Investigation of the Ability of Dibenzylsulfoxide and Triphenylphosphine oxide to form Cocrystals with Carboxyphenols,” C. Kempainen, D. Adsmund, American Chemical Society National Meeting, Denver, CO, March 2015.

“Saccharin Cocrystallization,” D. Birdsall, D. Adsmund, American Chemical Society National Meeting, New Orleans, LA, April 2013.

“Maximizing Scientific Thought through the Design of a Collaborative Research-Based Organic Chemistry 2 Laboratory Course,” D. Adsmund, 22nd International Conference on Chemistry Education, Rome, Italy, July 2012.

“Cocrystallization of Sulfamethazine with 20 Carboxylic Acids,” B. Q. Wierckz, D. Adsmund, American Chemical Society National Meeting, San Diego, CA, March 2012.

“Maximizing Engagement in the Laboratory: A Retrospective on 7 Years of a Collaborative Research-based Organic Chemistry 2 Laboratory Course,” D. Adsmund, Lilly Conference on College and University Teaching, Traverse City, MI, Sept 2010.

“Predicted and Unpredicted Cocrystals of m-Hydroxybenzoic Acid and Acridine,” D. Adsmund, J. Bernstein, and R. Vainer, American Crystallographic Association Meeting, Toronto, Ontario, July 2009.

“Evaluation of a 2-year Pilot of a Collaborative Research-based Organic Chemistry 2 Laboratory Course at Ferris State University,” D. Adsmund, P. Balanda, and D. Frank, Gordon Research Conference on Chemical Education: Research and Practice, New London, Connecticut, June 2005.

“Outcomes and Analysis of a 2-Year Pilot of a Collaborative Research-Based Organic Chemistry 2 Laboratory Course at Ferris State University,” D. Adsmund, P. Balanda, and D. Frank, 228th ACS National Meeting, NSF Symposium, Philadelphia, Pennsylvania, Aug 2004.

“Implementation of a Collaborative Research-Based Organic Chemistry 2 Laboratory Course at Ferris State University,” D. Adsmund, P. Balanda, and D. Frank, 18th Biennial Conference on Chemical Education, Ames, Iowa, July 2004.

“A Student Investigation of Sulfa Drug/Carboxylic Acid Molecular Recognition by Cocrystallization,” D. Adsmund; M. Whitener, and P. Squattrito, XIXth General Assembly and Conference of the International Union of Crystallography, Geneva, Switzerland, Aug 2002.

“An Investigation of the Effects of Molecular Changes on the Binding Preferences of Amidines,” D. Adsmund and D. Grabill, American Chemical Society Great Lakes/Central Regional Meeting, Grand Rapids, Michigan, June 2001.

“A Research Experience for Students in the Second Semester of Organic Chemistry at Ferris State University,” D. Adsmund, Biennial Conference on Chemical Education, Ann Arbor, Michigan, Aug 2000.

“A Student Investigation of the Molecular Recognition between Sulfa Drugs and Carboxylic Acids by Cocrystallization,” D. Adsmund and M. Whitener, American Crystallographic Association Annual Meeting, St. Paul, Minnesota, July 2000.

“Comparison of the Hydrogen-Bond Patterns of Sulfapyridine/Acetic Acid 1:1 Solvate with Related Structures,” S. Gorrell, D. Adsmund, and M. Whitener, American Crystallographic Association Annual Meeting, Arlington, VA; July. 1998.

“A Four-week Research and Development Team Project for the Organic Chemistry Laboratory,” D. Adsmund, Kentucky Academy of Science 83rd Annual Meeting, Morehead State University, Morehead, Kentucky, Nov 1997.

“An Analysis of the Hydrogen-bond Patterns Observed in Acetic Acid Solvates,” S. Gorrell and D. Adsmund, Kentucky Academy of Science 83rd Annual Meeting, Morehead State University, Morehead, Kentucky, Nov 1997.

“An Analysis of the Hydrogen-bond Preferences of Acetic Acid in Solvates of Neutral Organic Hosts,” J. Underwood and D. Adsmund, 8th Midwest Organic Solid-State Chemistry Conference, University of Nebraska, Lincoln, Nebraska, June 1996.

“What kind of a Molecule Would Let Acetic Acid be Included in its Crystal?” J. Underwood and D. Adsmund, Kentucky Academy of Science 83rd Annual Meeting, Kentucky State University, Frankfort, Kentucky, Nov 1996.

“An Investigation of Hydrogen Bond Preferences of Amidine Functionalities and Carboxylic Acid Groups by Cocrystallization,” K. Thomas and D. Adsmund, 7th Midwest Organic Solid-State Chemistry Conference, Bloomington, Indiana, June 1995.

“Student Design of Projects for Freshman Chemistry,” D. Adsmund and Z. Barnes, 13th Biennial Conference on Chemical Education, Lewisburg, Pennsylvania, July 1994.

“Graph-set Analysis of Hydrogen-bond Patterns in Polymorphs of Two Sulfa Drugs,” D. Adsmund and D. Grant, 6th Midwest Organic Solid-State Chemistry Conference, Minneapolis, Minnesota, June 1994.

Graph-set Analysis of Hydrogen-bond Patterns in Polymorphs of Two Sulfa Drugs,” D. Adsmund, American Crystallographic Association Annual Meeting, Atlanta, Georgia, June 1994.

“Scientific Method and Classification Skills for Middle School,” Z. Barnes and D. Adsmund, workshop at National Science Teachers Association 1993 Area Convention, Louisville, Kentucky, Nov 1993.

“Investigation and Modification of Complexation Behavior of Aminopyrimidines in the Solid State,” D. Adsmund, invited lecture at University of Kentucky, Lexington, Kentucky, April 1993.

“Hydrogen Bond Directed Molecular Recognition in Organic Crystals,” D. Adsmund and M. Etter, Kentucky Academy of Science, 78th Annual Meeting, Ashland, Kentucky, Oct 1992.

“Hydrogen-bond Selectivity in Asymmetrically Substituted Aminopyrimidines,” D. Adsmund, 32nd National Organic Chemistry Symposium, University of Minnesota, Minneapolis, MN, June 1991.

“Predicting, Synthesizing, and Analyzing Organic Cocrystals Formed by Solid-State Methods,” D. Adsmond, 2nd Midwest Organic Solid-State Chemistry Conference, Minneapolis, Minnesota, June 1989.

“Predicting and Analyzing Hydrogen-bond Patterns of 2-Aminopyrimidines,” D. Adsmond and M. Etter, American Crystallographic Association Annual Meeting, Seattle, Washington, July 1989. (winner of Linus Pauling Prize for best student poster).

Local Student Research Presentation Events

“Chemistry on the Bridge,” planned and executed a public poster presentation session where 60-90 students of Organic Chemistry presented the results of their laboratory research. (2006, 2008- 2012)

College of Arts and Sciences Student Recognition Event, 11 student research posters in 2011, 8 student research poster presentations in 2012.

Grants & Fellowships

“Finding the Sweet Spot for Ternary Cocrystal Formation,” D. Adsmond, J. Reardon, Ferris State University, Academic Affairs, Student Research Fellowship, funded, Summer 2015.

“An Investigation of the Ability of Dibenzylsulfoxide to form Cocrystals with Carboxylic Acids and Phenols,” D. Adsmond, C. Kemppainen, Ferris State University, Academic Affairs, Student Research Fellowship, funded, Summer 2015.

“An Investigation of the Ability of Sulfisomidine to form Cocrystals with Carboxylic Acids,” D. Adsmond, S. Douglas, Ferris State University, Academic Affairs, Student Research Fellowship, funded, Summer 2015.

“Determination and Analysis of Crystal Packing in Cocrystals Incorporating the Antibacterial Drug, Sulfamethazine, and a Carboxylic Acid,” D. Adsmond, Ferris State University, Academic Affairs, Faculty Research Fellowship, funded 25% release time Spring 2013-Fall 2013.

“Growth of X-ray Quality Sulfamethazine Cocrystals and Analysis of the Crystal Packing,” D. Adsmond, B. Wierckz, Ferris State University, Academic Affairs, Student Research Assistantship, funded \$1500, Spring 2013.

“An Investigation of the Cocrystallization Behavior of Saccharin,” D. Adsmond, D. Birdsall, Ferris State University, Academic Affairs, Student Research Fellowship, funded \$5500, Summer 2012.

“Assessing the Influence of Carboxylic Acid Structure and Crystallization Conditions on Acid:Amidine Cocrystal Formation” D. Adsmond, B. Wierckz, Ferris State University, Academic Affairs, Student Research Fellowship, funded \$4500, Summer 2011.

“The Rational Design, Synthesis, and Analysis of Ternary Cocrystals,” D. Adsmond, Ferris State University Research Grant, funded \$10,984, 2006 – 2007.

“FT-NMR Upgrade for a Collaborative Research-Based Organic Chemistry 2 Laboratory Course: Development and Implementation” D. Adsmond, P. Balanda, D. Frank, National Science Foundation, funded \$46,676, March 13, 2002.

“Funding for the Instrument Support for a Collaborative Research-Based Organic Chemistry Laboratory” D. Adsmond, Exceptional Merit Faculty/Staff Award funded by the Ferris Foundation, funded \$5,000 April 29, 2002.

“FT-NMR Upgrade for a Collaborative Research-Based Organic Chemistry 2 Laboratory” D. Adsmond, Dean’s Initiative Grant, funded \$1000 February 2002.

“Release Time for Grant Proposal Writing, Application to the National Science Foundation for Funds to Upgrade Ferris State University’s Chemistry Laboratory Instrumentation,” D. Adsmond, Faculty Grant Development Fund grant, funded \$2500 release time for January 2001-May 2001.

“An Investigation of the Effect of Molecular Change on Binding Preferences of Amidines” D. Adsmond, Ferris research grant, funded \$2950 May 2000.

“An Investigation of the Effect of Molecular Change on Binding Preferences of Amidines” D. Adsmond, Ferris State University research grant, funded \$2950, 2000.

“Development and Implementation of a Research Experience for Students in the Organic Chemistry Laboratory,” D. Adsmond, P. Balanda, Ferris State University professional development grant, funded \$3066, 1999.

“Characterization of New Acetic Acid Solvates and Studies of Acetic Acid Binding Interactions,” D. Adsmond, Morehead State University research grant, funded \$4406, 1997.

“An Investigation of the Preferences and Binding Modes of Acetic Acid in Solvate Formation,” D. Adsmond, Morehead State University research grant, funded \$3213, 1995.

Editor

Guest Editor for special issue of *Crystal Growth and Design* honoring Margaret C. Etter, 2014-2015.

Manuscript Review

Reviewer for the *Journal of Pharmaceutical Sciences*, *Crystal Growth and Design*, & *CrystEngComm*: 3 manuscripts in 2002, 1 manuscript in 2003, 1 manuscript in 2005, 3 manuscripts in 2006, 1 manuscript in 2008, 1 manuscript in 2009, 2 manuscripts in 2010, 1 manuscript in 2011, 2 manuscripts in 2012, 2 manuscripts in 2013, 2 manuscripts in 2015.

Memberships

American Chemical Society, American Crystallographic Association

Teaching Awards

Ferris State University Distinguished Teacher Award 2009

Ferris State University Outstanding Professor Award by Honors Students 2005

Research Interests

hydrogen-bonding, molecular recognition, graph sets, solvate formation, cocrystallization, polymorphism, pharmaceutical solids, and organic materials.

Teaching Interests

organic chemistry, cooperative and problem-based learning, collaborative laboratory research projects.

Peter B. Balanda

ASC 3021, 820 Campus Dr.

Ferris State University, Big Rapids, MI 49307-2225

H (231) 250-6203, W (231) 591-5870, Fax (231) 591-2545, balandap@ferris.edu

ACADEMIC EXPERIENCE:

Professor of Chemistry (2008-present)	Physical Sciences Department, Ferris State University, Big Rapids, MI. Teach/taught: Fund of Organic Chemistry.
Associate Professor (2003-2008)	Organic Chemistry 1, Organic Chemistry 2, Fund Organic- Polymer Chemistry, Intro Organic-Biochemistry, and Fund of Biochemistry.
Assistant Professor (1998-2003)	
Postdoctoral Associate (1997-1998)	Department of Chemistry, Virginia Polytechnic Institute and State University, Blacksburg, VA. Studied thermodynamics of host-guest complexations with Professor Harry Gibson.
Research assistant (1992-1997)	Department of Chemistry, University of Florida, Gainesville, FL. Carried on independent research. Established and maintained a thirteen lab and office computer network.
Teaching Assistant (1991-1992, 1996-1997)	Department of Chemistry, University of Florida.
Teaching Assistant (1988-1991)	Department of Chemistry, Central Michigan University; Outstanding Teaching Assistant Award, 1989-1990.
Secondary Science Teacher (1987-1988)	Murray-Wright High School, Detroit, MI. Taught high school chemistry and biology. Acquired an interest in polymer chemistry.
Substitute Teacher (1986-1987)	L'Anse Creuse Public Schools, Harrison Twp., MI

EDUCATION:

University of Florida (1991-1997)	Ph.D. in organic polymer chemistry. Research advisor: Professor John R. Reynolds. Thesis title: "Synthesis of Functionalized Poly(<i>p</i> -Phenylene)s <i>via</i> Palladium Acetate Catalyzed Suzuki Cross-Coupling Polymerization"
Central Michigan University (1988-1991)	Undergraduate and graduate course work in chemistry with independent research involving monomer and polymer synthesis with Professor Dillip Mohanty. Outstanding Teaching Assistant, 1990

Wayne State University (1986-1988)	Secondary high school teaching certification
Macomb Community College (1985)	Emergency medical technology certification
Albion College (1980-1983)	Liberal arts curriculum. B.A. in biology; member Beta-Beta-Beta Biological Honor Society; recipient Albion Presidential Award; graduated <i>cum laude</i>
L'Anse Creuse High School (1976-1980)	Salutatorian; National Honor Society; varsity tennis

PROFESSIONAL AFFILIATIONS:

American Chemical Society: Member (1989-present): Division of Organic Chemistry; Division of Chemical Education

International Alliance of Teacher Scholars: Member (2000-2002)

PUBLICATIONS & PRESENTATIONS:

Hull, B.; Balanda, P. "Towards the Synthesis of Bisbenzoxazoles from Resorcinol," Midwestern Symposium on Undergraduate Research in Chemistry, Michigan State University, October 11, 2014 & Hull, B.; Balanda, P. "Towards the Synthesis and Polymerization of Benzoxazole from Resorcinol," Research Fellowship, Ferris State University, August 21, 2014

Taylor, D.; Balanda, P. "Towards the Synthesis of Bisbenzoxazoles from Hydroquinone," 2014 Student Research Fellowship, Ferris State University, August 21, 2014

Hull, B.; Balanda, P.B. "One Pot Amidation of Anisole with Isobutyric Acid and Hydroxylamine in Polyphosphoric Acid," CAS Student Poster Session, Ferris State University, May 2, 2014

Balanda, P.B. "A Semi-quantitative Analysis of the Effect of Relative Monomer Concentrations on Rate of Copolymerization and Copolymer Composition in Styrene and Methyl Methacrylate Bulk Polymerization/Copolymerization for the Undergraduate Laboratory," 21st Biennial Conference on Chemical Education, August 1, 2010–August 5, 2010, University of North Texas, Denton, Texas

Adsmond, D.; Balanda, P.B.; Frank, D. "Evaluation of a 2-year pilot of a collaborative research-based Organic Chemistry 2 laboratory course at FSU," Gordon Research Conference on Chemistry Education Research and Practice, June 2005

Adsmond, D.; Balanda, P.B.; Frank, D. "Outcomes and Analysis of a 2-Year Pilot of a Collaborative Research-Based Organic Chemistry 2 Laboratory Course at FSU," 228th ACS National Meeting, NSF Symposium, Aug 2004

Balanda, P.B.; Adsmond, D.; Frank, D. "Research Projects in an Organic Chemistry 2 Laboratory," 18th Biennial Conference on Chemical Education, Ames, Iowa, July 21, 2004

Adsmond, D.; Balanda, P.B.; Frank, D. "Implementation of a Collaborative Research-Based Organic Chemistry 2 Laboratory Course at Ferris State University" 18th Biennial Conference on Chemical Education, Ames, Iowa, July 21, 2004

Balanda, P.B. "A Project-Driven One-Semester Introduction to Organic and Polymer Chemistry" 16th Biennial Conference of Chemical Education, Ann Arbor, MI, August 2, 2000

Balanda, P.B.; Ramey, M.B.; Reynolds, J.R. "Water Soluble and Blue Luminescent Cationic Polyelectrolytes Based on Poly(*p*-Phenylene)," *Macromolecules*, **1999**, *32*, 3970

Gong, C.; Balanda, P.B.; Gibson, H.W. "Supramolecular Chemistry with Macromolecules: New Self-Assembly based Main Chain Polypseudorotaxanes and Their Properties," *Macromolecules*, **1998**, *31*, 5278

Baur, J.W.; Kim, S.; Balanda, P.B.; Reynolds, J.R.; Rubner, M.F. "Thin-Film Light Emitting Devices Based on Sequentially Adsorbed Multilayers of Water-Soluble Poly(*p*-Phenylene)s." *Adv. Mater.* **1998**, *10*, 1452

Balanda, P.B.; Reynolds, J.R. "Functionalized Poly(*p*-Phenylene)s via Suzuki Cross-coupling" *Am. Chem. Soc., Proc. Div. Polym. Mats. Sci. Eng.* **1997**, *76*, 252

Balanda, P.B.; Reynolds, J.R. "Methoxyethoxy- and Triethoxy- Substituted Poly(*p*-Phenylene)s via Suzuki Cross-coupling" *Polym. Prepr. (Am. Chem. Soc., Div. Polym. Chem.)* **1996**, *37*(1), 528-529

Spangler, C.W.; Zhu, L.; Lu, Z.; He, M.; Balanda, P.B.; Reynolds, J.R. "Synthesis, Characterization and Oxidative Doping Behavior of Copolymers Incorporating BEDT-TTF Repeat Units" *Polym. Prepr. (Am. Chem. Soc., Div. Polym. Chem.)* **1995**, *36*(2), 292-293

Spangler, C.W.; Zhu, L.; Hall, T.J.; Balanda, P.B.; Reynolds, J.R. "Studies toward the Design and Synthesis of Superconducting Organic Polymers: Mainchain Incorporation of ET Subunits" *Polym. Prepr. (Am. Chem. Soc., Div. Polym. Chem.)* **1995**, *36*(1), 605-606

Reynolds, J.R.; Katritzky, A.R.; Balanda, P.B.; Musgrave, R.; Soloducho, J.; Sotzing, G.A.; Sankaran, B.; Spangler, G.W.; Zhu, L. "Electrically Conductive and Redox Electroactive Organic Polymers" *Am. Chem. Soc., Proc. Div. Polym. Mats. Sci. Eng.* **1995**, *72*, 393-394

Balanda, P.B.; Child, A.D.; Reynolds, J.R. "Towards the Synthesis of Highly Functionalized Poly(*p*-phenylenes)" *Polym. Prepr. (Am. Chem. Soc., Div. Polym. Chem.)* **1994**, *35*(1), 257-258

Cummings, D.C.; Mani, P.S.; Balanda, P.B.; Howell, B.A.; Mohanty, D.K. "Synthesis and Characterization of Poly(aryl ether-bissulfone)s" *J. Macromol. Sci., Chem.* **1991**, *A28*(8), 793-810

Balanda, P.B.; Cummings, D.; Mohanty, D.K. "Synthesis and Characterization of Bisphenol-A, Hydroquinone and Biphenol Functional Poly(aryl ether) Bissulfones" *Polym. Prepr. (Am. Chem. Soc., Div. Polym. Chem.)* **1990**, *31*(2), 671-672

OTHER PROFESSIONAL PARTICIPATION:

Attended American Chemical Society “44th National Organic Chemistry Symposium;” University of Maryland, College Park, Maryland; June 28-July 2, 2015.

Attended American Chemical Society “2014 Biennial Conference on Chemical Education;” Grand Valley State University; August 3&5, 2014, to attend *Symposia*:

“Engaging Students in Organic Chemistry: Lecture Methods Emphasis”

“Undergraduate Research in Chemistry: Expanding Opportunities and Broadening Participation”

Participated in the Ferris State University “Student Research Fellowship (SRF) Program,” supervising the summer chemistry research efforts (10 weeks, full time) of two FSU Student Research Fellows, May-July, 2014

Attended “Integrating Contemplative Practices into the Teaching and Learning Experience,” a retreat for FSU and GVSU faculty; Pierce Cedar Creek Institute; Hastings, Michigan; June 4-6, 2014

Attended “Liability & Safety Training for Academic Laboratories,” session by The Office of Safety, Health, Environmental, & Risk Management in conjunction with the Academic Affairs Director of Laboratory Safety, Ferris State University, 1/29/2015.

Attended “Academic Laboratory Safety” sessions by Academic Affairs Director of Laboratory Safety, Anne Hawkins-Badge, Ferris State University, 8/21/2014 & 8/23/2013.

Participated in Workshops sponsored by Faculty Center for Teaching & Learning Workshops, Ferris State University:

“Tips for Flipping,” 3/6/2014

“Whoever Does the Work Does the Learning: Facilitation Active Learning,” 3/5/2014

“The Naked Presenter,” FCTL Workshop, Ferris State University, May 22,23,30, June 4,6, & 19, 2013

“Presentation Zen,” FCTL Workshop, Ferris State University, May 29,31, & June 5, 2013

“An Introduction to Learner-Centered Teaching,” November 11, 2005

“Problem Based Learning,” July 16-18, 2001

Attended “Essential Face-to-Face Blackboard Training Workshop,” Ferris State University, 11/29/2011

Provided Consultation and Copolymerization Studies for Beholtztech Inc., 132 West First Street, Flint, MI 48502. Synthesized a latex substrate for use as membrane in the manufacture of a bioanalytical device. Student research opportunity provided for Harry Roy (currently pursuing a Ph.D.) at Wayne State University; work was supported by Beholtztech Inc. (\$4000). May 2010-December 2011

Completed American Chemical Society short course: “Organic Synthesis: Methods and Strategies for the 21st Century Chemist”, Boston, MA, May 20-22, 2009

Attended a two day NSF Multi-Initiative Dissemination Project Workshop, Central Michigan University, January 2003

Attended Ferris State University Spring Learning Institute – Teaching that Promotes Learning, 3/28/2003

Attended two symposia: “Self-assembled Photonic Band-gap Materials”; “Chromogenic Phenomena in Polymers: Tunable Optical Properties,” 223rd ACS National Meeting, *Orlando, Florida*, April 7-11, 2002; Dean’s Initiative Grant

Adsmund, D.; Balanda, P.B.; Frank, D. “FT-NMR Upgrade for a Collaborative Research-Based Organic Chemistry 2 Laboratory Course: Development and Implementation,” NSF Proposal Number 0126961, *Awarded 2002*, Final Report, May, 2005

Attended “The 1st Annual Lilly Conference on College & University Teaching—North,” September 21-22, 2001, Big Rapids, Michigan

Attended the NSCI Conference: “Instruction and Assessment: Infusing Brain Research, Learning Styles, and Multiple Intelligences,” Phoenix, AZ; February 8-11, 2001

Attended Equity within the Classroom XI: Teaching and Learning in a Diverse Classroom; Big Rapids, MI; March 22-23, 2001

Attended Center for Teaching, Learning & Faculty Development’s Facilitating Student Learning Program (2000-2001):

“Methods and Learners” (4 days)

“Repurposing Course Material” (4 days)

“Integrating Material into WebCT” (4 days)

“Student Assessment Techniques” (2 days)

Awarded Ferris State University Faculty Research Grant: “A New Route to Polyphenylenes: Self-Coupling of Arylboronates.” 2000-2001

Attended “The 6th Annual Lilly Conference on College & University Teaching-South,” Athens, Georgia; February 11-13, 2000

Awarded Ferris State University Professional Development Grant: “Development and Implementation of a Research Experience for Students in the Organic Chemistry Laboratory.” Co-author: Daniel Adsmund.; 1999-2000

Awarded Ferris State University Professional Development Grant: “Project Oriented Curriculum for CHEM 211: Fundamentals of Organic and Polymer Chemistry,” 1999-2000.

Attended Ferris State University Center for Teaching, Learning & Faculty Development workshops (1999-2000):

Case Studies Workshop

Get on the Web

Attended “1999 NSF Case Studies in Science Workshop,” SUNY Buffalo (5 days)

Attended “Legal Issues for Educators Panel Discussion,” Ferris State University, 1999

Attended “Grant Writing for New Faculty” workshop; Ferris State University, 1999

ACADEMIC SERVICE

Academic Senate, Ferris State University (2014-2015)

DAWG Days, Ferris State University (11/9/2013, 10/18/2014)

ACS Division of Chemical Education Examinations Institute, Committee Member for the 2012 Organic Chemistry Examination. Convening at the 241st (Anaheim, California, 3/26/2011-3/29/2011) and 242nd (Denver, Colorado, 8/27/2011-8/30/2012) American Chemical Society (ACS) National Meeting & Exposition

A Chemical Safety Committee (on behalf of the Hazardous Substance Awareness and Compliance Committee) to review a chemical hygiene plan for undergraduate research in the College of Pharmacy (2012-2013)

Interviewer for “Syria – US Ambassadorship Summer 2010,” Ferris State University, June 29-30, 2010

Academic Program Review Committee, Bachelor of Science in Nursing (2008-2009)

Academic Program Review Committee, Clinical Laboratory Sciences (1999-2000, 2004-2005)

Academic Senate Health Promotions and Substance Abuse Committee (2004-2007, secretary 2005-2006, 2006-2007)

Academic Senate Student Life Committee (2008-2010, chair 2009-2010)

Academic Senate Academic Standards and Policies Committee (2013-2015)

CAS Academic Policies and Standards Committee (2000-2003, 2006-2009, chair 2000-2003, 2007-2009)

CAS Curriculum Committee (2013-2015)

CAS Dean’s Search Committee (2011-2012)

CAS Promotion and Merit (2009-2011)

CAS Sabbatical Review Committee (1999-2000)

CAS Graduate Education Committee (2013-2015)

Physical Sciences Department Chemistry Minor Committee (2009-2010)

Physical Sciences Department Tenure Review Committee (2003-2014, chair 2006-2014)

Physical Sciences Department Tenure Policy Revision (2012-2013, chair 2012-2013)

Physical Sciences Department Candidate Tenure Committee (2006-2007, 2010-2011)

Physical Sciences Department Planning Committee (2007-2008, 2010-2012)

Physical Sciences Department Equipment Committee (2006-2013)

Physical Science Department Faculty Development and Travel Committee (1999-2001, 2004-2005, chair 1999-2000)

Physical Sciences Department Curriculum Committee (2000-2002, 2005-2007, 2008-2009, 2012-2015)

Physical Sciences Department Head Evaluation Committee (2000-2001)

Physical Sciences Department Safety Committee (1998-2002, chair 1999-2002)

Physical Science Department Faculty Search Committee (2004-2005)

Faculty advisor to the Sigma Pi men's fraternity (1999-2002)

Reitz Reading Room Committee (1998-1999)

COMMUNITY SERVICE & AWARDS

Service to Mecosta-Osceola Intermediate School District (MOISD)

Math, Science and Technology Center (MSTC) Science & Engineering Fair

Project Involvement: Mentor for Chloe Balanda (2007-2008), mentor for Alina Lou (2004-2005), assistance to: Phil Videtich (2004-2005)

Science Fair Judge (2006-2007, 2009-2012)

“Atoms, the Periodic Table, and Reactivity” Presentation to the 5th grade at Crossroads Charter Academy, November, 2007

Polymer chemistry laboratory/workshop provided for MSTC students, spring 2000

“The Structure and Functional Roles of Fats” Presentation to the Lions Club, January, 2003

Mecosta County Medical Center Foundation, Outdoor Activities and Sports Committee, Northern Lights Award Show 2008

Youth Soccer Volunteer (1999-2012)

American Youth Soccer Organization, Coach (1999-2002)

United States Youth Soccer Association (2002-2012):

Founding member: Northland United Soccer Club: Coach (2002-2011);

Director of Youth Development (2003–2009); President (2005-2011); Recreation Program Referee Assigner (2007-2012)

Nominee: Michigan State Youth Soccer Association 2003 Volunteer of the Year

Recipient: Mecosta County Medical Center Foundation, 2007 Northern Lights Award for Outdoor Activities and Sports

Finalist: Pioneer Group's 2009 Mecosta County Citizen of the Year
Recognition: Bench dedication at Industrial Park Soccer Field, 2012
Earned: United States Soccer Federation National Youth License, 2010

Knights of Columbus: Member (2000-present), Recorder (2003-2010), Trustee (2010-13, 2014-present),
Chancellor (2013-2014); Charity Golf Tournament Chair (2007-2013); Breakfast Crew Leader (2009-
present); Lifetime Achievement Award (2014)

CURRICULUM VITA

Kim K. Colvert
Department of Physical Sciences
Ferris State University
Big Rapids, Michigan 49307
(231) 591-5851 colvertk@ferris.edu

CURRENT TEACHING RESPONSIBILITIES

Survey, introductory and advanced courses in biochemistry and biochemistry labs, proteins laboratory.

Courses Taught at Ferris:

Quantitative Analysis (CHM 231)	Inorganic Chemistry (CHM 114)
Introductory Biochemistry (CHM 324)	Introductory Chemistry (CHM 100)
Biochemistry (CHM 364)	Proteins Laboratory (BIOL 473)
Instrumental Analysis (CHM 231)	Advanced Topics in Biochemistry (CHEM 474)
Chemical Calculations (ICT 221)	Chemistry and Food (CHEM 104)
Biochemistry Lab I (CHM 332)	Intro to Physical Chemistry (CHEM 451)
Biochemistry Lab II (CHM 333)	
Organic/Biochemistry (CHM 124)	

CURRENT RESEARCH INTERESTS

Binding site interactions and mechanisms of ATP synthases; ATP synthesis assay development, neurotransmitter detection by enzyme-coated microprobes.

POST DOCTORAL RESEARCH

In vitro metabolism and macromolecular binding of suspected carcinogens using HPLC, radioisotope, and protein and DNA isolation techniques. Suicide inactivation of cytochromes P450, affinity chromatography.

GRADUATE RESEARCH

Interaction between proteins in the electron transport chain of photosynthesis using protein purification and analysis techniques, enzyme assays, covalent crosslinking and absorbance spectroscopy.

EDUCATION

PhD August, 1984, University of Arkansas, Fayetteville, Arkansas 72701.
Major: Biochemistry. Dissertation Title: "Interaction of Ferredoxin with Ferredoxin:NADP Reductase in Chloroplast Membranes." Advisor: Dr. Danny J. Davis

B.A. June, 1977, Hendrix College, Conway, Arkansas 72032.
Major: Chemistry.

PROFESSIONAL EXPERIENCE

September, 1988 to present

Asst./Assoc./Full Professor of Chemistry, Physical Sciences Department
Ferris State University. Big Rapids, MI

August, 1986 to August, 1988

Assistant Professor of Chemistry
Chemistry Department
Southwest Missouri State University , Springfield, MO

August, 1984 to August, 1986

Postdoctoral position with Peter P. Fu,
Division of Biochemical Toxicology, National Center for Toxicological
Research, Jefferson, AR. (Exchange Program with Veteran's
Administration, Little Rock, AR)

ACTIVITIES AND AWARDS

Academic Scholar Award, Academic Affairs, 2012
Sabbatical Leave, University of Kansas-Lawrence, August 2009-August 2010
Sabbatical Leave, University of Kansas-Lawrence, August 2001-August 2002
(American Heart Association Grant)
Sabbatical Leave, University of Kansas-Lawrence, August 1994-June 1995
Ferris Faculty Research Grant, June 1993-May 1994
NSF Research Opportunity Award, University of Kansas-Lawrence. June-
August 1990 and June-August 1991
Chair, Western Michigan Section, American Chemical Society. 1991
Faculty Research Grant, Southwest Missouri State University. June 1987-June
1988.

COMMITTEES (current)

Departmental: Tenure Review, Candidate Tenure Committees, Equipment,
Scholarship, Search, Departmental Faculty Development

University: Biotechnology Advisory

Additional Service:

B.A. Biochemistry Program Coordinator
RSO advisor for Biotechnology Student organization
Independent Study Mentor (16 students since 2011)
Math /Science Student Project mentor (2 since 2005)
Science Fair
Dawg Days Volunteer
Alumni Outreach, Homecoming 2014

PUBLICATIONS

Stephanie C. Bishop, Shyam Mehta, Kim K. Colvert, Daxin Zheng, Mark L. Richter, Cindy L. Berrie and Fei Gao. "Insertion of a Rigid Structural Element into the Regulatory Domain of the Chloroplast F1-ATPase Gamma Subunit for Rotational Studies." *(to be published in the proceedings of 15th International Congress on Photosynthesis which was held on 22-27 August 2010, in Beijing, China)*

Kim K. Colvert, Fei Gao, Daxin Zheng, Shyam Mehta, Mark L. Richter, The Mutation E242K in the chloroplast ATP synthase Gamma Subunit Increases the Inhibitory Binding of the Epsilon Subunit Without Changing the Apparent Redox Potential of the Regulatory Dithiol." *(to be published in the proceedings of 15th International Congress on Photosynthesis which was held on 22-27 August 2010, in Beijing, China)*

Quillen, E.E., Haslam, G.C., Samra, H. S., Amani-Taleshi, D., Knight, J.A., Wyatt, D.E., . Bishop, S.C., Colvert, K.K., Richter M.L., Kitos, P.A. "Ectoadenylate kinase and plasma membrane ATP synthase activities of human vascular endothelial cells." *J. Biol. Chem.*, vol. 281, 20728-20737, 2006

Kirch, R.D., Colvert, K.K., Richter, M. L., Graber, P., "Intrinsic Fluorescence of the Chloroplast H⁺-ATPase.", *Archives of Biochemistry and Biophysics*, vol. 316, 1995.

K.K. Colvert, D.A. Mills, and M. L. Richter, "Structural Mapping of Cysteine 63 of the Chloroplast ATP Synthase Beta Subunit", *Biochemistry*, vol.31, pp. 3930-3935, 1992

L.Z. Morand, M.K. Frame, K.K. Colvert, D.A. Johnson, D.W. Krogmann, and D.J. Davis, "Plastocyanin Cytochrome *c* Interaction," *Biochemistry*, vol. 28, pp. 8039-8047, 1989.

K. K. Colvert and D. J. Davis, "Characterization of a covalently crosslinked complex involving ferredoxin and ferredoxin:NADP reductase," *Photosynthesis Research*, vol. 17, pp. 231-245, 1988.

K. K. Colvert, M. W. Chou, and P.P. Fu, "*In Vitro* Binding of Nitro-Polycyclic Aromatic Hydrocarbons and Their Oxidative Metabolites to Macromolecules," presented at the International Symposium on Polynuclear Aromatic Hydrocarbons, National Bureau of Standards, Gaithersburg, Maryland, September, 1987 (published in the proceedings of this meeting).

Kim K. Colvert and Peter P. Fu, "Xanthine Oxidase-Catalyzed DNA Binding of Dihydrodiol Derivatives of Nitro-Polycyclic Aromatic Hydrocarbons," *Biochemical and Biophysical Research Communications*, vol. 141, pp. 245-250, 1986.

Barbara J. Vieira, Kim K. Colvert, and Danny J. Davis, "Chemical Modification and Cross-linking as Probes of Regions on Ferredoxin Involved in its Interaction with Ferredoxin:NADP Reductase," *Biochemica et Biophysica Acta*, vol. 852, pp. 109-122, 1986.

Kim K. Colvert and Danny J. Davis, "Effect of pH, Salt and Coupling State on the Interaction of Ferredoxin with the Chloroplast Membrane," *Archives of Biochemistry and Biophysics*, vol. 225, pp. 936-943, 1983.

PRESENTATIONS

Effects of Putrescine Oxidase Active Site Mutations on Activity. Lukas Woodcock , Dr. Kim Colvert, American Chemical Society National Meeting, Student poster session, March 2015; Ferris State University CAS Student Awards Ceremony and Poster Session, April 2015.

Chemical Rescue of a Mutant Beta-Glycosidase from *Sulfolobus Solfataricus* by Indole and Indole Derivatives. Doug Hulbert, Elizabeth Utke, Matthew Mousseau, Dr. Kim Colvert, Ferris State University CAS Student Awards Ceremony and Poster Session, April 2015

The Role of His 432 Putrescine Oxidase in Substrate Interaction. Lukas Woodcock , Dr. Kim Colvert, Ferris State University CAS Student Awards Ceremony and Poster Session, April 2014; Midwestern Symposium on Undergraduate Research in Chemistry, Michigan State University, Oct. 2014

Kinetic Characterization of Mutant Beta-Glycosidase from *Sulfolobus Solfataricus* *Chemically Rescued by Indole*. Jacob Hare, Matthew Mousseau, Dr. Kim Colvert, Ferris State University CAS Student Awards Ceremony and Poster Session, April 2014

His Tag Removal and Heme Incorporation of Recombinant CCP1. Lukas Woodcock, Matthew Manninen, Dr. Kim Colvert, Ferris State University CAS Student Awards Ceremony and Poster Session, April 2013; Midwestern Symposium on Undergraduate Research in Chemistry, Michigan State University, Oct. 2013

Temperature Effects on Activity and Flavin Content of Recombinant L-6-hydroxynicotine Oxidase and Mutants. Thomas Dingman, Kimberly Johnson, Dr. Kim Colvert Ferris State University CAS Student Awards Ceremony and Poster Session, April 2013;

Midwestern Symposium on Undergraduate Research in Chemistry, Michigan State University, Oct. 2013

"Kinetic characterization of recombinant nicotine oxidase (6-L-hydroxy nicotine oxidase) from *Arthrobacter oxidans*. Nga Ton nu, Dr. Kim K. Colvert, Ferris State University CAS Student Awards Ceremony and Poster Session, April, 2012

The kinetics of recombinant 6-L-hydroxy nicotine oxidase are altered in the chimera of 6-L-hydroxy nicotine oxidase and maltose binding protein. David Kallio, Nga Tan nu, Dr. Kim Colvert Ferris State University CAS Student Awards Ceremony and Poster Session, April, 2012

Isolation and Characterization of Recombinant *Saccharomyces cerevisiae* Cytochrome C Peroxidase.

Matthew Manninen, Dr. Kim K. Colvert, Ferris State University CAS Student Awards Ceremony and Poster Session, April, 2012

Colvert, K. K. (Dec. 2011) "What I Do On My Summer Vacations: Current Research", Ferris Student Affiliate Chapter of the American Chemical Society.

Knight, J., Colvert, K.K., Amani, D., Haslam, G., Samra, H., Kitos, P.A. and Richter, M.L. (2003) "A novel plasma membrane ATP synthesis activity in human umbilical vein endothelial cells" KU undergraduate research symposium

Kim K. Colvert, "Structural Mapping of Cysteine 63 of the Chloroplast ATP Synthase Beta Subunit" Physical Sciences Department, Ferris State University, Big Rapids, Michigan, March, 1993

Gao, F., Colvert, K.K. & Richter, M.L. (1992) *Permanent asymmetry in the chloroplast ATP synthase: evidence against a rotational mechanism*, Midwest Biochemistry Conference, Manhattan Kansas

Mills, D.A., Colvert, K.K., & Richter, M.L. (1990) *Identification and distance mapping of the ATP binding site on the b subunit of the chloroplast ATP synthase*, Midwest Biochemistry Conference, University of Oklahoma

Mills, D.A., Colvert, K.K., & Richter, M.L. (1990) *Structural mapping of the b subunit of the chloroplast ATP synthase*, Gordon Research Conference, Bioenergetics, Vermont

Kim K. Colvert, "Metabolism of Benzo(a)pyrene by Plant Microsomal Enzymes," Midwest Regional Meeting, American Chemical Society, Wichita, Kansas, November, 1987.

K.K. Colvert, N.W. Chou, and P.P. Fu, "*In Vitro* Binding of Nitro-Polycyclic Aromatic Hydrocarbons and Their Oxidative Metabolites to Macromolecules,"

International Symposium on Polynuclear Aromatic Hydrocarbons, National Bureau of Standards, Gaithersburg, Maryland, September, 1987

Kim K. Colvert and Peter P. Fu, "Reductive Metabolism of Nitrated Polycyclic Aromatic Hydrocarbons to DNA Binding Derivatives," 190th National Meeting of the American Chemical Society, Division of Biological Chemistry, Chicago, Illinois, September 1985.

Kim Colvert and Danny J. Davis, "Preparation and Characterization of a Covalently Linked Adduct Between Ferredoxin and Ferredoxin:NADP Reductase," Ann. Plant Biochemistry-Physiology Symposium, University of Missouri-Columbia, Missouri, April, 1984.

Kim Colvert, Keith Hough, and Danny J. Davis, "Covalent Linkage of Interacting Proteins of the Photosynthetic Electron Transport Chain by a Water-Soluble Carbodiimide," Southwest Regional Meeting, American Chemical Society, Tulsa, Oklahoma, December, 1983.

K. Colvert and D. J. Davis, "Effects of pH and Salt on K_m for Ferredoxin in NADP Photoreduction by Chloroplast Membranes," Ann. Plant Biochemistry-Physiology Symposium, University of Missouri-Columbia, Missouri, April, 1982.

D.J. Davis and K. Colvert, "Effects of pH, Salt and Coupling State on the Interaction of Ferredoxin with the Chloroplast Membrane," Midwest Photosynthesis Conference, Argonne National Laboratory, Argonne, Illinois, October, 1982.

K. Colvert and D.J. Davis, "Effects of pH, Salt and Coupling State on the Interaction of Ferredoxin with the Chloroplast Membrane," West Central States Biochemistry Conference, Stillwater, Oklahoma, November, 1982.

David Frank
Physical Sciences Department
Ferris State University
Big Rapids MI 49307
(231) 591-2580

Employment History:

July 1992 – present: Department Head, Physical Sciences Department, Ferris State University, Big Rapids MI. Supervise faculty and staff in a 20-plus-member department in the areas of chemistry, biochemistry, industrial chemistry, physics, geology, astronomy and physical science.

July 2012 - June 2013: Interim Associate Dean, College of Arts and Sciences, Ferris State University, Big Rapids MI.

July 2003 – June 2008: Interim Department Head, Mathematics Department, Ferris State University, Big Rapids MI.

June 1997 – August 1997: Interim Department Head, Humanities Department, Ferris State University, Big Rapids MI.

Sept. 1985 – June 1992: Assistant/Associate Professor of Chemistry, Physical Sciences Department, Ferris State University, Big Rapids MI.

Aug. 1981 – June 1982: Chemistry Instructor, West Lafayette High School, W. Lafayette, IN.

Sept. 1978 – May 1984: Teaching Assistant, Chemistry Department, Purdue University, W. Lafayette IN.

Education:

Ph.D., Chemistry Education, Purdue University, W. Lafayette IN. (Dissertation Title: Implementing Instruction to Improve the Problem-Solving Abilities of General Chemistry Student. Dissertation advisor: J. Dudley Herron)

M.S., Chemistry, Purdue University, W. Lafayette IN.

B.A., *summa cum laude*, major in chemistry (minors in biology and mathematics), Macalester College, St. Paul MN.

Courses taught at Ferris State University:

Chemistry: Majors-level general chemistry, general chemistry for allied health, physical chemistry
Industrial chemistry: Chemical calculations, the chemical industry
General physics labs (both first and second semester)
Supervision of student teachers (mathematics, chemistry, biology, general science)
Freshman (orientation) seminar

Memberships in Professional/Honorary Organizations:

American Chemical Society
National Science Teachers' Association (NSTA)
Michigan Science Teachers' Association (MSTA)

Phi Beta Kappa

Grants/Funding (since 1999)

Adsmund, D., Frank, D. V. & Balanda, P. (2002-2005). FT-NMR upgrade for a collaborative research-based organic chemistry 2 laboratory course: Development and implementation. NSF (National Science Foundation) Grant No. DUE-0126961. Funded for: \$46,675.

Killian, W., Frank, D., Di Raddo, P. & Weaver, J. (2001-2002). Dow Foundation Grant for student scholarships, student research, ICT (Industrial Chemistry Technology) web page development, Instrumental Analysis course support (including laboratory manual development) and partial support for FT-NMF instrument purchase. Funded for \$25,000.

Killian, W., Frank, D. & Di Raddo, P. (2000-2001). Dow Foundation Grant for student scholarships, ICT web page development and Instrumental Analysis course support. Funded for \$14,700.

Frank, D., Goosen, R., Lowery, G. & Andrews, T. (1999-2001). Connecting with the learner: The implementation of an equity toolkit in west-central Michigan. Eisenhower grant for \$87,000.

Publications (since 1999)

Burns, F. & Frank, D. (2013). "The use of electronic media for chemical education research," *Chemistry Education and Sustainability in the Global Age*, pp. 185-195.

Padilla, M. J., Miaoulis, I. & Cyr, M. (program authors); Frank, D. V., Little, J. G & Miller, S. (book authors) (2005). *Prentice Hall Science Explorer: Chemical Building Blocks*. Pearson Education, Inc., Upper Saddle River NJ.

Padilla, M. J., Miaoulis, I. & Cyr, M. (program authors); Frank, D. V., Little, J. G & Miller, S. (book authors) (2005). *Prentice Hall Science Explorer: Chemical Interactions*. Pearson Education, Inc., Upper Saddle River NJ.

Wysession, M., Frank, D. & Yancopoulos, S. (2004). *Physical Science: Concepts in Action* (a textbook for students in secondary school). Pearson Education, Inc., Upper Saddle River NJ.

Frank, D. (head writer); Edmond, M. & Starr, W. (section writers) (2003). Section 2: "Designing Equitable Curriculum." One of six sections in the CD-ROM *Connecting With The Learner: An Equity Toolkit*. Produced by the North Central Regional Educational Laboratory.

Frank, D. & Killian, W. "Highlighted Program: The Industrial Chemistry Technology Program at Ferris State University." Article appearing in *Newsletter for Chemistry Technician Instructors*, Volume 11, No. 1, Spring 1999, p. 4.

Presentations/Workshops (since 1999)

- Burns, F., Frank, D., Asare, J. & Clark, L. (2015, May). Assessing higher order thinking skills through creative writing. Presented at the 2015 Joint Great Lakes/Central Regional Meeting of the American Chemical Society.
- Adsmond, D, Balanda, P. & Frank, D. (2014, October). Design of a collaborative research-based Organic Chemistry 2 laboratory course at Ferris State University. Presented at the International Scientific School Program, Kazan National Research Technological University, Kazan Russia.
- Frank, D. & Adsmond, D. (2014, October). Higher Education in the USA: And how Ferris State University fits into the big picture. Presented at the International Scientific School Program, Kazan National Research Technological University, Kazan Russia.
- Burns, F. & Frank, D. (2014, July). Chemical stories: Better chemistry through creative writing. Presented at the International Conference on Chemical Education, Toronto ON.
- Di Raddo, P., Thomson, M., Killian, W. & Frank, D. (2013, March). Industrial Chemistry Technology at Ferris State University: past, present and future. Presented at the annual conference of the Michigan Academy of Science, Arts & Letters, Holland MI.
- Burns, F. & Frank, D. (2010, August). The use of electronic media for chemical education research. Presented at the 21st International Conference for Chemical Education, Taipei, Taiwan.
- Burns, F., Frank, D., Kerr, T. & Stanislav, T. (2008, August). The effect of online learning logs on student outcomes in general chemistry. Presented at the 20th Biennial Conference for Chemical Education, Bloomington IN.
- Adsmond, D., Balanda, P. & Frank, D. (2004, August). Outcomes and analysis of a 2-year pilot of a collaborative research-based Organic Chemistry 2 laboratory course at Ferris State University. Presented at the 228th National Meeting of the American Chemical Society, Philadelphia PA.
- Balanda, P., Adsmond, D. & Frank, D. (2004, July). Research projects in an Organic Chemistry 2 laboratory. Poster presented at the 18th Biennial Conference on Chemical Education (BCCE), Iowa State University, Ames IA.
- Adsmond, D., Balanda, P. & Frank, D. (2004, July). Implementation of a collaborative research-based Organic Chemistry 2 laboratory course at Ferris State University. Presented at the 18th Biennial Conference on Chemical Education (BCCE), Iowa State University, Ames IA.
- Christafferson, J. & Frank, D. (2001, November) An inquiry-based course in physical science for pre-service elementary teachers. Presented at the annual meeting of the Project 30 Alliance, Washington DC.
- Frank, D., Christafferson, J., & Heck, F. (2001, June). Cooperative-learning and inquiry-based science courses for preservice teachers. Presented at the 33rd Central/Great Lakes Joint Regional Meeting of the American Chemical Society, Grand Rapids MI.

Killian, W., Di Raddo, P., Frank, D. & Hoekstra, M. (2001, June). Meeting the challenges for chemical technicians with an innovative certificate program. Presented at the 33rd Central/Great Lakes Joint Regional Meeting of the American Chemical Society, Grand Rapids MI.

Partigianoni, C., Frank, D., Jacobs, L., Killian, W. & Shepler, V. (2001, June). Don't slay them — SLA them! Presented at the 33rd Central/Great Lakes Joint Regional Meeting of the American Chemical Society, Grand Rapids MI.

Curriculum Vitae
William Killian
Department of Physical Sciences
Ferris State University
231-349-1578
WilliamKillian@ferris.edu

Education:

North Park Colleges, B.A. Biology, 1973. Magna Cum Lauda Graduate.

Ohio State University, M.S. Chemistry, 1976.

Area of Research: Synthesis and Characterization of Substituted.
Dihydropyridines in Relation to NAD/ NADH models.

Representative Summer Experience

Summer

1998&1999:

Taught at Parke-Davis and coordinated pharmaceutical chemical tech certificate program

Summer

1994:

Visiting Scientist, Dow Chemical Company, Surfactant Research

Summer

1992&1993:

Research Associate, The Upjohn Company, HPLC method development.

Full Time:

1987-Present:
University

Associate Professor, Industrial Chemical Coordinator, Ferris State

Courses Taught:

General Chemistry
Laboratory Safety
Applied Analytical Chemistry
Instrumental Analysis

1985-1986:

Instructor, George Williams college.
Closed in March '86 due to financial exigency.

1984-1985:

Instructor, Loop Junior College, part-time position.
Courses Taught:

General Chemistry
Environmental Science

1981-1985:

Chemistry/Manager, Inland Steel.
2 years as an EPA compliance water/waste water chemist.
2 years as a quality control manager for chemical operations at rolling mill.

Publications/Presentations:

"N-ACYL-1, 4-Dihydropyridines by Acid Catalyzed Condensations,"
Tetrahedron Letters, 16, 1407-1410, 1978

"Development of a Process for Treating Red Water by Organic/ Inorganic
Separation and Biodegradation," 14th Annual Army Environmental R&D
Symposium, Williamsburg, VA, November 14-16, 1989.

"Detection of Chemical Plumes Utilizing Passive-Remote Fourier Transform
FTIR Spectroscopy," 44th Annual Pittsburgh Conference and Exposition on
Analytical Chemistry, Atlanta, GA, March 8-12, 1993.

"The Role of an Industrial Advisory Board in Chemical Technology
Program,"
15th Biennial Conference on Chemical Education, Waterloo, Ontario, August
1998.

"How to Obtain Accreditation for a Two-Year Industrial Technology
Program," ACS Region Meeting, Midland, MI, October, 1997.

"A Mechanistic Representation For the Synthesis of Benzanthrone and
Violanthrone," Journal of Polycyclic Aromatic Compounds, Vol 19, pp 179-
197, 2000.

"Roundtable Discussion of Curricular Issue in Chemical Technology
Programs,"
BCCE in Lafayette, IN, 2006.

ICT Chemistry poster and presented at National ACS Meeting, 2013.

Affiliations:

American Chemical Society
Instrumental Society of America

YAMUNA KOLLALPITIYA

830 Woodward Ave · Big Rapids, MI 49307

(316) 734-0348 · yamunakollalpitiya@yahoo.com

EDUCATION

Wichita State University, Wichita, KS

Ph.D. in Chemistry/Biochemistry

July 2011

Dissertation

Part I: Investigation of Mechanisms of Copper and Zinc Neurotoxicity

Part II: Pre-steady State Kinetics of the Reduction of Cytochrome b₅₆₁ with Ascorbate

M.Sc. in Chemistry/Biochemistry

May 2008

Relevant coursework

Electroanalytical Chemistry, Photochemistry, Spectroscopy, Physical Biochemistry, Analytical Spectroscopy, Bioorganic Chemistry, Advanced Biochemistry, Neurochemistry

University of Colombo, Sri Lanka

M.Sc. in Analytical Chemistry

August 2004

(Completed theory and practical components only)

University of Peradeniya, Sri Lanka

B.Sc. in Chemistry, 2nd class upper division

March 2000

Subsidiary Subject: Physics

TEACHING EXPERIENCE

Assistant Professor

August 2013 - Present

Department of Physical Sciences, Ferris State University, Big Rapids, MI

- Taught biochemistry courses (CHEM 324 and OPTM 530)
- Instructed General Chemistry Labs (CHEM 114, 122 and 103)

Professor

July 2011 – May 2013

Department of Chemistry, Warren Wilson College, Asheville, NC

- Created syllabi and taught Principles of Chemistry, General Chemistry and Biochemistry courses
- Instructed Biochemistry and Analytical Chemistry lab sessions
- Served as a student advisor and a research mentor

Teaching Assistant

August 2006 – May 2011

Department of Chemistry, Wichita State University, Wichita, KS

- Instructed labs and recitation sessions for General Chemistry and Biochemistry
- Individually mentored three undergraduate students in independent research projects

Temporary Lecturer*May 2000 – September 2000*

Department of Chemistry, University of Peradeniya, Sri Lanka

- Conducted lab sessions and group discussions in undergraduate Organic Chemistry, Inorganic Chemistry, and Physical Chemistry lecture classes

TEACHING INTERESTS

Biochemistry, General Chemistry, Analytical Chemistry, Physical Chemistry

RESEARCH EXPERIENCE**Ph.D. Candidate***January 2005 - July 2011*

Department of Chemistry, Wichita State University, Wichita, KS

- Studied the factors affecting copper and zinc-induced apoptosis in neuronal cells
- Characterized SH-SY5Y neuronal cells as a serotonergic model
- Purified and characterized cytochrome b₅₆₁ protein from natural sources for functional studies
- Studied the kinetics of cytochrome b₅₆₁

Research Officer*July 2001 -December 2004*

Industrial Technology Institute, Colombo, Sri Lanka

- Performed quantitative analysis on metals and minerals using ASTM, BS, SLS standards
- Provided test reports to industry
- Trained laboratory staff of two companies to perform testing

Research Assistant*October 2000- June 2001*

Environmental Technology Division, National Building Research Organization, Colombo, Sri Lanka

- Analyzed air pollutants by standard methods
- Provided test reports to industry

LABORATORY SKILLS

- Handling and maintenance of neuronal and nonneuronal cell lines (SH-SY5Y, MN9D, PC12)
- Basic methods in protein purification from natural sources
- Analytical and separation chromatography techniques including FPLC, HPLC-EC, HPLC-UV and GC/MS
- Spectroscopy (UV/VIS, CD, Fluorescence, Stopped flow, AAS)
- Electrophoresis
- Titration techniques

AWARDS AND AFFILIATIONS

- Member: Sigma Xi, 2012-2013
- Mellon funds to redesign general chemistry I course, 2011
- Lloyd Parker Graduate Fellowship in Chemistry, 2006-2008
- Member: American Association for the Advancement of Science, 2008-2011
- Student Affiliate Member: American Chemical Society, 2008-2011
- Outstanding Teaching Assistant, Spring-2009
- Junior Faculty Fellow, 2014-2015
- Professional Development Intensives, 2014

PUBLICATIONS/ PRESENTATIONS

- **Kollalpitiya, Yamuna** and Wimalasena, Kandatege, Neurotoxicity of Copper (II) and Zinc (II). 45th Midwest Regional Meeting of the American Chemical Society, Wichita, KS, October 27-30, 2010.
- **Kollalpitiya, Yamuna** and Wimalasena, Kandatege, Catecholaminergic Toxicity of Copper could not be due to its Redox Activity. Poster, 44th Midwest Regional Meeting of the American Chemical Society, Iowa City, IA, October 21-24, 2009.
- **Kollalpitiya, Yamuna** and Wimalasena, Kandatege. Membrane Permeable Chelators Increase Copper Uptake and Toxicity in Catecholaminergic Cells. Poster. 84th Southwestern and Rocky Mountain Division Regional Meeting of the American Association for the Advancement of Science, Tulsa, OK, March 28-31, 2009.
- **Kollalpitiya, Yamuna** and Wimalasena, Kandatege. Transport of Tryptophan into Neuronal cells. Poster. 4th Annual Symposium on Graduate Research and Scholarly Projects, Wichita State University, April 25, 2008.
- **Kollalpitiya, K.M.Y.P.**, Kamaldeen, T. and Navarathne, A., Detection of Hydrogen Peroxide in Milk using a Biosensor. *Chemistry of Sri Lanka* (2000), 17, 41.
- **Kollalpitiya, K.M.Y.P.**, Kamaldeen, T. and Navarathne, A., Detection of Hydrogen Peroxide in Milk using a Biosensor. Poster. Annual Research Sessions, University of Perdeniya, Sri Lanka 2000.

COLLEEN M. PARTIGIANONI
Curriculum Vitae
July, 2015

Education

Ph. D., (1991) Chemistry, Michigan State University, East Lansing MI.
B.S., (1986), Chemistry, *magna cum laude*, Ithaca College, Ithaca NY.

Professional Experience

Ferris State University:

Professor of Chemistry: 2009 – present.
Associate Professor of Chemistry: 2004 – 2009.
Assistant Professor of Chemistry: 1999 – 2004.

Pellissippi State Community College: Adjunct Instructor 5 / 98 – 5 / 99.

Cornell University: Tutor, Learning Skills Center 1 / 98 – 5 / 98.

University of North Carolina: Visiting Professor 1 / 97 – 1 / 98; 8 / 94 – 8 / 95
(one year appointments funded by Career Advancement and Visiting Professorship Awards from the National Science Foundation)

Ithaca College: Assistant Professor of Chemistry 8 / 91 – 8 / 94; 8 / 95 – 8 / 96.

Ferris Teaching Assignments

Chem 121 General Chemistry 1 (lecture and lab)
Fall Semesters: 1999 through 2014;

Chem 122 General Chemistry 2 (lecture and lab)
Spring Semesters: 2001 through 2015

Chem 381: Inorganic Chemistry: Spring 2010, Spring 2012, Spring 2014

Chem 497 Independent Study in Coordination Chemistry: Fall 04, Spring 08

Chem 114 Introduction to General Chemistry
1 section: (lecture and lab): Winter 05 & Summer 00.
3 sections: (lab): Winter 03.

Chem 103 Preparatory Chemistry (lecture and lab): Summer 00

Service

FSU Committee Service

Departmental (Recent)

2014-2015

Assessment Committee (Chair)
CHEM 121 and CHEM 122 Assessment Coordinator
General Chemistry Faculty Search Committee
B. A. in Biochemistry and Chemistry Program Review Committee

2013-2014

Assessment Committee (Chair)
CHEM 121 and CHEM 122 Assessment Coordinator
Curriculum Committee

2012-2013

Assessment Committee (Chair)
CHEM 121 and CHEM 122 Assessment Coordinator
Equipment Committee
Tenure Policy Revision
Tenure Review Committee
Summer Teaching Committee

2011-2012

Assessment Committee (Chair)
Chem 122 Assessment Coordinator
Equipment Committee
Tenure Review Committee
CTC for Gary Hiel (Chair)

2010-2011:

Assessment Committee
Chem 122 Assessment Coordinator
Equipment Committee
Tenure Review Committee
CTC for Gary Hiel (Chair)

2009-2010:

Assessment Committee
Chem 122 Assessment Coordinator
Equipment Committee
Safety Committee
Tenure Review Committee
CTC for Gary Hiel (Chair)

2008-2009:

Assessment Committee
Equipment Committee
Tenure Review Committee

College

CAS Assessment Committee (2011 – present)
CAS Sabbatical Leave Committee (2010–2011; 2006 – 2007)
CAS Diversity Committee (2008–2010)
CAS Academic Standards and Policies (2003 – 2006)
CAS Planning Committee (2001 – 2004)
CAS Faculty Support and Development (2000 – 2003), Recorder (2002 - 2003)

University

Scientific Understanding Assessment Committee (2002 – 2008)

Advising / Mentoring

Faculty Advisor for Kappa Psi Pharmaceutical Fraternity (Fall 2002 – present)

Mentor in Select Sixty (Fall 2005 – Winter 2006)

Research Advisor for an undergraduate student (Fall 2002 – Winter 2003)

Academic Advisor for approximately 20 pre-pharmacy students / year.

Honors/ Recognition

Excellence in Course Assessment Award (Spring 2011)

Semifinalist for Ferris' Distinguished Teacher Award, Spring 2007.

Recipient of the Outstanding Professor Award, FSU Honors Program, Fall 2004.

Scholarly and Professional Activities

Publications

A New Electron Transfer Donor for Photoinduced Electron Transfer in Polypyridyl Molecular Assemblies”; Colleen Partigianoni, Sandrine Chodorowski-Kimmes, Joseph A. Treadway, Durwin Striplin, and Thomas J Meyer, Inorg. Chem. **1999**, 38, 1193.

“Photoreduction of Diaryl Disulfides by Quadruply Bonded Dimolybdenum and Ditungsten Complexes”; Carolyn Hsu, Sarah A. Helvoigt, Colleen M. Partigianoni, Claudia Turro and Daniel Nocera, Inorg. Chem. **1995**, 34, 6186.

“Photoredox Chemistry of d⁴ Bimetallic Systems”; Colleen M. Partigianoni, Claudia Turro, Carolyn Hsu, I-Jy Chang, and Daniel Nocera, Adv. Chem. Series (238), Kutal, ed, **1993**, 147.

“Photoredox Chemistry of Mixed Valency Systems”; Colleen Partigianoni, Claudia Turro, Yeung-gyo Shin, Douglas Motry, Janice Kadis, Joel I. Dulebohn, and Daniel G. Nocera, NATO ASI Series, Reidel Publishing Company: Amsterdam; **1991**, 91.

“Photoinduced Oxidative-Addition to a Quadruply Bonded Tungsten Complex $W_2Cl_4(dppm)_2$ ”; Colleen M. Partigianoni and Daniel Nocera, Inorg. Chem. **1990**, 29, 2033.

“Multielectron Photochemistry of Quadruply Bonded Metal-Metal Complexes”; Colleen M. Partigianoni, I-Jy Chang, and Daniel Nocera, Coord. Chem. Rev. **1990**, 97, 105.

Conference Presentations

“Overcoming Fear of Perceived Hurdles in Implementation of POGIL,” Colleen Partigianoni, 20th Biennial Conference on Chemical Education, Bloomington, Indiana, July 27-31 2008.

“Overcoming Fear of Perceived Hurdles in Implementation of POGIL,” Colleen Partigianoni, 234th American Chemical Society National Meeting, Boston, MA, August 19 – 23 2007.

“Ligand Effect on the Photoinduced Electron Transfer Reactions of Quadruply-Bonded Bimetallic Complexes,” Colleen Partigianoni, 34th Great Lakes / Central Regional American Chemical Society Meeting, Ypsilanti, MI, June 26 – 29, 2002.

“Don’t Slay Them – SLA Them,” **Colleen Partigianoni**, David V. Frank, Lowell Jacobs, William Killian and Virginia Shepler, 33rd Great Lakes / Central Regional American Chemical Society Meeting Grand Rapids, Michigan, June 11 – 13, 2001.

“Increasing Student Success in General Chemistry Classes with Structure Learning Assistance (SLA) Workshops,” **Colleen Partigianoni**, David Frank, Lowell Jacobs, Biennial Conference on Chemical Education, University of Michigan, Ann Arbor, Michigan, July 30 – August 3, 2000.

Conference Participation

2015 American Chemical Society Great Lakes Regional Meeting, Grand Rapids, MI, May 27 – 30, 2015

2014 Biennial Conference on Chemical Education, Grand Valley State University, Allendale, MI, August 3 – 7, 2014

2012 Biennial Conference on Chemical Education, Penn State University, University Park, PA, July 29 – August 2, 2012

12th Annual Texas A & M University Assessment Conference, College Station, Texas, February 19 – 21, 2012

19th Biennial Conference on Chemical Education, Purdue University, West Lafayette, Indiana, July 29 – August 3, 2006.

American Association of Higher Education National Conference, “Learning in 3D: Democratic Transformations, Diversity Redefined, Digital Environments,” San Diego, CA, April 1– 4, 2004.

Lilly Conference on College and University Teaching–West, California State Polytechnic University, Pomona, California, March 14 & 15, 2003.

Lilly Conference on College and University Teaching, The University of Georgia, Athens, Georgia, February 11 – 13, 2000.

External Workshop Participation

National Science Foundation Sponsored POGIL Workshop: (“Process Oriented Guided Inquiry Learning in the Laboratory), Berry College, Mount Berry, GA, July 15-17 2008.

National Science Foundation Sponsored POGIL Workshop: (“Process Oriented Guided Inquiry Learning in the Classroom and Laboratory), University of St. Thomas, St. Paul, Minnesota, June 23rd – June 25th, 2005.

National Science Foundation Sponsored POGIL Workshop, Grand Valley State University, Allendale, MI October 2, 2004.

Pearson Education / Benjamin Cummings General Chemistry Forum, Chicago, Illinois, November 13, 2004.

National Science Foundation: Multi-Initiative Dissemination Project, Innovations in Chemical Education, Central Michigan University, Mount Pleasant, Michigan, April 4 & 5, 2003.

National Science Foundation Sponsored Chautauqua Short Course: “Process Workshops: A New Model for the Science Classroom”; SUNY Stony Brook, Long Island NY, June 7 – 9, 2001.

Internal Workshop Participation (Center for Teaching, Learning and Faculty Development)

FerrisConnect Block Training, August 28 – 29, 2008.

Faculty Learning Community on Learner Centered Teaching, Fall 05 (45 hour course.)

“Getting Up to Speed with WEBCT,” May 10–12, 2005.

Critical Thinking Workshop, Critical Thinking Institute at Ferris State University, Ferris State University, Big Rapids, Michigan, May 22 & 23, 2003.

“Test What You Teach, Teach What You Test,” (3/ 04/ 02 — 4 / 29 / 02): 30 hour course.

New to Ferris Faculty Transition Program (Fall 2009)

Mark A. Thomson

Department of Physical Sciences
Ferris State University

EDUCATION:

Ph.D. Inorganic Chemistry. August 1995; Colorado State University, Fort Collins, Colorado.
Dissertation: Synthetic Models for the Resting Oxidized Form of the Dioxygen Binding Site in Cytochrome *c* Oxidase. Oren P. Anderson and C. Michael Elliott, Advisors.
Awards: Graduate Teaching Fellowship, Gustafson Graduate Teaching Award.

B.S. Chemistry. June 1987; University of Utah, Salt Lake City, Utah.

ACADEMIC EXPERIENCE:

Associate Professor, Chemistry. Department of Physical Science, Ferris State University, August 2011 to present.

Assistant Professor, Chemistry. Department of Physical Science, Ferris State University, August 2007 to August 2011.

Instructor, Chemistry. Department of Physical Science, Ferris State University, August 2006 to July 2007.

Instructor, Chemistry. Department of Chemistry and Physics, Southeastern Louisiana University, August 2003 to August 2006.

Instructor, Wet Science Gear Up. Southeastern Louisiana University, June and July 2005.

Instructor, Chemistry. Our Lady of Holy Cross College, August to December 2003.

Visiting Assistant Professor, Chemistry. Department of Chemistry and Physics, Arkansas State University, August 2002 to May 2003.

Assistant Professor, Chemistry. Department of Chemistry, Xavier University of Louisiana, August 1995 to August 2002.

Instructor, Chemistry. Division of Science, Louisiana State University at Alexandria, August 1994 to August 1995.

Instructor, Chemistry. Fort Polk Center, Northwestern State University of Louisiana, June to August 1995.

AREAS OF INTEREST AND EXPERTISE:

INSTRUCTION

- General Chemistry Lecture & Laboratory
- Applied Fermentation Chemistry
- Physical Chemistry
- Biochemistry
- Chemistry for Non-Science Majors
- K-12 Education in Science and Chemistry
- Environmental Chemistry

RESEARCH

- History and Application of Small-Scale Fermentation.
- Chemical Analysis Applications in the Fermentation Industry.
- Interdisciplinary Approaches to Pedagogy and Content.
- Preparation of K-12 Science Teachers including the use of Technology Resources

FERRIS STATE UNIVERSITY SERVICE:**Department of Physical Sciences**

Program Coordinator, BS in Industrial Chemistry, 2015 to present
Assessment Committee, 2006-07, 2008-2012, 2013-2015
Curriculum Committee, 2008-09, 2012 to 2015
Faculty Development and Travel Committee, 2009-2012
Department Assessment Coordinator, 2008-2012
Planning Committee, 2007-08
General Chemistry Tenure-Track Search Committee, 2007-08

College of Arts and Sciences

New Student Orientation, 2012 to present
Pre-Pharmacy Advisor, 2007 to present
College Sabbatical Leave Committee, 2014 to 2015
College Promotion/Merit Committee, 2011 to 2015
Chair, 2011-2012, 2013-2015
College Curriculum Committee, 2012 to 2013
College Assessment Committee, 2008-2011
Chair, 2008-2011

University

Dean of the Library Search Committee, 2011-2012
Academic Program Review Council, 2011-2012
Pre-Pharmacy Task Force, 2011
Assessment Mentor 2009-2011

PROFESSIONAL ORGANIZATIONS:

American Chemical Society, Member since 1990
Joint Great Lakes Central Regional Meeting Executive Committee, 2013 to present
Program Co-Chair, 2013 - 2015
Committee on Technician Affairs, 2013 to present
Central Region Steering Committee, 2011 to present
Western Michigan Section, Councilor – 2007 to present
ACS Speaker Service, 2006 to the present.
Committee on Project SEED, 2008 - 2012
Louisiana Section, Chair Elect – 1999, Chair – 2000

Master Brewers Association of America, Member since 2012
American Society of Brewing Chemists, Member since 1999

PROFESSIONAL TRAINING:

ACS Leadership Development System

“Leading Without Authority” May 27, 2015; Grand Rapids, MI.

“Strategic Planning” March 18, 2014; Dallas, TX.

“Developing Communication Strategies” September 9, 2013; Indianapolis, IN.

“Engaging and Motivating Volunteers” September 9, 2013; Indianapolis, IN.

“Regional Meeting Planning Conference” November 1-3, 2013; Washington, DC, sponsored by the American Chemical Society.

“McGraw-Hill General Chemistry Symposium” March 1-3, 2013; San Diego, CA, sponsored by McGraw Hill Publishing.

“NCA-HLC Assessment Workshop” July 23-25, 2008; Lisle, IL.

“Summer Hands-On AP Chemistry Workshop” June 23-24, 2008; Baltimore, MD, sponsored by Vernier Software & Technology.

“Ferris Connect Training” June 5-6, 2007; Ferris State University, sponsored by the Faculty Center for Teaching and Learning.

“Scholarship of Teaching and Learning Faculty Learning Community” Spring 2007; Ferris State University, sponsored by the Faculty Center for Teaching and Learning.

“POGIL – Process Oriented Guided Inquiry Learning Workshop” March 24, 2007; Joliet Junior College, Joliet, IL.

“Computational and Theoretical Chemistry Workshop” May 15-20, 2005; Salt Lake City, Utah, sponsored by NSF and the Center for Workshops in the Chemical Sciences.

“Computer and Graphing Calculator Workshop” February 26, 2005; New Orleans, Louisiana, sponsored by Vernier Software & Technology.

“Medic-B Faculty Teaching Workshop” July 18-21, 2001; Boston, Massachusetts, sponsored by Indiana University.

“T.H.E. | QUEST Training Workshop” March 13-14, 29-30, April 14-15, 2000; University of Louisiana at Lafayette, sponsored by University of Louisiana at Lafayette and LaSIP.

CONFERENCE ATTENDANCE:

250th National Meeting, American Chemical Society, Boston, MA, August 16-20, 2015.

Joint Great Lakes Central Regional Meeting, American Chemical Society, Grand Rapids, MI, May 27-30, 2015.

249th National Meeting, American Chemical Society, Denver, CO, March 22-26, 2015.

248th National Meeting, American Chemical Society, San Francisco, CA, August 10-14, 2014.

247th National Meeting, American Chemical Society, Dallas, TX, March 16-20, 2014.

246th National Meeting, American Chemical Society, Indianapolis, IN, September 8-12, 2013.

American Society of Brewing Chemists Annual Meeting, Tucson, AZ, May 19-28, 2013.

44th Central Regional Meeting, American Chemical Society, Mt. Pleasant, MI, May 15-18, 2013.

245th National Meeting, American Chemical Society, New Orleans, LA, April 7-11, 2013.

Michigan Academy of Science, Arts, and Letters Annual Meeting, Holland, MI, March 22, 2013.

244th National Meeting, American Chemical Society, Philadelphia, PA, August 19-23, 2012.

WBC 2012, American Society of Brewing Chemists and Master Brewers Association of the Americas, Portland, OR, July 28-August 1, 2012.

43rd Central Regional Meeting, American Chemical Society, Dearborn, MI, June 6-9, 2012.

243rd National Meeting, American Chemical Society, San Diego, CA, March 25-29, 2012.

242nd National Meeting, American Chemical Society, Denver, CO, August 28-September 1, 2011.
42nd Central Regional Meeting, American Chemical Society, Indianapolis, IN, June 8-10, 2011.
241st National Meeting, American Chemical Society, Anaheim, CA, March 27-31, 2011.
240th National Meeting, American Chemical Society, Boston, MA, August 22-26, 2010.
239th National Meeting, American Chemical Society, San Francisco, CA, March 21-25, 2010.
9th Annual Lilly Conference, Traverse City, MI, September 24-27, 2009.
238th National Meeting, American Chemical Society, Washington, DC, August 16-20, 2009.
237th National Meeting, American Chemical Society, Salt Lake City, UT, March 22-26, 2009.
2008 Assessment Institute, IUPUI, Indianapolis, IN, October 25-28, 2008.
236th National Meeting, American Chemical Society, Philadelphia, PA, August 17-21, 2008.
235th National Meeting, American Chemical Society, New Orleans, LA, April 6-April 10, 2008.
234th National Meeting, American Chemical Society, Boston, MA, August 19-23, 2007.
38th Central Regional Meeting, American Chemical Society, Cincinnati, OH, May 20-23, 2007.
233rd National Meeting, American Chemical Society, Chicago, IL, March 25-29, 2007.

STUDENT RESEARCH SUPERVISION AND PRESENTATIONS:

Lucas Woodcock, Big Rapids, MI. February 2015 to April 2015.

“Effect of Putrescine Oxidase Active Site Mutations on Activity.” As presented at the 249th National Meeting of the American Chemical Society, Denver, CO March 22-26, 2015 (Research conducted with Dr. Kim Colvert)

College of Arts and Sciences Student Research Grant, Ferris State University, Applied for January 18, 2015. \$750 for travel to ACS National Meeting in Denver, CO March 22-26, 2015

Jacob Longnecker, Ferris State University, Big Rapids, MI. May 2014 to August 2014.

Student Research Fellowship, Ferris State University, May 2014 to August 2014.

“Determining typical pH ranges throughout the brewing process for brown ale and American pale ale style beers.” As presented in the Student Research Fellowship Seminar, Ferris State University, August 20, 2014

Symon Cronk, Ferris State University, Big Rapids, MI. May 2014 to August 2014.

Student Research Fellowship, Ferris State University, May 2014 to August 2014.

“Addition of gypsum and its effect on pH and flavor perception in American amber ale.” As presented in the Student Research Fellowship Seminar, Ferris State University, August 20, 2014

Spencer Crittendon, Ferris State University, Big Rapids, MI. January 2013 to August 2013.

Student Research Fellowship, Ferris State University, May 2013 to August 2013.

Student Research Assistantship, Ferris State University, January 2013 to May 2013.

“Analysis of Yeast Available Nitrogen and its Effect on Wine Fermentation.” As presented in the Student Research Fellowship Seminar, Ferris State University, August 21, 2013

Kim Johnson and Joe Saviano, Ferris State University, Big Rapids, MI. September 2012 to April 2013.

“Acquire the practical laboratory skills and knowledge needed for the chemical industry with an associate's in Industrial Chemistry Technology alongside a bachelor's degree.” As presented at the 245th National Meeting of the American Chemical Society, New Orleans, LA, April 7-11, 2013

College of Arts and Sciences Student Research Grant, Ferris State University, Applied for February 5, 2013. \$1500 for travel to ACS National Meeting in New Orleans, LA April 7-11, 2013

Caleb Archambalt, Ferris State University, Big Rapids, MI. May 2011 to May 2013.

College of Arts and Sciences Student Research Grant, Ferris State University, Applied for February 5, 2013. \$750 for travel to ACS National Meeting in New Orleans, LA April 7-11, 2013

I&EC Travel Grant, American Chemical Society, April, 2013. \$1000 for travel to present at the 245th National Meeting of the American Chemical Society, New Orleans, LA, April 7-11, 2013

Student Research Assistantship, Ferris State University, October 2012 to May 2013.

“Development and Improvement of Protocols and Methodologies for Chemical Analysis in the Fermentation Industry.” As presented in the Student Research Fellowship Seminar, Ferris State University, August 22, 2012

Student Research Fellowship, Ferris State University, May-to July, 2012. \$6000 for stipend, travel, and supplies

“Factors effecting the carbonation rate of non-alcoholic sodas or carbonated beverages.” As presented at the 243rd National Meeting of the American Chemical Society, San Diego, CA, March 25-29, 2012

I&EC Student Travel Grant, American Chemical Society, March, 2012. \$500 for travel to present at the 243rd National Meeting of the ACS in San Diego, CA

College of Arts and Sciences Student Research Grant, Ferris State University, June 2011-to May, 2012. \$750 for travel and supplies

Tyler Weatherwax, Ferris State University, Big Rapids, MI. August 2011 to April 2012.

“Fermentation in High School: I Hope it Doesn't Explode!” As presented at the 243rd National Meeting of the American Chemical Society, San Diego, CA, March 25-29, 2012

College of Arts and Sciences Student Research Grant, Ferris State University, June 2011-to May, 2012. \$750 for travel and supplies

Steven Lingenfelter, Ferris State University, Big Rapids, MI. August 2010 to April 2011.

“The Promotion of Undergraduate Research at Teaching Institutions.” As presented at the 241st National Meeting of the American Chemical Society, Anaheim, CA, March 27-31, 2011

I&EC Student Travel Grant, American Chemical Society, March, 2011. \$1000 for travel to present at the 241st National Meeting of the ACS in Anaheim, CA

CONSULTATION/COLLABORATION EXPERIENCE:

Crankers Brewery, Big Rapids, MI. May 2012 to present. Collaboration has resulted in analytical chemistry research by FSU student Caleb Archambalt, both on-site and in research labs at FSU during the summer of 2012.

The Blue Cow Café, Big Rapids, MI. October 2008 to May 2010. Consultation resulted in discussions and presentations on the chemistry of fermentation, especially as it applies to the production of beer. The presentations have included discussion of beer evaluation, regional beer styles, and beer – food pairings at beer dinners and monthly beer style discussion groups.

Dillard University, New Orleans, LA. October 2003 to June 2009. Environmental Chemistry Education collaboration with Dr. José Ramirez to develop a new Ecology Lab Manual incorporating experiments in environmental chemistry for use in the Biology curriculum at Dillard University. The collaboration has also included guest lectures on various occasions on Acid Rain and on Ecology from a Chemistry perspective.

Flint Community Schools, Genesee Area Skill Center, and Dillard University. October 2006 to April 2007. Environmental Studies collaboration with Dr. José Ramirez (DU) and Joyce Dudley (GASC) to enhance the environmental education studies of approximately 20 High School students through soil and water field testing in post-Katrina New Orleans, Louisiana.

GRANT EXPERIENCE:

Computerized Data Collection for CLAB 123 and CLAB 124, Inorganic Chemistry Lab I & II. Co-Investigator, Dr. Tino Ladogana, Student Technology Fee Program, Southeastern Louisiana University, December 2004, \$30445.55. Proposal to enhance the pedagogy employed in CLAB 123 and CLAB 124 by the acquisition of new computer-based data collection probes and software.

PUBLISHED COURSE MATERIAL:

Thomson, M. A. *CHEM 121 Laboratory Manual*, V. 4.; Ferris Copy Center, Big rapids, MI, 2015.

Thomson, M. A. *CHEM 122 Laboratory Manual*, V. 2.; Ferris Copy Center, Big rapids, MI, 2015.

Adams, M. R.; Allen, L. R.; Bauer, J.; Carmichael, JW Jr.; Henry, S.; Sevenair, J. P.; Thomson, M. A. *General Chemistry Laboratory Manual*, 13th ed.; Stipes Publishing Company: Champaign, IL, 2009.

Adams, M. R.; Allen, L. R.; Bauer, J.; Carmichael, JW Jr.; Sevenair, J. P.; Thomson, M. A. *General Chemistry II Laboratory Manual*; 4th ed.; Stipes Publishing Company: Champaign, IL, 2004.

Adams, M. R.; Bauer, J.; Bean, K. S.; Carmichael, JW Jr.; Eduok, E.; Henry, S.; Howell, D.; Klassen, B.; Privett, J. A.; Sevenair, J. P.; Thomson, M. A. *Handbook for General Chemistry Volume I: Chemistry 1010*, 15th ed.; Stipes Publishing Company: Champaign, IL, 2003.

Adams, M. R.; Bauer, J.; Bean, K. S.; Carmichael, JW Jr.; Eduok, E.; Henry, S.; Howell, D.; Isovitsch, R.; Privett, J. A.; Sevenair, J. P.; Thomson, M. A. *Handbook for General Chemistry Volume II: Chemistry 1020*, 16th ed.; Stipes Publishing Company: Champaign, IL, 2003.

Allen, L. R.; Bauer, J.; Carmichael, JW Jr.; Sevenair, J. P.; Thomson, M. A. *Qualitative Inorganic Analysis Laboratory Manual*, 4th ed.; Stipes Publishing Company: Champaign, IL, 1997.

BOOK CHAPTERS:

- Thomson, M. A.; Killian, W. Transitioning Culture: Teaching and Modeling Workplace Behavior. In Moore, M.; Leesma, E (Eds.), "Academia and Industrial Pilot Plant Operations and Safety." ACS Symposium Series; American Chemical Society, Washington, DC; 2014.
- Thomson, M. A. The 'Science' and 'Art' of Teaching and Learning at Xavier University of Louisiana. In Lenoar Foster, Janet A. Guyden, and Andrea L. Miller (Eds.), "Affirmed Action: Essays on the Academic and Social Lives of White Faculty Members at Historically Black Colleges and University." Lanham, MD: Rowman & Littlefield Publishers, Inc, 1999.

RESEARCH PUBLICATIONS:

- Trautmann, N. M.; Carlsen, W. S.; Eick, C. J.; Gardner, F. E. Jr.; Kenyon, L.; Moscovici, H.; Moore, J. C.; Thomson, M. A.; West, S. S. "Online Peer Review: Learning Science As It's Practiced." *Journal of College Science Teaching*, **2003**, *32*, 443-447.
- Thomson, M. A.; Kar, M.; Anderson, O. P.; Lenz, T.; Vaughan, J. D. "The Structure of phenyl maleic anhydride" *Acta Cryst., Cryst. Struct. Commun.* **1996**, *C52*, 168-169.
- Mylrajan, M.; Andersson, L. A.; Sun, J.; Loehr, T. M.; Thomas, C. S.; Sullivan, E. P., Jr.; Thomson, M. A.; Long, K. M.; Anderson, O. P.; Strauss, S. H. "Resonance Raman Spectroscopic Core-Size Correlations for the Crystallographically Defined Complexes $\text{Fe}^{\text{II}}(\text{OEP})$, $\text{Fe}^{\text{II}}(\text{OEC})$, $\text{Fe}^{\text{III}}(\text{OEP})(\text{NCS})$, and $[\text{Fe}^{\text{III}}(\text{OEP})(N\text{-MeIm})_2]^+$, $[\text{Fe}^{\text{III}}(\text{OEP})(\text{DMSO})_2]^+$." *Inorg. Chem.* **1995**, *34*, 3953-3963.
- Thomson, M. A.; Anderson, O. P. "Structure of Carba-bicyclomyacin I." *Acta Cryst., Cryst. Struct. Commun.* **1991**, *C47*, 1984-1986.
- Thomson, M. A.; Anderson, O. P. "Structure of Benzyl 3-Benzyl-3-methyl-2-oxo-5,6-diphenylmorpholin-4-ylcarboxylate." *Acta Cryst., Cryst. Struct. Commun.* **1991**, *C47*, 1996-1998.
- Thomson, M. A.; Anderson, O. P. "The Structure of a Model for Aspirochlorine (Antibiotic A30641)." *Acta Cryst., Cryst. Struct. Commun.* **1991**, *C47*, 2003-2005.
- Thomson, M. A.; Anderson, O. P. "The Structure of 1-(Methoxymethyl)-16,17-didehydro-19-oxoalloyohimbane" *Acta Cryst., Cryst. Struct. Commun.* **1991**, *C47*, 2494-2495.
- Thomson, M. A.; Anderson, O. P. "The Structure of (4S,4'S,5'S) 3-(5'-Benzyloxy-5'-methyl-2'-oxo-2',3',4',5'-tetrahydro-4'-furyl)-4-phenyl-1,3-oxazolidin-2-one" *Acta Cryst., Cryst. Struct. Commun.* **1991**, *C47*, 2496-2497.

PRESENTATIONS:

- "The role of flavoring agents in carbonation rate for yeast carbonated non-alcoholic soda; a general chemistry experiment with interesting problems." With Caleb Archambault and Tyler Weatherwax, as presented at the 75th American Society of Brewing Chemists Annual Meeting, Tucson, AZ, May 19-22, 2013.
- "Establishing a culture: Teaching and modeling safe workplace behavior." As presented at the 245th National Meeting, American Chemical Society, New Orleans, LA, April 7-11, 2013.
- "Industrial Chemical Technology at Ferris State University: past, present and future." With Bill Killian, Pasquale Di Raddo, and Dave Frank, as presented at the Michigan Academy of Science, Arts, and Letters Annual Conference, Holland, MI, March 22, 2013.
- "The Chemistry of Beer." As presented to the FSU Student Affiliates of the American Chemical Society, Big Rapids, MI, February 7, 2013.

- “Is it Beer? Is it Wine? Investigations into Native American Fermentation Traditions.” As presented at the November Meeting of the Western Michigan Section of the American Chemical Society, Spring Lake, MI, November 8, 2012.
- “¿Qué Hay en mi Sopa? Dispersión de Contaminantes Químicos por Inundación.” As presented in the Día Mas Verde Seminar Series at Universidad Interamericana, Recinto de Ponce, Ponce, PR, October 6, 2010.
- “Is it Beer? Is it Wine? Investigations into Native American Fermentation Traditions.” As presented at the 240th National Meeting of the American Chemical Society, Boston, MA, August 22-26, 2010.
- “What Makes Beer Beer? An Introduction to Fermentation Chemistry.” As presented to the FSU Student Affiliates of the American Chemical Society, Big Rapids, MI, April 21, 2010.
- “Hurricane Katrina: A Natural or Man-Made Catastrophe. A Personal and Academic Perspective.” As presented in the Science Today Seminar Series at SUNY-Oswego, Oswego, NY, April 1, 2009.
- “The Role of Chemistry in the Development of Regional Styles of Beer and Ale.” As presented to the STEM Scholarship Recipients at Ferris State University, Big Rapids, MI, March 19, 2009.
- “The Role of Chemistry in Producing Different Styles of Beer and Ale.” As presented at the 235th National Meeting of the American Chemical Society, New Orleans, LA, April 6-April 10, 2008.
- “Chicha: Pre-Columbian Brewing Traditions of South America.” As presented at the 235th National Meeting of the American Chemical Society, New Orleans, LA, April 6-April 10, 2008.
- “The Fine Art of Brewing, or, What is Beer?” As presented at the September Meeting of the Western Michigan Section of the American Chemical Society, Holland, MI, September 25, 2007.
- “Chicha: South American Brewing Traditions that Predate European Influences.” As presented at the 39th Central Regional Meeting of the American Chemical Society, Cincinnati, OH, May 20-23, 2007.
- “What Makes Beer Beer? An Introduction to Fermentation Chemistry.” As presented to the FSU Student Affiliates of the American Chemical Society, Big Rapids, MI, February 22, 2007.
- “The Role of Chemistry in the Development of Regional Styles of Beer and Ale.” As presented at the March Meeting of the Sabine-Neches Section of the ACS, Beaumont, TX, March 31, 2005.
- “The Role of Chemistry in Beer Stability and the Development of Regional Styles of Beer and Ale.” As presented at the September Meeting of the Louisiana Section of the ACS, New Orleans, LA, September 28, 2004.
- Hale, R. P.; Thomson, M. A.; Rodrigue, S.; Kocic, V.; Eschenazi, E. “A Collaborative Approach Between Education, Science and Mathematics Faculty to Provide Professional Development Activities for Pre-service and Veteran Teachers.” As presented at the Ninth National HBCU Faculty Development Symposium, Nashville, TN, October 17-20, 2002.
- Hale, R. P.; Bordelon, D. E.; Carmichael, M. C.; Thomson, M. A. “Curriculum Redesign - A Collaborative Approach Between Education and Arts and Sciences Faculty.” As presented at the Ninth National HBCU Faculty Development Symposium, Nashville, TN, October 17-20, 2002.
- Carlsen, W.; Trautmann, W.; Abrams, E.; Ahern, K.; Dekkers, P.; Eick, C.; Gardner, F.; Ghosh, N.; Kenyon, L.; Moore, J.; Moscovici, H.; Thomson, M.; West, S.; Yalvac, B. “Peer Review by

- College Students in Science and Science Education: A Multi-Institutional R & D Project.” As presented at the Annual Meeting of the American Educational Research Association, New Orleans, LA, April 1-5, 2002.
- Thomson, M.; Black, L. “Study Abroad at HBCU Institutions in the Sciences: Collaborating to Breakdown Barriers.” As presented at the Eighth National HBCU Faculty Development Symposium, Norfolk, VA, October 18-21, 2001.
- Thomson, M.; Fulwiler, J. “Working Together to Improve Middle School Science and Math Education.” As presented at the Seventh National HBCU Faculty Development Symposium, Jackson, MS, October 19-22, 2000.
- Anderson, T.; Bales, F.; Foster, L.; Frank, F.; Guyden, J.; Henzy, K.; Redinger, M.; Rozman, S.; Sides-Gonzales, K.; Silvergate, J.; Thomson, M.; Ziegler, W. “White Faculty at Historically Black Colleges and Universities: Academic and Social Lives.” As presented at the Annual Meeting of the American Educational Research Association, New Orleans, LA, April 24-28, 2000.
- Humphrey, J. H.; Ramirez-Domenech, J.; Thomson, M. “The Across The Curriculum Thinking Program: Interdisciplinary Interactions at Xavier University.” As presented at the Winter Conference, “How Learning Happens: Making Connections, Constructing Knowledge, Building Community,” of The Collaboration for the Advancement of College Teaching and Learning, Bloomington, MN, November 19-20, 1999.
- Thomson, M.; Bean, S.; Privett, A. “The First-Year Experience for Chemistry Students at Xavier University.” As presented at the 215th National Meeting of the American Chemical Society, Dallas, TX, March 29-April 3, 1998.
- Thomson, M.; Okon, S. “Letting the Cat Out of the Bag: Do Our Students Know What We Want Them to Know?” As presented at the Spring Conference, “Teaching Key Concepts Within and Across Disciplines,” of The Collaboration for the Advancement of College Teaching and Learning, Bloomington, MN, February 19-20, 1998.

AMERICAN CHEMICAL SOCIETY SPEAKER SERVICE PRESENTATIONS:

- “The Role of Chemistry in the Development of Regional Beer Styles, or “What is Beer (to a Chemist)?” As presented at the October Meeting of the St. Joseph Valley Section of the ACS, South Bend, IN, October 29, 2009.
- “The Role of Chemistry in the Development of Regional Beer Styles, or “What is Beer (to a Chemist)?” As presented at the October Meeting of the Puget Sound Section of the ACS, Olympia, WA, October 21, 2009.
- “The Role of Chemistry in the Development of Regional Beer Styles, or “What is Beer (to a Chemist)?” As presented at the October Meeting of the Portland Section of the ACS, Portland, OR, October 20, 2009.
- “The Role of Chemistry in the Development of Regional Beer Styles, or “What is Beer (to a Chemist)?” As presented at the October Meeting of the Richland Section of the ACS, Richland, WA, October 19, 2009.
- “What Kind of Beer Am I Drinking? Is it Good? And What Makes a Beer Good Anyway? An Introduction to the Beer Evaluation.” As presented at the November Meeting of the Greater Houston Section of the ACS, Houston, TX, November 13, 2008.

- “What Kind of Beer Am I Drinking? Is it Good? And What Makes a Beer Good Anyway? An Introduction to the Beer Evaluation.” As presented at the November Meeting of the Brazosport Section of the ACS, Lake Jackson, TX, November 12, 2008.
- “The Role of Chemistry in the Development of Regional Beer Styles, or “What is Beer (to a Chemist)?” As presented at the November Meeting of the South Texas Section of the ACS, Corpus Christi, TX, November 11, 2008.
- “What Kind of Beer Am I Drinking? Is it Good? And What Makes a Beer Good Anyway? An Introduction to the Beer Evaluation.” As presented at the November Meeting of the San Antonio Section of the ACS, San Antonio, TX, November 10, 2008.
- “The Role of Chemistry in the Development of Regional Beer Styles, or “What is Beer (to a Chemist)?” As presented at the March Meeting of the Lake Superior Section of the ACS, Duluth, MN, March 7, 2008.
- “What Kind of Beer Am I Drinking? Is it Good? And What Makes a Beer Good Anyway? An Introduction to the Beer Evaluation.” As presented at the March Meeting of the La Crosse-Winona Section of the ACS, La Crosse, WI, March 6, 2008.
- “The Role of Chemistry in the Development of Regional Beer Styles, or “What is Beer (to a Chemist)?” As presented at the March Meeting of the Central Wisconsin Section of the ACS, Marshfield, WI, March 5, 2008.
- “The Role of Chemistry in the Development of Regional Beer Styles, or “What is Beer (to a Chemist)?” As presented at the March Meeting of the Milwaukee Section of the ACS, Milwaukee, WI, March 4, 2008.
- “The Role of Chemistry in the Development of Regional Beer Styles, or “What is Beer (to a Chemist)?” As presented at the March Meeting of the Northeast Wisconsin Section of the ACS, Oshkosh, WI, March 3, 2008.

VITA

Jeffrey A. Christafferson

Personal Data:

<u>Office Address</u>	<u>Home Address</u>
Department of Physical Sciences Ferris State University Big Rapids, MI 49307 (616) 592 – 2585	260 Harper Dr. Sparta, MI 49345 (616) 887 - 2631

Educational History:

**Western Michigan University
Kalamazoo, MI**

Major:	Science Education (A.B.D.)
Progress:	27 Grad. Hrs. Completed (4.0 G.P.A) Passed Comprehensive Exam (2004)

**The University of Akron
Akron, Ohio**

Major:	Physics
Degree:	M.S.
Date Earned:	1987

**The University of Akron
Akron, Ohio**

Major:	Physics
Degree:	B.S., Magna Cum Laude
Date Earned:	1985

Professional Positions:

2004-Present	Associate Professor of Physics The Department of Physical Sciences Ferris State University
1988-2004	Assistant Professor of Physics The Department of Physical Sciences Ferris State University
1987 - 1988	Instructor of Physics (1-year temporary position) The Department of Physical Sciences Ferris State University

Courses Taught:

Astronomy (The Solar System, The Stellar System, & The Sun), Physical Science, Conceptual Physics, Introductory Physics, General Physics, Modern Physics, Engineering Statics, Engineering Dynamics, Physics Laboratory, Physics Seminar, Math & Science Methods for Elementary Education

Awards/Recognitions

2001-2002 Distinguished Teacher Finalist (Ferris State University)

Ferris State University Service

- **Department Of Physical Sciences:** Curriculum Committee, Faculty Search (Chemistry), Faculty Development and Travel (current chair), Safety Committee, Planning Committee, Tenure Review
- **College of Arts & Sciences:** Curriculum Committee, Planning Committee, Graduate Education Committee, CAS Promotions/Merit Committee (chair, 2006-2007)
- **Academic Senate:** Professional Development Committee (chair, 2004-2006), Arts & Lectures Committee

Professional Memberships:

American Association of Physics Teachers
Michigan Association of Physics Teachers
National Science Teachers Association

Professional Activities:

Professional Development:

American Association of Physics Teachers 2009 Summer Conference Workshops

- NTIPERS: Research-Based Conceptual Reasoning Tasks
- A New Methodology for Using Clickers in Physics
- Using the Reformed Teaching Observation Protocol (RTOP) to Improve Physics & Physical Science Instruction

Faculty Center for Teaching & Learning (Ferris State University)

- Online Instructor Certification Program, Languages and Literature Online Learning Committee (Oct. 2009 – March 2010)
- Transforming a Course Toward More Learner Centered Teaching (Spring 2009, awarded \$400 Professional Development Incentive grant)
- Learner Centered Teaching (Fall 2008, awarded \$400 Professional Development Incentive grant)
- The Scholarship of Teaching (Spring 2007, awarded \$750 Professional Development Incentive grant)
- Faculty Writing Workshop (Spring 2006, awarded \$400 Professional Development Incentive grant)
- WebCT: Preparing for your First Semester (Spring 2005, awarded \$300 Professional Development Incentive grant)

Chemical Heritage Foundation Leadership Initiative in Science Education (Spring 2005)

- Process Oriented Guided Inquiry Learning (POGIL) Practical Inquiry Workshop
- Teaching Teachers about Inquiry and the Nature of Science
- Universal Design for Science, Technology, Engineering, and Mathematics (STEM) Education

American Association of Physics Teachers 2003 Summer Conference Workshops

- Video-Based Motion Analysis
- Explorations in Physics
- Physics by Inquiry

Conference Attendance

American Association of Physics Teachers 2009 Summer Meeting, 2009.

Participated in several workshops/discussions centered on improving classroom instruction through the use of structured sequences of “clicker” questions and conceptual reasoning tasks.

5th annual Leadership Initiative in Science Education Conference, April, 2005.

Sponsored by the Dow Chemical Company and the Chemical Heritage Foundation, conference showcased methods for improving students’ understanding of science, highlighting inquiry-based techniques and techniques for teaching the nature of science.

Michigan Test for Teacher Certification Item Review Conference, October, 2004

Participated in the evaluation of test items for the Integrated Science certification exam for secondary education in the state of Michigan.

American Association of Physics Teachers Summer Meeting, 2003. Participated in several workshops/discussions centered on teaching and learning with regard to inquiry based environments.

Special Courses/Workshops Taught

Mecosta-Osceola ISD Math, Science, and Technology Center

Provide physics instruction to high school juniors and serve as mentor/research advisor for student science fair projects.

CURRICULUM VITA

*Pasquale Di Raddo, PhD.
Professor, Organic/Biochemistry
Ferris State University ASC 3011
Big Rapids, MI 49307
(231) 591-2584*

Education: BSc. McGill University (1976)
PhD. McGill University (1983)
Postdoctoral Fellow, Montreal Neurological Institute (1984)
Research Associate/Instructor, University of Chicago (1984-88)

Teaching: University of Wisconsin (1988-89)
Carthage College (1989-94)
Ferris State University Associate Professor (1994-98)
Professor (1998-2009)

Awards:

- Faculty Merit (2004)
- Outstanding Faculty Inter-fraternity Council Advisor (2004)
- RSO Outstanding Faculty Advisor (2005)
- RSO Outstanding Faculty Advisor finalist (2006)
- Ferris Distinguished Teacher of the Year (2006)
- Student Government Faculty of the Year (2008)
- Ferris Commencement Address (Winter 2006) (U-Tube)

Courses: Organic Chemistry 321, 322
Taught Biochemistry 324, 474 (spring '10)

Conference: Presentations

- National ACS Meeting ('04) *Atmospheric Chemistry*
Washington DC.
- National ACS Meeting (05) *Vitamin A*
San Diego CA
- National ACS Meeting ('06) *Vitamin B*
Green Chemistry
Health Risks of Pthalates in Toys
Atlanta, GA

- National ACS Meeting ('07) *Vitamin C*
Chicago IL
- National ACS Meeting ('08) *Vitamin D*
New Orleans LA
- National ACS Meeting ('09) *Vitamin E*
Salt Lake City UT

Student Ryan Littich ('06) *Green Chemistry Reagents*
Research: Josh Miller ('08 MOISD) *Chemical Hair Straighteners*

Committees:

Ferris ICT Advisory Board (04-09)
 Committee on Technician Affairs (National, 05-08)
 ICT program Review report (07)
 Tenure Review Committee (04-09) (Departmental)
 CTC Committee (06-09) (Departmental):
 Dr. Hiel (chaired one yr)
 Dr. Prakasam (chaired one yr)
 Sabbatical Leave (06) CAS
 Professional Development Grant (06-09) (chair 08-09)
 Developmental Travel (chaired), Safety (Departmental)
 Michigan Energy Conference Attendee (April 08)

Professional Chemical Toxicology (ACS workshop San Francisco, 04)
Development: Green Chemistry in the Lab Workshop (University of Oregon, 05)

Grants University Research Grant (2006)
Received: *Use of Phosphorus Acids as Green Acid Substitutes* (06) \$3700

Timme Grants (05,06,07) \$500-800 each

Publications:

- InChemistry p10 (February 2005)
- J Chem Education **82** 984 (2005)
- Chemical Heritage **24** 3 (2006)
- J Chem Education **83** (2006)
- Chemistry Outlook p9 (Sprg. 2006)
- C&En News (feature article) p49 (2006)
- Going Green: Integrating Green Chemistry into the Curriculum (text, 06)
- J Chem Education 84 24 (2007)

Professional Membership: America Chemical Society (04-09)
Kappa Psi Pharmaceutical Fraternity (04-09)
Golden Key Honor Society (04-09)

University Present'ns: Humanities Colloquium (March 06)
Honors Students Colloquium (Winter 06)
Spring Learning Institute (Feb. 09)
Honors Students Colloquium (Fall 09)
Lang & Lit Colloquium (January '10)

Advising: Pre-medicine, Pre-pharmacy
Four RSO student science groups:

- Pre-optometry club
- Pre-medicine club
- American Chemical Society
- Kappa Psi Pharmaceutical Fraternity

Community:

Services Artworks Celebration of Local Writers (06)
ISO International Festival of Cultures (Quebec) (06)
Magic of Chemistry Show (Dr. Slime, Crossroads Charter,
400 attendees, 05)
Middle/High School Science Fair Judging (05-08)
Relay for Life (three year participant)
Walk for Warmth (06)
Presentation on Autism and Learning at Crossroads Elementary (06)
Breast Cancer Awareness (08, 09)
Festival of the Arts (Feb. '10)

Hobbies: Fatherhood, Running, Gym, Poetry

Up-to-date Resume

Bo Lou

Bo Lou

Physical Sciences Department, Ferris State University, Big Rapids, MI 49307
(231)591-5874, loub@ferris.edu

EDUCATION:

UNIVERSITY	YEAR	MAJOR	DEGREE
Emory University	1985-1989	Physics	Ph.D
Zhejiang University	1982-1985	Optics/Laser Engineering	M.Sc
Zhejiang University	1978-1982	Optics/Laser Engineering	B.Sc

EMPLOYMENT HISTORY:

September, 1998 – present

Professor of physics at Ferris State University, Big Rapids, MI 49307. Teaching undergraduate physics courses and laboratories; serving department, college, and university committees; advising students; and writing physics ancillary materials and physics textbook.

September, 1998 – May 2001

WebCT Administrator at Ferris State University, Big Rapids, MI 49307. Serving leadership role in integration of technology and instruction, maintaining and administering the Ferris WebCT Server, conducting weekly and monthly workshops on how to integrate instruction and technology and how to teach with WebCT.

August, 1997 – May 2000

Information Officer for Ferris Faculty Association (FFA), Big Rapids, MI 49307. Maintaining membership database.

January 1995 – present

Freelance Author for Pearson, Addison Wesley, Prentice Hall, William C. Brown Publishers, and Jones & Bartlett Publishers. Writing college level physics text books and ancillary manuals.

September, 1993 - 1998

Associate professor of physics at Ferris State University, Big Rapids, MI 49307. Teaching undergraduate physics courses and laboratories; serving department and college committees; advising students; developing World Wide Web based lesson modules, writing physics ancillary materials for leading physics texts, and conducting research in optical properties of superlattices.

September, 1990 - August 1993

Assistant professor of physics at Ferris State University, Big Rapids, MI 49307. Teaching undergraduate physics courses and laboratories; serving department and college committees; advising students; developing innovative teaching methods, and conducting research in optical properties of superlattices.

August, 1989 - August 1990

Visiting assistant professor of physics at Berry College, Mt. Berry Station, GA 30149. Teaching undergraduate physics courses and laboratories and conducting research in optical properties of superlattices.

January 1989 - May 1989

Researcher for a joint research program of Brookhaven National Laboratory and Emory University. Conducting infrared synchrotron radiation transmission studies of thin film high T_c superconductors.

September 1985 - December 1988

Student of Ph.D. program in experimental condensed matter physics. Topic of Ph.D dissertation: Far-Infrared Studies on GaAs-AlGaAs Superlattices.

September 1982 - May 1985

Student of Master of Science Program in Laser Technology. Topic of M.Sc thesis: Tunable-CO₂ Waveguide Laser.

AWARDS:

Distinguished Faculty Award by the PTMSA (Professional Tennis Management Student Association) of Ferris State University, 2006

Outstanding graduate student of molecular spectroscopy by The Coblenz Society.

Applied Spectroscopy, 42*f*, 1137 (1988).

Applied Spectroscopy, 43*f*, 363 (1989).

University fellowships, Emory University, 1985 – 1989.

PUBLICATIONS: (in reverse chronological order)

Jerry Wilson, Anthony Buffa, and **Bo Lou**, “College Physics with MasteringPhysics”, 7th edition, Addison-Wesley, ISBN-10: 0-321-57111-8, ISBN-13: 978-0-321-57111-3, 1128 pp (2010).

Bo Lou, “Student Study Guide and Selected Solutions Manual, Volume 1”, 7th edition, for College Physics 7th edition by Jerry Wilson, Anthony Buffa, and **Bo Lou**, Addison-Wesley, ISBN-10: 0-321-59274-3, ISBN-13: 978-0-321-59274-3, 288 pp (2010)

Bo Lou, “Student Study Guide and Selected Solutions Manual, Volume 2”, 7th edition, for College Physics 7th edition by Jerry Wilson, Anthony Buffa, and **Bo Lou**, Addison-Wesley, ISBN-10: 0-321-59278-6, ISBN-13: 978-0-321-59278-1, 288 pp (2010)

Jerry Wilson, Anthony Buffa, and **Bo Lou**, “College Physics”, 6th edition, Prentice-Hall, INC, ISBN 0-13-149579-8, 1048 pp (2007).

Bo Lou, “Student Study Guide and Selected Solutions Manual, Volume 1”, 6th edition, for College Physics 6th edition by Jerry Wilson, Anthony Buffa, and **Bo Lou**, Prentice-Hall, INC, ISBN 0-13-149716-2, 208 pp (2007)

Bo Lou, “Student Study Guide and Selected Solutions Manual, Volume 2”, 6th edition, for College Physics 6th edition by Jerry Wilson, Anthony Buffa, and **Bo Lou**, Prentice-Hall, INC, ISBN 0-13-174405-4, 224 pp (2007)

Bo Lou, “Instructor’s Solutions Manual”, 6th edition, for College Physics 6th edition by Jerry Wilson, Anthony Buffa, and **Bo Lou**, Prentice-Hall, INC, ISBN 0-13-149710-3, 444 pp (2007)

Jerry Wilson and Anthony Buffa with **Bo Lou**, “College Physics”, 5th edition, Prentice-Hall, INC, ISBN 0-13-067644-6, 1072 pp (2002)

Bo Lou, “Student Study Guide and Solutions Manual”, 5th edition, for College Physics 5th edition by Jerry Wilson and Anthony Buffa with **Bo Lou**, Prentice-Hall, INC, ISBN 0-13-047195-X, 400 pp (2002)

Bo Lou, “Instructor’s Solutions Manual”, 5th edition, for College Physics 5th edition by Jerry Wilson and Anthony Buffa with **Bo Lou**, Prentice-Hall, INC, ISBN 0-13-047194-1, 464 pp (2002)

Bo Lou, “Study Guide, Student Solutions Manual”, 4th edition, for College Physics 4th edition by Jerry Wilson and Anthony Buffa, Prentice-Hall, INC, ISBN 0-13-084365-2, 392 pp (1999)

Bo Lou, “Instructor’s Solutions Manual”, 4th edition, for College Physics 4th edition by Jerry Wilson and Anthony Buffa, Prentice-Hall, INC, ISBN 0-13-084168-4, 396 pp (1999)

Bo Lou, "Ask Bo...", a weekly column in FYI, an official publication of Ferris State University, to answer questions about instructional technology, September 9, 1999 – May 2000. (A web version is available at <http://www.ferris.edu/htmls/news/fyi/>).

Bo Lou, "Test Item File" for Physics, Principles with Applications, 5th edition by Douglas Giancoli, Prentice-Hall, INC., ISBN 0-13-628017-X, 537 pp (1998).

Bo Lou, "Study Guide, Student Solutions Manual", 3rd edition, for College Physics 3rd edition by Jerry Wilson and Anthony Buffa, Prentice-Hall, INC., ISBN 0-13-505116-9, 346 pp (1997).

Bo Lou, "Instructor's Solutions Manual", 3rd edition, for College Physics 3rd edition by Jerry Wilson and Anthony Buffa, Prentice-Hall, INC., ISBN 0-13-505090-1, 380 pp (1997).

Dean Lee and **Bo Lou**, "Instructor's Solutions Manual", 1st edition, for Physics for Scientists and Engineers, 1st edition by Lawrence Lerner, Jones and Bartlett Publishers, ISBN 0-7637-0206-4, Vol. 2, 566 pp (1997).

Bo Lou, "Answer Booklet" to accompany University Physics, 1st ed. by Jeff Sanny & William Moebs, Wm. C. Brown Publishers, ISBN 0-697-26722-9, 58 pp (1996).

Bo Lou, T. Kremser, and R. Cole, "Student Solutions Manual", 1st edition, for University Physics, 1st edition by Jeff Sanny & William Moebs, Wm. C. Brown Publishers, ISBN 0-697-23258-1, 87 pp (1996).

Bo Lou, T. Kremser, and R. Cole, "Instructor's Solutions Manual", 1st edition, for University Physics, 1st edition by Jeff Sanny & William Moebs, Wm. C. Brown Publishers, ISBN 0-697-05887-5, 459 pp (1996).

Bo Lou and A. Hilgendorf, "Instructor's Solutions and Resource Manual", 4th edition, for Physics: Principles with Applications 4th ed. by Douglas Giancoli, Prentice-Hall, INC, ISBN 0-13-141285-X, 555 pp (1995).

Bo Lou, and Z. C. Feng "Valence subbands and acceptor levels in p-type GaAs - Al_xGa_{1-x}As superlattices", Semicond. Sci. Technol., Vol. 8, pp1741 - 1745 (1993).

Ali Abbasabadi and **Bo Lou**, "POST-USE REVIEW: College Physics, 3rd ed. Raymond A. Serway and Jerry F. Faughn. 1091 pp. Saunders College Publishing, Philadelphia, 1992. Price \$61.25 ISBN 0-03-073331-6", Am. J. Phys., Vol. 61, No. 1 (1993).

Bo Lou, "Plasma-phonon coupling in GaAs - AlAs superlattices", Solid State Commun., Vol. 84, No. 6, pp685 - 690 (1992).

Bo Lou, "Physics 211, 212, 241, 242 Laboratory Materials", Ferris Copy Center 1991 - 2008.

Bo Lou, "Far-infrared transmission spectra of GaAs - AlAs superlattices at oblique incidence", Solid State Commun., Vol. 76, pp1395 - 1401 (1990).

G. P. Williams, R. C. Budhani, C. J. Hirschmugl, G. L. Carr, S. Perkowitz, **Bo Lou**, and T. R. Yang, "Infrared synchrotron-radiation transmission measurements on Yb₂Cu₃O₇ in the gap and supercurrent regions", Phys. Rev., B41, pp4752 - 4755 (1990).

S. Perkowitz, **Bo Lou**, L. S. Kim, O. K. Wu and J. N. Schulman, "Far-infrared determination of effective mass and valence-band offset in the HgTe/CdTe superlattice", Phys. Rev. B40, pp5613 - 5616 (1989).

Bo Lou, R. Sudharsanan, and S. Perkowitz, "Anisotropy and infrared response of the GaAs-AlAs superlattice", Phys. Rev., B (Rapid Communications) 38, pp2212-2214 (1988). (Erratum: Phys. Rev. 39, 1387 (1989))

R. Sudharsanan, S. Perkowitz, **Bo Lou**, T. Drummond, and B. Doyle, "Far-infrared characterization of AlAs-GaAs superlattices", Superlattices Microstruct, Vol. 4, pp657-660 (1988).

R. Sudharsanan, S. Perkowitz, **Bo Lou**, B. R. Caldwell, and G. L. Carr, "Infrared reflectance of rare earth-barium-copper oxide superconductors" in High-Temperature Superconducting Materials, edited by W. Hatfield and J. Miller, Jr., pp283-288 (1988).

I. Bozovic, D. Mitzi, M. Beasley, A. Kapitulnik, and T. Geballe, S. Perkowitz, G. L. Carr, **Bo Lou**, R. Sudharsanan, and S. Yom, "Vibrational spectra and lattice instabilities in the high-T_c superconductors Yb₂Cu₃O₇ and GdBa₂Cu₃O₇", Phys. Rev., B36, pp4000-4002 (1987).

S. Perkowitz, G. L. Carr, **Bo Lou**, S. S. Yom, and R. Sudharsanan, "Phonon, plasmon and gap behavior in superconducting high-T_c Y₁Ba₂Cu₃O₇ and Gd₁Ba₂Cu₃O₇", Solid State Commun., Vol. 64, pp721-725 (1987).

FERRIS STATE UNIVERSITY COMMITTEE SERVICE: (since Fall 1990)

University Wide

Volunteer Assistant Coach for Man's and Woman's Tennis teams (2011 - 2012)
Planning for China Educational Opportunities (September 2008 – 2012)
Advancing Online Education Committee (2005 – 2010)
Academic Instructional Technology Advisory Committee (1998 – 2001)
Information Technology Council (1998 – 2001)
Instructional Web Subcommittee, (Co-Chair) (1998 – 2001)
Senate Budget Planning Committee (1997 – 2001)
University Web Policies and Use Task Force (1997 – 1998)
Affirmative Action Council (1996 – 1999)

College of Arts and Sciences

Sabbatical Leave Committee (2011 – current; serving a second two-year terms)
Faculty Steering Committee for Online Development (2004 – 2006)
The Arts and Sciences Planning Committee (1991 – 1992).
The Arts and Sciences Minority Retention Task Force (1991 – 2001).
The Arts and Sciences Computer Committee (1990 – 2001).

Department of Physical Sciences

Tenure Track Physics Search Committee (September 2013 – current).
Faculty Development and Travel Committee 2002, 2003, 2004, 2005, 2006, 2007, 2011, 2012, and 2013
Department Tenure Review Committee (1995 – current).
Department Head Evaluation Committee 2001, 2002, 2003, 2004.
Tenure Track Astronomy Position Search Committee 2002.
Safety Committee 2001 – 2002.
Faculty Development and Travel Committee 1998 – 1999.
Search Committee for Tenure-Track Physics Position (Chair) (1996).
Department Planning Committee (1991 – 1993).
Department Curriculum Committee (1992 – 1993).
Department Faculty Development and Travel Committee (1992 – 1993).
Department Head Evaluation Committee (1990 – 1995).
Search Committee for the Chemistry position (1991).
Search Committees for the temporary Astronomy/Physics position (1992 – 1993).

PRABHAKARA H. SHETTY

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231-591 2589 (work)
231-796 1362 (home)

Education

Wayne State University, Ph. D., Chemistry, 12/89
Eastern Michigan University, M.S., Chemistry, 12/86
University of Bombay, M.Sc., Physical Chemistry, 11/76

University of Bombay, B.Sc., Chemistry, 3/72

Employment

Ferris State University, Professor of Chemistry, 1999-todate
Ferris State University, Associate Professor of Chemistry, 1994-1999
Ferris State University, Assistant Professor of Chemistry, 1991-1995

Dickinson College, Assistant Professor of Chemistry, 1990-1991 (sabbatical replacement)

Lafayette College, Dreyfus Teaching & Research Fellow, 1989-1990

Primary Professional Responsibilities

Classes Taught

CHEM 103, Preparatory Chemistry, in summer
CHEM 114, Introduction to General Chemistry, in fall and summer
CHEM 121, General Chemistry I, winter 2002
CHEM 122, General Chemistry II, in winter
CHEM 231, Quantitative Analysis, in fall

Advising

Pre-Pharmacy

University Service

Committee Work

University

Student Life Committee (2005-2008)
Distinguished Teacher Award Committee (1999-2000)

College

Academic Program Review Committee (Pre-Pharmacy, 2008)
Sabbatical Leave Committee (2003-2004)
Promotion/Merit Committee (2001-2003)

Department

Course Outcome Discussion group (CHEM 114, CHEM 121/122, 2008)
Safety Committee (2008)
Planning Committee (2001-2002, 2005-2006, 2008)
Faculty Development Committee (1999-2000, 2001-2002, 2004-2006), **Chair 2004-2005**
Equipment Committee (2000-2005)
General chemistry Search Committee (1999-2000)
Curriculum Committee (2001-2002)
General Chemistry Discussion Group (2002-2003)

Scholarly Activities

Presentations in Scientific Conferences

Optimizing Parameters for the Separation and Detection of Cholesterol Esters by High Performance Liquid Chromatography, David C. Snyder (Ferris alumnus) and Prabhakara Shetty, Oral Presentation at the 36th American Chemical Society (ACS) Great Lakes Regional Meeting, Peoria, IL, October 18, 2004.

Separation and Identification of Sterol Esters by Gradient Elution HPLC Coupled with Multiple Wavelength UV/VIS Detector, D. Snyder (Ferris grad) and P. Shetty, Presented as a poster at the 35th ACS-Central Regional Meeting, Pittsburgh, PA, October 22, 2003.

A Relatively Fast Technique for the separation and identification of Cholesterol Esters by HPLC, D. Snyder (Ferris grad), P. Shetty and D. Haugh (Ferris alumnus), Presented as a poster at the 226th ACS-National Meeting, New York, NY, September 7, 2003.

Determining the Amount of Methyl Ethyl Ketone in an Industrial Liquid Effluent, A. Anderson (Ferris Grad), P. Wolf (Ferris Grad) and P. Shetty, Presented as a poster at Great Lakes College Chemistry conference, East Lansing, MI, April 8, 2000.

Analysis Of Methyl Ethyl Ketone in Industrial Effluents by GLC, P. Wolf (Ferris grad) and Prabhakara Shetty, Presented as a poster at Great Lakes College Chemistry Conference, East Lansing, April 17, 1999.

Publications

Optimizing Parameters for the Separation and Detection of Cholesterol Esters by High Performance Liquid Chromatography, David C. Snyder and Prabhakara Shetty, will be re-prepared for publication.

Participation in Scientific Conferences

19th Biennial Conference for Chemical Education, West Lafayette, IN, 7/29/2006

36th ACS, Great Lakes Regional Meeting, Peoria, IL, 10/18/2004

35th ACS, Central Regional Meeting, Pittsburgh, PA, 10/22/2003

226th ACS, National Meeting, New York, NY, 10/07/2003

33rd ACS, Central/Great Lakes Regional Meeting, Grand Rapids, MI, 06/13/2002

Great Lakes College Chemistry Conference, East Lansing, MI, 04/08/2000

Great Lakes College Chemistry Conference, East Lansing, MI, 04/17/1999

Honors and Awards

Awarded one semester (fall 2002) of sabbatical leave to work on optimizing the separation and identification of sterol esters by HPLC.

Research with Ferris Students

1999-2000, Paul Wolf, worked separating and identifying methyl ethyl ketone in industrial waste by gas chromatography (GC).

2000, Andrea Anderson, worked on separating and identifying methyl ethyl ketone in industrial waste by GC.

2001 (fall) David Haugh, worked on separating Sterol esters

2002-2005 David Snyder, developed a methodology to separate and identify sterol esters.

2003 (fall) Pawan N. Parasu, (from MST program) worked on separating sterol esters

Membership in Professional Organization

American Chemical Society

Other Contributions

1999- Setup and maintenance of a new Gas Chromatograph (HP 6890)

2000- Setup and maintenance of a new multi-wavelength UV/VIS detector.

2002- Setup and maintenance of a new High Performance Liquid Chromatographic pump (Beckman 127)

2007 - Developed methodology, and maintenance of a new UV/VIS detector (Beckman 166)

Luis A. Rivera-Rivera, Ph.D.

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College Station, TX 77843-3255

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EDUCATION

- 2011 **Ph.D. in Chemistry:** Texas A&M University, College Station, TX
Dissertation: *Morphed potential energy surfaces from the spectroscopy of weakly bound complexes*
Advisor: Dr. Robert R. Lucchese
- 2004 **M.S. in Chemistry:** University of Puerto Rico, Mayagüez, PR
Thesis: *Synthesis, characterization, reactions, and mechanisms of (dihapto-[C60]fullerene) (dihapto-bidentate ligand) tricarbonyl tungsten(0)*
Advisor: Dr. José E. Cortés-Figueroa
- 2002 **B.S. in Chemistry with High Honors:** University of Puerto Rico, Mayagüez, PR

EXPERIENCE

- 2014-Present **Postdoctoral Research Associate:** Department of Chemistry, Texas A&M University, College Station, TX
- Study of weakly bound complexes of water molecule.
 - Canonical potential for pairwise interatomic interactions.
 - Semiclassical formulation of chemical bonding.
- Chemistry Instructor:** STEM Division, Blinn College, Bryan, TX
- Instructor of General Chemistry lecture and laboratory course.
- 2011-2014 **Postdoctoral Fellow:** Department of Chemistry, University of Missouri, Columbia, MO
- Pressure effects on vibrational relaxation.
 - Shock simulations of energetic materials.
 - Molecular dynamics simulations of hydrocarbons and energetic materials.
 - HPC cluster systems administrator.
- 2007-2008 **Teaching Assistant:** Department of Chemistry, Texas A&M University, College Station, TX
- Instructor of General Chemistry and Physical Chemistry laboratory courses.

- 2005-2011 **Research Assistant:** Department of Chemistry, Texas A&M University, College Station, TX
- Generating potential energy surfaces of weakly bound complexes.
 - Quantum mechanics electronic structure calculations.
 - Rovibrational dynamics of weakly bound complexes.
 - Telluride School on Theoretical Chemistry, Telluride, CO; July 19-25, 2009.
- 2004 **Research Associate:** Department of Chemistry, University of Puerto Rico, Mayagüez, PR
- Synthesis of ligands and metallic complexes.
 - Spectroscopic characterization by UV-Vis, IR, NMR, and electrochemistry.
 - Interaction studies of metal-DNA and metal-protein, and kinetic studies.
- 2002-2003 **Teaching Assistant:** Department of Chemistry, University of Puerto Rico, Mayagüez, PR
- Instructor of General Chemistry laboratory course.
- 1999-2003 **Research Assistant:** Department of Chemistry, University of Puerto Rico, Mayagüez, PR
- Synthesis of ligand-transition metal carbonyl complexes.
 - Spectroscopic characterization by UV-Vis, IR, and NMR.
 - Study of the mechanisms of ligand exchange reactions of fullerene-transition metal complexes.

AWARDS

- 2008: Marie M. and Jim H. Galloway Endowed Graduate Scholarship in Chemistry
- 2002: 26th Senior Technical Meeting Poster Award
- 2000-2011: Gates Millennium Scholar Award
- 2000: Ángel Quintero Alfaro Grant for academic achievement

PUBLICATIONS

27. J. R. Walton, **L. A. Rivera-Rivera**, R. R. Lucchese, and J. W. Bevan, *From H_2^+ to the Multidimensional Potential of the Intermolecular Interaction $Ar \cdot HBr$: A Canonical Approach*, Chem. Phys. Lett. 2015, vol. 639, pp. 63-66.
26. J. R. Walton, **L. A. Rivera-Rivera**, R. R. Lucchese, and J. W. Bevan, *Canonical potentials and spectra within the Born-Oppenheimer approximation*, J. Phys. Chem. A 2015, vol. 119, pp. 6753-6758.
25. J. R. Walton, **L. A. Rivera-Rivera**, R. R. Lucchese, and J. W. Bevan, *A general transformation to canonical form for potentials in pairwise interatomic interactions*, Phys. Chem. Chem. Phys. 2015, vol. 17, pp. 14805-14810.

24. M. Khanpour, **L. A. Rivera-Rivera**, and T. D. Sewell, *On statistical mechanics of small systems: Accurate analytical equation of state for confined fluids*, Phys. Chem. Liq. 2015, vol. 53, pp. 467-480.
23. **L. A. Rivera-Rivera**, A. F. Wagner, T. D. Sewell, and D. L. Thompson, *Pressure effects on the relaxation of an excited nitromethane molecule in an argon bath*, J. Chem. Phys. 2015, vol. 142, pp. 014303 (15 pages).
22. R. R. Lucchese, C. K. Rosales, **L. A. Rivera-Rivera**, B. A. McElmurry, J. W. Bevan, and J. R. Walton, *A unified perspective on the nature of bonding in pairwise interatomic interactions*, J. Phys. Chem. A 2014, vol. 118, pp. 6287-6298.
21. **L. A. Rivera-Rivera**, A. Siavosh-Haghighi, T. D. Sewell, and D. L. Thompson, *A molecular dynamics study of the relaxation of an excited molecule in crystalline nitromethane*, Chem. Phys. Lett. 2014, vol. 608, pp. 120-125.
20. A. F. Wagner, **L. A. Rivera-Rivera**, D. Bacherrie, J. W. Perry, and D. L. Thompson, *A classical trajectory study of the dissociation and isomerization of C₂H₅*, J. Phys. Chem. A 2013, vol. 117, pp. 11624-11639.
19. **L. A. Rivera-Rivera**, K. W. Scott, B. A. McElmurry, R. R. Lucchese, and J. W. Bevan, *Compound model-morphed potentials contrasting OC-⁷⁹Br³⁵Cl with the halogen bonded OC-³⁵Cl₂ and hydrogen-bonded OC-HX (X = ¹⁹F, ³⁵Cl, ⁷⁹Br)*, Chem. Phys. 2013, vol. 425, pp. 162-169.
18. **L. A. Rivera-Rivera**, B. A. McElmurry, K. W. Scott, R. R. Lucchese, and J. W. Bevan, *The Badger-Bauer rule revisited: Correlation of proper blue frequency shifts in the OC hydrogen acceptor with morphed hydrogen bond dissociation energies in OC-HX (X = F, Cl, Br, I, CN, CCH)*, J. Phys. Chem. A 2013, vol. 117, pp. 8477-8483.
17. **L. A. Rivera-Rivera**, T. D. Sewell, and D. L. Thompson, *Post-shock relaxation in crystalline nitromethane*, J. Chem. Phys. 2013, vol. 138, pp. 084512 (8 pages).
16. B. A. McElmurry, **L. A. Rivera-Rivera**, K. W. Scott, Z. Wang, I. I. Leonov, R. R. Lucchese, and J. W. Bevan, *Studies of low-frequency intermolecular hydrogen-bonded vibrations using a continuous supersonic slit jet mid-infrared quantum cascade laser spectrometer*, Chem. Phys. 2012, vol. 409, pp. 1-10.
15. **L. A. Rivera-Rivera**, B. A. McElmurry, R. R. Lucchese, and J. W. Bevan, *Predicted properties of CO-HF isomer using a six-dimensional morphed potential*, J. Mol. Struct. 2012, vol. 1023, pp. 43-48.
14. S. D. Springer, **L. A. Rivera-Rivera**, B. A. McElmurry, Z. Wang, I. I. Leonov, R. R. Lucchese, A. C. Legon, and J. W. Bevan, *CMM-RS potential for characterization of the properties of the halogen-bonded OC-Cl₂ complex, and a comparison with hydrogen-bonded*

OC-HCl, J. Phys. Chem. A 2012, vol. 116, pp. 1213-1223.

13. **L. A. Rivera-Rivera**, B. A. McElmurry, Z. Wang, I. I. Leonov, R. R. Lucchese, and J. W. Bevan, Morphed intermolecular potential of OC:HCCH complex based on infrared quantum cascade laser spectroscopy, Chem. Phys. Lett. 2012, vol. 522, pp. 17-22.

12. **L. A. Rivera-Rivera**, Z. Wang, B. A. McElmurry, R. R. Lucchese, J. W. Bevan, and G. Kanschä, Morphing a vibrationally-complete ground state potential for the hydrogen bond OC-HF, Chem. Phys. 2011, vol. 390, pp. 42-50.

11. **L. A. Rivera-Rivera**, Z. Wang, B. A. McElmurry, F. F. Willaert, R. R. Lucchese, J. W. Bevan, R. D. Suenram, and F. J. Lovas, A ground state morphed intermolecular potential for the hydrogen bonded and van der Waals isomers in OC:HI and a prediction of an anomalous deuterium isotope effect, J. Chem. Phys. 2010, vol. 133, pp. 184305 (13 pages).

10. **L. A. Rivera-Rivera**, R. R. Lucchese, and J. W. Bevan, A four-dimensional compound-model morphed potential for the OC:HBr complex, Phys. Chem. Chem. Phys. 2010, vol. 12, pp. 7258-7265.

9. **L. A. Rivera-Rivera**, R. R. Lucchese, and J. W. Bevan, A parameterized compound-model chemistry for morphing the intermolecular potential of OC-HCl, Chem. Phys. Lett. 2008, vol. 460, pp. 352-358.

8. W. Jabs, F. F. Willaert, B. A. McElmurry, **L. A. Rivera-Rivera**, R. Montuoro, R. R. Lucchese, J. W. Bevan, and R. D. Suenram, Microwave-base structure and four-dimensional morphed intermolecular potential for HI-CO₂, J. Phys. Chem. A 2007, vol. 111, pp. 11976-11985.

7. **L. A. Rivera-Rivera**, B. A. McElmurry, S. P. Belov, R. R. Lucchese, and J. W. Bevan, A three-dimensional morphed potential of Ne-HCl including the ground state deuterated Σ bending vibration, Chem. Phys. Lett. 2007, vol. 444, pp. 9-16.

6. **L. A. Rivera-Rivera**, R. R. Lucchese, and J. W. Bevan, A morphed intermolecular bending potential of OC-HCl, Chem. Phys. Lett. 2006, vol. 429, pp. 68-76.

5. Y. Pérez, V. López, **L. Rivera-Rivera**, A. Cardona, and E. Meléndez, Water-soluble titanocene complexes with sulfur-containing aminoacids: Synthesis, spectroscopic, electrochemical and Ti(IV)-transferrin interaction studies, J. Biol. Inorg. Chem. 2005, vol. 10, pp. 94-104.

4. **L. A. Rivera-Rivera**, G. Crespo-Román, D. Acevedo-Acevedo, Y. Ocasio-Delgado, and J. E. Cortés-Figueroa, [60]Fullerene displacement from fac-(dihapto-[60]fullerene) (dihapto-1,2-bis-(1,10-phenanthroline) tricarbonyl tungsten(0)), Inorg. Chim. Acta 2004, vol. 357, pp. 881-887.

3. Y. Ocasio-Delgado, **L. A. Rivera-Rivera**, G. Crespo-Román, and J. E. Cortés-Figueroa, *Site of bond breaking in mer-(dihapto-[60]fullerene) (dihapto-1,2-bis-(diphenylphosphino)ethane tricarbonyl tungsten(0)*, Inorg. React. Mech. 2003, vol. 5, pp. 13-19.
2. **L. A. Rivera-Rivera**, F. D. Colón-Padilla, Y. Ocasio-Delgado, J. Martínez-Rivera, S. Mercado-Feliciano, C. M. Ramos, and J. E. Cortés-Figueroa, *Kinetics and mechanisms of ligand exchange reactions on (dihapto-buckminsterfullerene) pentacarbonyl tungsten(0)*, Inorg. React. Mech. 2002, vol. 4, pp. 49-56.
1. **L. Rivera-Rivera**, F. Colón-Padilla, A. del Toro-Novalés, and J. E. Cortés-Figueroa, *Photosynthesis of (dihapto-buckminsterfullerene) pentacarbonyl tungsten(0)*, J. Coord. Chem. 2001, vol. 54, pp. 143-151.

INVITED PRESENTATIONS

5. Department of Chemistry, Skidmore College, Saratoga Springs, NY; December 3, 2015. *Is There a Fundamental Difference Between Bonding in CO and Ar₂?*
4. Department of Chemistry, University of Texas-Pan America, Edinburg, TX; May 6, 2015. *Is There a Fundamental Difference Between Bonding in CO and Ar₂?*
3. School of Science, Engineering & Mathematics, Bethune-Cookman University, Daytona Beach, FL; March 18, 2015. *Is There a Fundamental Difference Between Bonding in CO and Ar₂?*
2. North Research Group, Department of Chemistry, Texas A&M University, College Station, TX; January 16, 2015. *Simulations of internally excited nitromethane molecule in argon bath*
1. Numerical Analysis Seminar, Department of Mathematics, Texas A&M University, College Station, TX; September 30, 2009. *Interpolation of a six-dimensional potential energy surface and calculation of rovibrational energy levels for the hydrogen bound complex OC-HF*

CONTRIBUTED PRESENTATIONS

19. 70th International Symposium on Molecular Spectroscopy, Champaign-Urbana, IL; June 22-26, 2015. *A general transformation to canonical form for potentials in pairwise intermolecular interactions*
18. 70th International Symposium on Molecular Spectroscopy, Champaign-Urbana, IL; June 22-26, 2015. *A rovibrational analysis of the water bending vibration in OC-H₂O and a morphed potential of the complex*
17. American Physical Society prairie section Fall 2013 meeting, Columbia, MO; November 7-9, 2013. *Single molecule relaxation in crystalline nitromethane*

16. 26th Southwest Theoretical Chemistry Conference, Denton, TX; October 22-24, 2010. Implementation of an alternative method for fitting a vibrationally complete ab initio potential in non-covalent interactions
15. 23rd Austin Symposium on Molecular Structure and Dynamics, Austin, TX; March 7-9, 2010. A four-dimensional compound-model morphed potential for the OC:HBr complex
14. 25th Southwest Theoretical Chemistry Conference, Houston, TX; October 16-17, 2009. A four-dimensional compound-model morphed potential for the OC:HBr complex
13. 24th Southwest Theoretical Chemistry Conference, El Paso, TX; October 10-12, 2008. Ground state isotopic isomerization: Investigation of an anomalous deuterium isotope effect in OC-HI using 4-D intermolecular potential morphing
12. 22nd Austin Symposium on Molecular Structure, Austin, TX; March 1-4, 2008. A parameterized compound-model chemistry for morphing the intermolecular potential of OC-HCl
11. 23rd Southwest Theoretical Chemistry Conference, College Station, TX; October 12-14, 2007. Four-dimensional morphed intermolecular potential for HI-CO₂
10. 22nd Southwest Theoretical Chemistry Conference, Austin, TX; October 27-29, 2006. A morphed intermolecular potential of the hydrogen-bonded dimer OC-HCl
9. 21st Austin Symposium on Molecular Structure, Austin, TX; March 5-7, 2006. An initial morphed potential of OC-HCl
8. 2nd Colloquium in Protein Structure, Function and Dynamics, San Juan, PR; February 15-19, 2005. Complexation of titanocene antitumor agents to human transferrin: The effect of the ancillary ligand on Ti(IV)-transferrin binding
7. 28th ACS-STM, Isabela, PR; November 18-19, 2004. Studies of human apo-transferrin and Ti⁺⁴ complexes by NMR, UV-Vis, and ICP
6. Spring Conference in Protein Research 2004, San Juan, PR; April 15-17, 2004. Interaction studies of human transferrin and titanium complexes
5. 227th ACS national meeting, Anaheim, CA; March 27 – April 1, 2004. Mechanism of ligand exchange reactions on (dihapto-[60]fullerene) transition metal carbonyl complexes
4. 27th ACS-STM, Quebradilla, PR; November 7, 2003. Mechanism of ligand exchange reactions on (dihapto-[60]fullerene) transition-metal carbonyl complexes
3. 225th ACS national meeting, New Orleans, LA; March 23-27, 2003. Site of bond breaking on (dihapto-[60]fullerene) transition-metal complexes

2. 224th ACS national meeting, Boston, MA; August 18-22, 2002. Determination of W-fullerene bond energy

1. 220th ACS national meeting, Washington DC; August 19-24, 2000. Photosynthesis of (dihapto-buckminsterfullerene) pentacarbonyl tungsten (0)

CURRICULUM VITAE

Karen M. Strasser

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Ferris State University
820 Campus Drive, ASC2004
Big Rapids, Michigan 49307

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Email karen_strasser@ferris.edu

Education

Ph.D. University of Louisiana, Lafayette, Louisiana, Environmental and Evolutionary Biology,
graduation: December 12, 1998 , GPA: 4.0 (4.0 scale)

D.L. Felder advisor

B. S. University of Tampa, Tampa, Florida, double major: Marine Science/Biology, minor:
chemistry

Graduation: May 1994 GPA: 3.86 (4.0 scale)

Research Interests

- I. Systematics and Biogeography of Decapod Crustaceans
 - A. Comparative studies of larval development (including observations on morphology, number and duration of larval stages) to infer phylogenetic associations.
 - B. Comparative morphology of adults
- II. Larval ecology- Effects on development, dispersal, settlement, recruitment, and behavior of marine invertebrate larvae (particularly with decapod crustaceans).
 - A. Environmental factors such as temperature, salinity and light.
 - B. Biological factors such as conspecifics, competitors, predators, tannins, and other species associated with the adult habitat.
 - C. Human impacts such as pollutants, pesticides, fertilizers.
- III Burrowing behavior of postlarvae; effects of sediment type, grain size, presence of organics, and other species.

Professional Experience

- 7/07 to present Department Head, Department of Biological Sciences, Ferris State University, Big Rapids, Michigan.
- 7/06 to 7/07 Interim Department Head, Department of Biological Sciences, Ferris State University, Big Rapids, Michigan.
- 8/05 to present Associate Professor of Biology; Ferris State University, Big Rapids, Michigan. Courses taught: Environmental Conservation (upper level majors), General Biology I and II (for biology majors), Developmental Biology (upper level majors)
- 8/02 to 9/05 Assistant Professor of Biology; Ferris State University, Big Rapids, Michigan. Courses taught: Biological Concepts (non-majors biology), Environmental Conservation (upper level majors), General Biology I and II (for biology majors), Developmental Biology Lab (upper level majors)
- 8/99 to 5/02 Assistant Professor of Biology; The University of Tampa, Tampa, Florida. Courses: Ecology, Ecology Lab, Conservation Biology, Biological Diversity, Environmental Science, Senior Seminar, Gateways (Freshman seminar).
- 5/99 Member of Organizing Committee for the Crustacean Society Meeting in Lafayette, Louisiana.
- 1/99 to 5/99 Visiting Assistant Professor; University of Tampa; Tampa, Florida. Courses: Conservation Biology, Environmental Science, and Marine Biology;
- Summer, 1998 Instructor; Biology 101 (for majors); University of Louisiana; at Lafayette Lafayette, Louisiana.
- 5/95 Research cruise to the Dry Tortugas, Florida, on the R/V Bellows; trip sponsored by the University of Florida. Survey of Florida Straits decapod fauna by demersal sampling.
- Fall 1995, 1996, 1997 Lab Instructor; Invertebrate Zoology; University of Louisiana; Lafayette, Louisiana. Set up labs, ordered and collected specimens, prepared lab handouts, held review sessions, set up and administered lab practicals, and lectured for Dr. Felder as needed.
- 6/94 to 6/95 Research Assistant; Dr. Julie Bailey-Brock; University of Hawaii, at Manoa; Honolulu, Hawaii. Gained experience in benthic sampling, elutriation, and identification of polychaete worms. Assisted with the generation of reports and data entry into the ODES network.

Spring 1994 Teaching Assistant; University of Tampa; Tampa, Florida. Biology Laboratory (for non-majors): Assisted in lab set up, tutored and held review sessions for students.

5/93 to 5/94 Lab Assistant; Thornton Laboratories; Tampa, Florida. Worked in the Bioassay Department culturing *Pimephales promelas* and *Cyprinella leedsi*, conducted acute and chronic tests, and monitored pH, DO, conductivity, alkalinity, and hardness of breeding tanks.

Fall 1992, 1993 Teaching Assistant; University of Tampa; Tampa, Florida. Introductory Biology Lab (for majors), set up practical exams, tutored, and held review sessions for students.

5/93 to 8/93 Research Assistant; Dr. Stan Rice; University of Tampa; Tampa, Florida. Cultured and assisted with feeding experiments of the wood-boring isopod *Sphaeroma terebrans*, and gathered data on his barnacle settlement study.

Classes taught

General Biology I (BIOL 121, Ferris State University) Lecture and Lab
 General Biology 2 (BIOL122, Ferris State University) Lab and Lecture
 Developmental Biology (BIOL 370, Ferris State University) Lab and Lecture
 Environmental Conservation (BIOL 347, Ferris State University) Lab and Lecture
 Biological Concepts (BIOL 103, Ferris State University) Lab and lecture
 Ecology (BIO 212, University of Tampa) Lab and Lecture
 Conservation Biology (BIO 346, University of Tampa) Lecture and seminar sections
 Biological Diversity (BIO 203, University of Tampa) Lecture and Lab
 Environmental Science (BIO 112, University of Tampa) Lecture only
 Marine Biology (MAR 126, University of Tampa) Lecture only
 Gateways I and II (Freshman seminar GTW 100, 102, University of Tampa)
 Senior Seminar (BIO 410, University of Tampa) lecture only
 Biology II (Majors biology, BIO 102, University of Louisiana) Lecture only
 Invertebrate Zoology (BIO 410L, University of Louisiana) lab only

Committee Work (since employed at Ferris State University)

IACUC committee (Fall 2006 →)
 Biotech Advisory Board (Fall2006→)
 Card Wildlife Center Advisory Board Fall 2006 →)
 University Enrollment Task Force (Fall 2006 →)
 Chair, Search committee for 2 tenure track positions in Physiology (Fall 2006→ Sp 2007)
 National Competitive Scholarship Committee (Fall 2005 → 2007)
 CAS Online Learning Steering Committee (Fall 2005→Winter 2006)

CAS Scientific Understanding Committee (Fall 2004→)
Chair, Search committee for 4 tenure track positions in Biology (Fall 2004-Winter 2005)
College Board CLEP National Test Development Committee (July 2004 -->)
Departmental Faculty Development Committee (Fall 2003 -->Winter 2006)
Departmental Planning Committee (Fall 2003 --> Winter 2006)
College of Arts and Sciences Graduate Education Committee (Fall 2003 –Fall 2004)
University Arts and Lectures Committee (Fall 2003 --> Winter 2006)
Chair, Laboratory Tech Search Committee (Winter 2004)
Chair, Department Microscope Committee (Fall 2003, 2006)

Academic Honors, Awards and Fellowships

University of Louisiana Doctoral Fellowship. Stipend and tuition waver. \$12,000/yr 1995-1999.
University of Tampa Outstanding Graduate in Biology 1994
Honors Program Member at the University of Tampa. 1990-1994.
Crawford and Company Scholarship. 1992-1994. Merit scholarship helped defray costs of housing and books at the University of Tampa.
University of Tampa Presidential and Life Science Scholarships. 1990-1994. Merit scholarship that covered tuition costs at the University of Tampa.

Reviewerships

Marine Biology
Journal of Crustacean Biology
NSF Division of Ocean Sciences
NSF Assembling the Tree of Life (AToL)
Memoirs of Museum Victoria
Gulf of Mexico Science
Scientia Marina
Gulf and Caribbean Research
Invertebrate Biology

Professional Affiliations

The Crustacean Society
The Society for Conservation Biology

Research Support

Pierce Cedar Creek Institute, Muter B., Strasser KM, Watson P. Approx. \$7000 as part of the Undergraduate Research Grant in Environmental Science Program. Funds for summer stipend for B. Muter and equipment to support the project. Summer 2005

Ferris State University Faculty Research Grant, \$6,563 to purchase equipment. 2003-2004.

USGS, Felder DL, Strasser KM, Klerks P. - \$36,014 funded by as part of the Tampa Bay Project. 2001, and 2002

Delo Grant , The University of Tampa- \$5000. 2001-2002

Dana Grant , The University of Tampa - \$1700. Summer 2001

Dana Grant, The University of Tampa – \$1275. Summer 2000

Graduate student fellowship-- Smithsonian Institution. Provided stipend to work at the Smithsonian Marine Station at Linkport for ten weeks. \$3000, 1997.

Graduate student research grant-- Louisiana Universities Marine Consortium. Supplies for dissertation research. \$2000, 1996-1998.

Graduate student research grants-- Graduate Student Organization at the University of Louisiana. Covered cost of supplies for dissertation research and travel expenses. \$160, Spring 1996; \$160, Summer 1996; \$240, Spring 1998.

Undergraduate research internship-- NSF Research Experience for Undergraduates. Stipend and supplies for summer research at Shannon Point Marine Center in Anacortes Washington. \$2200, 1992.

Honors Research Fellowship-- University of Tampa Honors Program. Merit award for undergraduate research. \$1000, 1992-1993; \$1000, 1993-1994.

Presented Papers at Professional Meetings

The larval development of two sibling species of hermit crabs in the genus *Paguristes* (Crustacea: Anomura: Diogenidae) under laboratory conditions. Poster presentation at the Annual meeting of the Society of Integrative and Comparative Biology (SICB) January, 2003 in New Orleans, Louisiana. . (K. Strasser)

Settlement Cues determining the distribution and host preference of *Tunicotheres moseri* (Rathbun) in the Tampa Bay, FL. Poster presentation at the Crustacean Society Meeting June, 2003 in Williamsburg, Virginia. (J. Ambrosio, W. Price, and K. Strasser).

Settlement cues determining the distribution and host preference of *Tunicotheres moseri* (Rathbun) in Tampa Bay. March 20-23, 2003. Poster presentation at the Southeastern Estuarine Research Society Meeting, Atlantic Beach, NC (J. Ambrosio, W. Price, and K. Strasser)

Preliminary evidence of molecular variability among populations of the hermit crab *Paguristes tortugae* (Diogenidae), on the basis of the 16s rRNA gene. November 2002. Poster presentation at the Congresso Brasileiro Sobre Crustáceos, Sao Paulo, Brazil (Biagi, Mantelatto, Strasser and Felder).

Effects of ghost shrimp on Tampa Bay sediment characteristics. Poster presentation at the Second Annual Science Conference, Gulf of Mexico Estuaries Integrated Science Tampa Bay Pilot Study, Sept. 2002 in St. Petersburg, FL. (Klerks, Paul, Darryl Felder , Karen Strasser, Pete Swarzenski).

Protracted larval development in *Axianassa australis* (Thalassinidea: Axianassidae). Poster presentation at the 8th Colloquium Crustacea Decapoda Mediterranea, September, 2002 in Corfu Isl., Greece. (Strasser, K. M. & D.L. Felder)

- Preliminary evidence of molecular variability among populations of the hermit crab *Paguristes tortugae* (Diogenidae), on the basis of the 16S rRNA gene. Poster presentation at the 8th Colloquium Crustacea Decapoda Mediterranea, September, 2002 in Corfu Isl., Greece. (Garcia, R.B., F.L. Mantelatto, K. Strasser & D.L. Felder)
- Factors determining host selection of the symbiotic copepod *Clausidium dissimile* Wilson, 1921 (Crustacea: Cyclopoidia: Clausiidae) in sympatric populations of *Sergio trilobata* (Biffar 1970) and *Lepidophthalmus louisianensis* (Schmitt 1935) (Crustacea: Decapoda: Callinassidae) Poster presented at the National Honors Collegiate Conference Nov. 4 to Nov. 7, 2001 in Chicago, and in March, 2002 at the Benthic Ecology Meeting in Orlando, Florida. (J. Corsetti and K.M. Strasser)
- Investigation of the population biology of the ghost shrimp *Sergio trilobata* (Biffar 1970) (Crustacea: Decapoda: Thalassinidea). Poster presented in February, 2002 at the Southeastern Estuarine Research Society meeting in South Carolina. (J. Corsetti and K.M. Strasser)
- Preliminary observations on the symbiotic Relationship between the pea crab *Tumidotheres maculatus* and the sea squirt *Styela plicata* in Tampa Bay, FL. Poster presentation at the Southeastern Research Society in Charleston, SC March 29 – 31, 2001 (Jeff Grim, Anthony DiGirolamo, and K.M. Strasser)
- Sand as a stimulus for settlement in the ghost shrimp *Callichirus major* (Say) and *C. islagrande* (Schmitt) (Crustacea: Thalassinidea: Callinassidae). May, 1999. Oral presentation at the Crustacean Society Meeting in Lafayette, Louisiana.
- Settlement cues in successive developmental stages of the ghost shrimp *Callichirus major* and *C. islagrande* (Crustacea: Decapoda: Thalassinidea). March, 1998. Oral presentation at the Benthic Ecology Meeting in Melbourne, Florida. (K.M. Strasser and D.L. Felder).
- A comparison of settlement cues in the Gulf of Mexico and western Atlantic populations of the ghost shrimp *Callichirus major* (Crustacea: Decapoda: Thalassinidea). January, 1998. Oral presentation at the annual meeting of the Society for Integrative and Comparative Biology in Boston, Massachusetts. (with published abstract, *American Zoologist* 37 (5): 409. (K.M. Strasser and D.L. Felder).
- Settlement cues in the Gulf of Mexico population of the ghost shrimp *Callichirus major* (Crustacea: Decapoda: Thalassinidea). May, 1997. Oral presentation at the summer meeting of the Crustacean Society in Mobile, Alabama, 1997. (K.M. Strasser and D.L. Felder).
- The hermit crabs of Tampa Bay, Florida. Oral presentation at the annual meeting of Tri Beta regional conference in Tuscalusa, Alabama, 1992, and at the Florida Academy of Science in Tallahassee, Florida, 1994. (K.M. Strasser and W.W. Price).

Publications

- Klerks, Paul L., Felder, Darryl L., **Strasser**, Karen, Swarzenski, Peter W. 2007. Effects of ghost shrimp on zinc and cadmium in sediments from Tampa Bay, FL, *Marine Chemistry* 104: 17-26.

- Strasser** , K. M. and D. L. Felder. 2005. Larval development of the mud shrimp *Axianna australis* (Decapoda: Thalassinidea) under laboratory conditions. *Journal of Natural History*. 39:2289-2306.
- Corsetti, J.L and K. M. **Strasser**. 2003 Host selection of the symbiotic copepod *Clausidium dissimile* in two sympatric populations of ghost shrimp. *Marine Ecology Progress Series* 256 : 151-159.
- Corsetti, J.L. and K. M. **Strasser**. 2003 Population biology of the ghost shrimp *Sergio trilobata* (Biffar 1970) (Crustacea: Decapoda: Thalassinidea). *Gulf and Caribbean Research*. 15: 13-19.
- Strasser** K. M., and D. L. Felder. 2001 Effect of decreased salinity on development of the ghost shrimp *Callinectes islagrande* and two populations of *C. major* (Crustacea: Decapoda: Thalassinidea). *Gulf and Caribbean Research* 13:9-19.
- Strasser** K. M., and D. L. Felder. 2000. Larval development of the ghost shrimp *Callinectes islagrande* (Decapoda: Thalassinidea). *Journal of Crustacean Biology* 20(1):100-117
- Strasser** K. M., and D. L. Felder. 1999. Larval development of two populations of the ghost shrimp *Callinectes major* (Decapoda: Thalassinidea). *Journal of Crustacean Biology* 19(4):844-878.
- Strasser** K. M., and D. L. Felder. 1999. Sand as a stimulus for settlement in the ghost shrimp *Callinectes major* and *C. islagrande* (Crustacea: Decapoda: Thalassinidea). *Journal of Experimental Marine Biology and Ecology* 239: 211-222.
- Strasser** K.M. and D. L. Felder. 1999. Settlement cues in an Atlantic coast population of the ghost shrimp *Callinectes major* (Crustacea: Decapoda: Thalassinidea). *Marine Ecology Progress Series* 183: 217-225.
- Strasser**, K. M. and W. W. Price. 1999. Species composition and spatial distribution of hermit crabs in Tampa Bay, Florida and surrounding waters. *Gulf Research Reports* 11: 33-50.
- Strasser** , K. M. and D. L. Felder. 1998. Settlement cues in successive developmental stages of the ghost shrimp *Callinectes major* and *C. islagrande* (Crustacea: Decapoda: Thalassinidea). *Marine Biology* 132: 599-610.

Referees:

- 1) Matthew Klein, Dean, College of Arts and Sciences
 address- Ferris State University
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 Big Rapids, MI 48823
 phone- (231)-591-3660
 email- kleinm@ferris.edu
- 2) Mary Murnik, Professor, Department of Biological Sciences
 address- Ferris State University
 820 Campus Drive, ASC 2004
 Big Rapids, MI 48823
 phone- (231)-591-2546
 email- murnikm@ferris.edu
- 3) Darryl L. Felder, Professor and Head, Department of Biology (Ph.D. Advisor)
 address- University of Louisiana, Lafayette
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 Lafayette, LA 70504-2451
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 email- dlf4517@louisiana.edu

- 4) Dr. Karin Otto, Department of Biology (Supervisor at the University of Tampa)
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- 5) Dr. Kevin Beach, Associate Professor of Biology (Colleague at University of Tampa)
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Tampa Florida 33606-1490
phone- (813)253-3333
email- kbeach@ut.edu

- 6) Dr. Wayne Price, Professor of Biology (Colleague at University of Tampa)
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Curriculum Vitae
Daisy L. Daubert

Address:

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820 Campus Drive, ASC 2004
Big Rapids, MI 49307

Residence

1304 Darwin Ave.
Big Rapids, MI 49307
Ph: (503) 421-4882

Ph: (231)591-2554

E-mail: dauberd@ferris.edu

Education:

B.S.	December 1998	Washington State University Pullman, Washington Major: Animal Science Minor: Neuroscience
Ph.D.	June 2006	Oregon Health & Science University Integrative Biomedical Science Program

Teaching Experience (* Denotes new prep)

Ferris State University

Fall 2013	Human Physiology and Anatomy I (BIOL 321) 4 lecture and lab sections *Basic Human Anatomy-Physiology (BIOL 109) 4 lecture sections
Summer 2013	Human Physiology and Anatomy II (BIOL 322) 1 lecture and lab section
Spring 2013	Human Physiology and Anatomy II (BIOL 322) 3 lecture and lab sections Pathophysiology (BIOL 300) 1 lecture section
Fall 2012	Human Physiology and Anatomy I (BIOL 321) 4 lecture and 3 lab sections *Endocrinology (BIOL 421) 1 lecture section
Summer 2012	Human Physiology and Anatomy II (BIOL 322) 1 lecture and lab section
Spring 2012	Human Physiology and Anatomy II (BIOL 322) 3 lecture and lab sections Pathophysiology (BIOL 300) 1 lecture section
Fall 2011	Human Physiology and Anatomy I (BIOL 321) 3 lecture and lab sections

	Pathophysiology (BIOL 300) 1 lecture section
Summer 2011	Human Physiology and Anatomy II (BIOL 322) 1 lecture and lab section
Spring 2011	Human Physiology and Anatomy II (BIOL 322) 2 lecture and lab sections Pathophysiology (BIOL 300) 1 lecture section Human Anatomy and Physiology (BIOL 205) 1 lab section
Fall 2010	Human Physiology and Anatomy I (BIOL 321) 2 lecture and 3 lab sections *Pathophysiology (BIOL 300) 1 lecture section
Summer 2010	Human Physiology and Anatomy II (BIOL 322) 1 lecture and lab section
Spring 2010	*Human Physiology and Anatomy II (BIOL 322) 3 lecture and lab sections *Human Anatomy and Physiology (BIOL 205) 1 lab section
Fall 2009	*Human Physiology and Anatomy I (BIOL 321) 2 lecture and 4 lab sections

Research Experience:

- 1) Summer 1993. Technical Assistant: Dept. of Veterinary Microbiology and Pathology, Washington State University, Pullman, WA. Dr. Thomas Besser.
- 2) 1994. Technical Assistant: Field Disease Investigative Unit, Washington State University, Pullman, WA. Dr. Thomas Besser.
- 3) 1995-1996. Animal Technician: Wegner Hall Vivarium, Washington State University, Pullman, WA.
- 4) 1996-1999. Technical Assistant: Dept. of Veterinary and Comparative Anatomy, Pharmacology and Physiology, Washington State University, Pullman, WA. Dr. Robert Speth.
- 5) 1999. Graduate Student: Neuroscience Program, Veterinary Comparative Anatomy, Pharmacology and Physiology, Washington State University, Pullman, WA. Dr. Robert Speth.
- 6) 1999-2006. Graduate Student: Integrative Biomedical Science, Department of Physiology and Pharmacology, Oregon Health & Sciences University, Portland, OR. Dr. Virginia Brooks.
- 7) 2006. Postdoctoral Fellow: Department of Pharmacology, University of Missouri-Kansas City, Kansas City, MO. Dr. Deborah Scheuer.
- 8) 2006-2009. Postdoctoral Associate: Department of Physiology and Functional Genomics, University of Florida, Gainesville, FL. Dr. Deborah Scheuer.
- 9) Summer 2012. Visiting Scientist: Oregon Health & Sciences University, Portland, OR. Dr. Virginia Brooks.
- 10) Summer 2013. Research Volunteer: University of Florida, Gainesville, FL. Dr. Deborah Scheuer

Memberships:

American Physiological Society: 2003-present.

Human Anatomy and Physiology Society: 2011-present

Grants:

American Heart Association pre-doctoral fellowship: \$40,000, July 2003-July 2005.

Awards:

One of the four best writing portfolio submissions for Fall 1998 at Washington State University

N.L. Tartar Trust Research Fellowship: July 2001-July 2002.

Oregon Health & Science University student research forum best student talk award: May 2004.

FASEB Summer Research Conferences; Neural Mechanisms in Cardiovascular Regulation travel award: July 2004.

2005 Caroline tum Suden/Frances A. Hellebrandt Professional Opportunity Award

Committee Service:

Biology Awards Committee: 2010-present

Biology Faculty Development Committee: 2010-present
Chair 2012-present

Biology Planning Committee: 2011-present

Academic Senate: 2012-present

Health Promotion Committee: 2012-2013

Biology Geneticist Faculty Search Committee: 2012-2013

Conferences Attended:

Experimental Biology April 2010

Human Anatomy and Physiology Society May 2011

CUR Beginning a Research Program in the Natural Sciences at a Predominantly Undergraduate Institution November 2011

Professional Development:

Attended Faculty Center for Teaching and Learning workshop on using the smart classroom, Fall 2009

Attended Faculty Center for Teaching and Learning new faculty transition seminar series, Spring 2010

Presented a poster at Experimental Biology, April 2010

Attended Faculty Center for Teaching and Learning Presentation Zen, Summer 2010

Attended Human Anatomy and Physiology Society conference, May 2011

Attended Pearson Publishers seminar on the use of different computer/web programs in biology education, March 2011

Attended Academically Adrift seminar at Central Michigan University, October 2011

Attended Faculty Center for Teaching and Learning the Naked Presenter, Spring 2012

Did research with Virginia Brooks at Oregon Health & Science University, May-June 2012

Did research with Deborah Scheuer at the University of Florida, May-June 2013

Attended McGraw Hill seminar on the use of LearnSmart adaptive learning program and Tegrity, September 2013

Continue to work on research started in at the University of Florida, July 2013-present

Abstracts:

Daubert D.L., Meadows G.G., Wang J.H., Sanchez P.J., and Speth R.C.. 1998. Changes in angiotensin II receptors in dopamine-rich regions of the mouse brain with aging and ethanol consumption. Society for Neuroscience Abstracts, 24:2180.

Daubert D.L., Meadows G.G., Sanchez P., and Speth R.C.. 1999. Chronic ethanol consumption increases adrenal angiotensin II receptor density in female mice in an age and time dependent manner. Society for Neuroscience Abstracts, 25:2200.

Daubert D.L., Giraud G.D., Brooks V.L. 2003. Role of nitric oxide in impaired baroreflex function during pregnancy in conscious rabbits. The FASEB Journal, 17:A23.

Daubert D.L., Brooks V.L. 2004. Role of angiotensin II (AngII) and nitric oxide (NO) in the decreased baroreflex gain of pregnancy. *The FASEB Journal*, 18:A1078.

Daubert D.L., Brooks V.L. 2004. Stress decreases baroreflex gain (BRG) through increased nitric oxide (NO). *The FASEB Journal*, 18:A294.

Daubert D.L., Chung M-Y, Brooks V.L. 2005. Decreased insulin sensitivity: mechanism for decreased baroreflex gain during pregnancy? *The FASEB Journal*, 19:A576.

Daubert D.L., Chung M-Y., Brooks V.L. 2006. Decreased insulin sensitivity: mechanism for decreased baroreflex gain during pregnancy? *The FASEB Journal*, 20:A359.

Daubert D.L., Looney B.M., Su Y. and, Scheuer D.A. 2008. Corticosterone in the dorsal hindbrain does not alter the number of neurons in cardiovascular brain regions activated by stress. *The FASEB Journal*, 22: 1171.5

Looney B.M., **Daubert D.L.**, Su Y., and Scheuer D.A. 2008. Low doses of corticosterone act in the dorsal hindbrain to enhance the arterial pressure response to both acute and repeated stress. *The FASEB Journal*, 22: 1171.4

Su Y., **Daubert D.L.**, Sumners C., Speth R., Li H., and Scheuer D.A. 2008. Glucocorticoids enhance expression of angiotensin II type 1 receptors in the dorsal hindbrain. *The FASEB Journal*, 22: 1171.6.

Daubert D.L., Dong Y., Scheuer D.A. 2010. Chronic increases in dorsal hindbrain (DHB) corticosterone (Cort) enhance the blood pressure response to restraint stress without changing peripheral Cort. *The FASEB Journal*, 24: 1019.18

Publications:

Daubert, D.L., Meadows, G.G, Wang, J.H., Sanchez, P.J, Speth, R.C. 1999. Changes in angiotensin II receptors in dopamine-rich regions of the mouse brain with aging and ethanol consumption. *Brain Research*, 816:8-16.

Speth, R.C., **Daubert, D.L.**, Grove, K.L. 1999. Angiotensin II: a reproductive hormone too? *Regulatory Peptides*, 79:25-40.

Braileanu, G.T., Simasko, S.M., Speth, R.C., **Daubert, D.**, Hu, J., Mirando, M.A. 2002. Angiotensin II increases intracellular calcium concentration in pig endometrial stromal cells through type 1 angiotensin receptors, but does not stimulate phospholipase C activity or prostaglandin F2alpha secretion. *Reproduction Fertility and Development*, 14:199-205.

Daubert, D.L., Brooks, V.L. 2007. Nitric oxide impairs baroreflex gain during acute psychological stress. *American Journal of Physiology*, 292(2): R955-61.

Daubert, D.L., Liu, D., Zucker, I.H., Brooks, V.L. 2007. Roles of nitric oxide and angiotensin II in the impaired baroreflex gain of pregnancy. *American Journal of Physiology*, 292(6): R2179-87.

Daubert, D.L., Chung M.Y., Brooks, V.L. 2007. Insulin resistance and impaired baroreflex gain during pregnancy. *American Journal of Physiology*, 292(6): R2188-95.

Daubert D.L., McCowan M., Erdos B., Scheuer D.A. 2012. Nucleus of the solitary tract catecholaminergic neurons modulate the cardiovascular response to psychological stress in rats. *Journal of Physiology*, 590(Pt 19): 4881-95.

Publications in Preparation:

Daubert, D.L. and Scheuer, D.A. Involvement of corticosterone and vasopressin in cardiovascular and neuroendocrine responses to psychological stress in rats. Submitted to the *Journal of Physiology*.

Curriculum Vitae

Christopher DeFraia

Assistant Professor, Ferris State University

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Grand Rapids, MI 49503

EDUCATION

- 2010 **Ph.D.**, Microbiology and Cell Science (Molecular Biology), University of Florida.
Dissertation: Characterization of NPR1 suppressors and their role in plant immunity. Advisor: Dr. Zhonglin Mou.
- 2005 **B.S.**, Biotechnology, *cum laude*, Rutgers University.
Thesis: Molecular characterization of dissimilatory arsenate respiring prokaryotes using an arsenate respiratory reductase gene (*arrA*) as a biomarker. Advisor: Dr. Lily Young.

UNIVERSITY TEACHING EXPERIENCE

- Spring 2014 **Visiting Assistant Professor of Biology**, Department of Biology, Kenyon College, Gambier, OH.
Instructor, Applied Bioinformatics (BIOL 391)
-Developed a new upper-level bioinformatics computer laboratory course for biological science majors
-Taught analysis of single gene and genomic sequence data
-Oversaw presentation and peer-review of independent research projects
Lecturer, Genetic Analysis (BIOL 255)
-Course is a survey of the principles and applications of genetics
-Taught a lecture class of 15 biology majors and non-majors
-Taught students to read and evaluate primary literature
- Fall 2013 **Visiting Professor**, Department of Biology and Earth Science, Otterbein University, Westerville, OH.
Lecturer: Genetics (BIO 2010)
-Taught 72 biological science majors the principles and applications of genetics
-Developed two new lectures on epigenetics and RNA interference
-Collaborated with Otterbein faculty to enrich the genetics laboratory course
- 2005-2006 **Graduate Student**, Department of Microbiology and Cell Science,

University of Florida, Gainesville, FL.

Teaching Assistant, Bacterial Genome Sequencing Analysis (MCB 4320C)

- Taught computer laboratory section of the course in which students annotated genes from a novel bacterium
- Created computer laboratory activities and assessments
- Oversaw independent student projects and creation of manuscripts

Lead Instructor, Basic Biology of Microorganisms Laboratory (MCB 3020L)

- Taught microbiological techniques and theory to 36 microbiology majors in this intermediate-level, six hour/week class.
- Supervised three undergraduate teaching assistants

RESEARCH EXPERIENCE

- 2013-Present **Postdoctoral Researcher**, Department of Molecular Genetics, Ohio State University, Columbus, OH.
Research topic: Architecture and movement of the nucleus
Advisor: Dr. Iris Meier
- 2010-2013 **Postdoctoral Fellow**, Department of Molecular Genetics, Ohio State University, Columbus, OH.
Research topic: Epigenetic silencing of transposable elements
Advisor: Dr. R. Keith Slotkin
- 2005-2010 **Graduate Research Fellow**, Department of Microbiology and Cell Science, University of Florida, Gainesville, FL.
Research topic: Identification and characterization of genes essential for disease resistance in plants.
Advisor: Dr. Zhonglin Mou
- 2004-2005 **Undergraduate Research Fellow**, Department of Environmental Sciences, Rutgers University, New Brunswick, NJ.
Research topic: Identification and sequencing of an arsenic respiration gene from a novel bacterium.
Advisor: Dr. Lily Young
- 2003 **Undergraduate Researcher**, Biotechnology Center for Agriculture and the Environment, Rutgers University, New Brunswick, NJ.
Research topic: Histidine Biosynthesis in *Arabidopsis thaliana*
Advisor: Dr. Thomas Leustek

UNDERGRADUATE RESEARCH MENTORING

- 2013-Present **Anisa Moussa**, Undergraduate Researcher, Ohio State University
-Research topic: Isolation of nuclearmembrane mutants.
- 2011-2013 **Erica Thomas**, Undergraduate Researcher, Ohio State University

- 2010-2011 **Jennifer Bosse**, Undergraduate Researcher, Ohio State University
 -Research topic: Production of mutant plants with active transposons
 -Will pursue a Ph.D. in molecular biology
- Summer 2008 **Mallory Bembry**, NSF REU Undergraduate Research Fellow, University of Florida
 -Research topic: Genotyping of plant transposon silencing mutants
 -Currently a graduate student at Ohio State University
- 2007-2010 **George Marek**, Undergraduate Researcher, University of Florida
 -Research topic: Genetic analysis of an immunocompromised mutant
 -Obtained B.S. in Plant Science Biotechnology from Fort Valley State University
 -Research topic: Isolation of immunocompromised mutant plants using a bacterial sensor
 -Obtained B.S. in Microbiology from the University of Florida
 -Currently a MD-PhD student at the University of Florida

PUBLICATIONS

1. **DeFraia, C**, & Slotkin, R. K. (2014). Analysis of retrotransposon activity in plants. *Methods in Molecular Biology* (Clifton, NJ), **1112**, 195–210.
2. **DeFraia C***, Wang Y*, and Mou Z. (2013). The histone acetyltransferase activity of Elongator subunit 3 is essential for its role in plant immunity. *BMC Plant Biology*. **13**:102. (2013). *Indicates equal contribution.
3. Nuthikattu S, McCue AD, Panda K, Fultz D, **DeFraia C**, Thomas EN, Slotkin RK. The initiation of epigenetic silencing of active transposable elements is triggered by RDR6 and 21-22 nucleotide small interfering RNAs. *Plant Physiol*. May;**162**(1):116-31. (2013).
4. **DeFraia, C** and Mou, Z. The role of the Elongator complex in plants. *Plant Signal Behav* 6 (2). (2011).
5. **DeFraia C**, Zhang X, and Mou Z. Elongator subunit 2 is an accelerator of immune responses in *Arabidopsis thaliana*. *Plant J*. 64 (3):511–523. (2010).
6. Xiong Y, **DeFraia C**, Williams D, Zhang X, and Mou Z. Deficiency in a cytosolic ribose-5-phosphate isomerase causes chloroplast dysfunction, late flowering and premature cell death in Arabidopsis. *Physiol Plant* **137**: 249–263. (2009).
7. Xiong Y, **DeFraia C**, Williams D, Zhang X, Mou Z. Characterization of Arabidopsis 6-phosphogluconolactonase T-DNA insertion mutants reveals an essential role for the oxidative section of the plastidic pentose phosphate pathway in plant growth and development. *Plant Cell Physiol* **50** (7): 1277–1291. (2009).
8. **DeFraia C**, Schmelz E, and Mou Z. A rapid biosensor-based method for quantification of free and glucose-conjugated salicylic acid. *Plant Methods* **4**, 28. (2008).
9. Zhang X, Xiong Y, **DeFraia C**, Schmelz E, and Mou Z. The Arabidopsis MAP Kinase Kinase 7: A crosstalk point between auxin signaling and defense responses? *Plant Signal Behav* **3**, 272-274. (2008).

10. Zhang X, Dai Y, Xiong Y, **DeFraia C**, Li J, Dong X, and Mou Z. Overexpression of Arabidopsis *MAP Kinase Kinase 7* leads to activation of plant basal and systemic acquired resistance. *Plant Journal* **52**, 1066-1079. (2007).
11. Perez-Jimenez J, **DeFraia C**, Young L. Arsenate respiratory reductase gene (*arrA*) for *Desulfosporosinus* sp. strain Y5. *Biochem Biophys Res Commun* Dec **16**:(2):825-9 (2005).

ABSTRACTS

1. **DeFraia C.** and Slotkin RK. "Transgenerational Epigenetic Silencing of Transposable Elements in Arabidopsis Pollen." Ohio State University Comprehensive Cancer Center Symposium. Columbus, OH. (2013).
2. **DeFraia C.** and Slotkin RK. "Epigenetic Silencing of Transposons by sRNAs in Arabidopsis." Ohio State University Comprehensive Cancer Center Symposium. Columbus, OH. (2013).
3. **DeFraia C.**, McCue A., and Slotkin, RK. "Transgenerational activation of transposable elements in Arabidopsis." Cell Symposia: Epigenetics and the Inheritance of Acquired States. Boston, MA. (2011).
4. **DeFraia C.**, Zhang X., Mou., Z. "A genetic screen for suppressors of *npr1*-mediated SA toxicity identifies a novel positive regulator of salicylic acid-mediated immunity." 21st International Conference on Arabidopsis Research. Yokohama, JP. (2010).
5. **DeFraia C.** and Mou Z. "A rapid and biosensor-based method for quantification of free and glucose-conjugated salicylic acid." 19th International Conference on Arabidopsis Research. Montreal, CA. (2008).
6. **DeFraia C.** and Mou Z. "Suppressor mutants of *npr1* restore salicylic acid tolerance and pathogen resistance in Arabidopsis thaliana." Florida Genetics. Gainesville, FL. (2007).

FELLOWSHIPS AND AWARDS

2011-2013	Pelotonia Postdoctoral Fellowship
2010	IFAS/CALS Graduate Student Travel Grant
2009	Davidson Graduate Student Travel Scholarship
2005-2009	University of Florida Alumni Fellowship
2004	Center for Environmental Bioinorganic Chemistry Research Fellowship
2003	Rutgers Undergraduate Research Fellows Award

PROFESSIONAL ACTIVITIES

2014	Invited Speaker, Otterbein University
2013	Manuscript Reviewer, Public Library of Science (PLOS) Genetics
2012	Manuscript Reviewer, The Plant Cell
2006-Present	Member, American Association for the Advancement of Science

COMMUNITY SERVICE

- 2011-2012 **Planning Committee Member**, Tour-de-H2O. Helped plan and execute a charity bike ride to fund clean water projects in African villages.
- 2008 **Panel Member**, Café Scientifique. Discussed transgenic plants and genetically modified organisms in a public forum.
- 2007 **Presenter**, Sunbelt Agricultural Expo. Discussed the state of plant disease resistance research with farmers and the public.

UNIVERSITY SERVICE

- 2012-2013 **Co-Instructor**, Young Scholars Program, 7th grade biology. Taught 7th grade students the scientific method through plant biology experiments
- 2010 **Poster Judge**, University of Florida Undergraduate Research Symposium.
- 2006-2007 **Graduate Representative**, University of Florida Career Fair. Discussed graduate school and career opportunities with undergraduates.
- 2005-2006 **Chair**, Invited Speaker Committee for Microbiology and Cell Science.

LABORATORY SKILLS

Confocal and fluorescence microscopy, real time PCR, microarray analysis, northern blot, fluorescence-activated cell sorting, genetic screening, map-based cloning, construction of transgenic plants, next-generation sequencing, western blot, yeast two-hybrid, recombinant protein expression and purification, bisulfite sequencing, chromatin immunoprecipitation, enzyme activity assays, subcellular fractionation, HPLC.

COMPUTER SKILLS

Blackboard, Moodle, DNA and protein sequence analysis, microarray data analysis, Graphpad Prism, ImageJ, Galaxy/Bowtie (analysis of genomic deep sequencing data).

OLUKEMI FADAYOMI
Department of Biological Sciences

Arts and Sciences Commons 2009
Ferris State University
Big Rapids, MI 49307
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EDUCATION

Ph.D. North Texas State University, Denton, Texas, Biology (Immunoparasitology) 1986
MS Stephen F. Austin State University, Nacogdoches, Texas Biology (Microbiology) 1982
B.Sc. East Texas Baptist College, Marshall, Texas Biology 1980

PROFESSIONAL HISTORY

Fulbright Scholar, University of Namibia 2003

Biotechnology Program Coordinator, Ferris State University 2000 to 2003

Professor of Biology, Ferris State University 1997 to present

Visiting Fellow, Centers for Disease Control and Prevention, Atlanta, GA 1994 to 1996

Associate Professor of Biology, Ferris State University 1992 to 1997

Assistant Professor of Biology, Ferris State University, 1987 to 1992

Visiting Assistant Professor of Biology, Virginia Commonwealth University, Richmond, VA
1986 to 1987

TEACHING EXPERIENCES

Ferris State University (Courses taught)

General Biology 1 and II (zoology and botany)
Cell and Molecular Biology
Introduction to Biotechnology
Medical Parasitology
Advanced Immunology laboratory
Current Topics in Biology

University of Namibia

General Microbiology
Advanced Microbiology

Virginia Commonwealth University 1986-87 (Courses taught)

General Parasitology
Cell Biology
General Microbiology
General Biology

COLEGE/UNIVERSITY SERVICES

University:

Academic Program Review	2005- present
Senate Diversity Committee	2000 - 2003
Distinguished Teacher Award Committee	2000 - 2001
Scientific Understanding Committee	1999 - 2001
Faculty Research Grant Committee	1998 - 2000
Academic Senate	1997 - 98
Diversity Counts	1997 - 99
Animal Care and Use Committee	1988 – 89, 1990 - 94
Graduate and Professional Council	1992 - 94
Radiation Safety Committee	1990 - 93

College:

Sabbatical Leave Committee	1996 - 97
Curriculum Committee	1991 - 93
Minority Retention Task Force	1990 - 94
Pre-Optometry Advisory Board	1989 - 94, 1997 - 99

Department:

Present or past chair in

Biotechnology Advisory Board	2000 - 03
Department Tenure Review Committee	1996 - 98
Faculty Development Committee	1996 - 97
Candidate Tenure Committee	1996 - 98
Curriculum Committee	1990 - 93
Faculty Development Committee	1989 - 91
General Biology Committee	1988 - 94

Member

Planning Committee	2001- 03
Arts and Science Remodeling Subcommittee	1989 - 90
Curriculum Committee	1988 - 89
General Biology Committee	1987 – present

PROFESSIONAL HONORS, FELLOWSHIPS, LISTINGS, AWARDS, AND RESEARCH SUPPORT

Merit promotion 2007
Fulbright Scholar Award (Namibia, Africa), 2003
College of Arts and Sciences Deans Initiative Grant, 1999, 2002
Michigan Association of Governing Boards' of State Universities Distinguished Faculty Award, 1997
Development of a Multimedia and Interactive Approach to Teaching Laboratory Biology Courses. Ferris State University Faculty Development Grant, 1997.
Establishment and Maintenance of the Life Cycle of the Human Blood Fluke *Schistosoma mansoni*. Ferris State University. Ferris State University Faculty Research Grant, 1997.
Visiting Scientist Fellowship, National Centers for Infectious Diseases, Centers for Disease Control, Atlanta, GA, 1995 –96

Who's who of American Women, 1991
Selected to participate in a two-week intensive NSF workshop on Introduction of Molecular Biology to Undergraduate Curriculum, 1993
Role of Immune Response in the Protection against *Trichinella spiralis*. Ferris State University Faculty Research, 1989.

REPRESENTATIVE PROFESSIONAL ACTIVITIES

Consultancies

- Wadsworth Publishing Company, 2002
- Williams and Wilkins Publishers, 1991
- Wm. C. Brown Publishers, 1989 - 90
- McGraw-Hill Publishing Company, 1989

Membership

- Association of College and University Biology Educators 1997 - present.
- American Society of Tropical Medicine and Hygiene 1994 – present
- International Alliance of Teacher Scholars, Inc. 2001-2002

Publications

- Adewusi, O.I., R. Mitchell III and D. Stewart 1999. "General Biology Laboratory Manual", Kendall/ Hunt Publishing Company, Dubuque, IA. 203 pages
- Adewusi, O.I., Nix, N.A., Lu, X., Colley, D.G. and Secor, W.E. 1996. "*Schistosoma mansoni*: Relationship of tumor Necrosis Factor- α to Morbidity and Collagen deposition in Chronic Experimental Infection." *Experimental Parasitology* 84: 115-123.
- Adewusi, O.I., Colley, D.G., and Secor, W.E. 1996. "Association Between TNF- α and Morbidity During Experimental Chronic Schistosomiasis," FASEB.
- Adewusi, K. and Goven, A.J. 1987. "Enhanced Lysophospholipase Activity in Sensitized Mice Challenged with *Trichinella spiralis*: A Role for Cell-cooperation." *Developmental and Comparative Immunology* 11: 215-225.
- Adewusi, K. And Goven, A.J. 1987. "The Effect of Anti-thymocyte Serum on the Eosinophil and Lysophospholipase Responses in Mice Infected With *Trichinella spiralis*." *Parasitology* 94: 115-122.
- Adewusi, K. and Goven, A.J. 1986. "Enhancement of Lysophospholipase Activity with *Trichinella spiralis* Antigen: Evidence for Cell Cooperation." *Journal of Parasitology* 72: 716-722.
- Adewusi, Kemi 1982. "Fine Structure of the Tegument and Associated Structures in the Tapeworm *Cittotaenia*." *Journal of Texas Society for Electron Microscopy* 13:15.

Presentations

- Advances in Agricultural Biotechnology. March 2003. Neudamm College, Windhoek Namibia

- Adewusi, OI, Freeman Jr.GL, Colley, DG, and Secor, WE. December 1996. "Production of TNF- α by Spleen Cells of Mice with Chronic *Schistosoma mansoni* Infections," American Society of Tropical Medicine and Hygiene, Baltimore, MD.
- Adewusi, OI, Colley DG, and Secor WE. June 1996. "Association between TNF- α and Morbidity during Experimental Chronic Schistosomiasis." America Association of Immunologists Annual Meeting, New Orleans, Louisiana.
- Adewusi, OI, Colley, DG, and Secor, WE. November 1995. "Association of Hypersplenomegaly Syndrome and High TNF- α Levels in the Liver Homogenates of Mice with Chronic Schistosomiasis." American Society of Tropical Medicine and Hygiene, San Antonio, Texas.
- Adewusi, OI. October 1995. "The Role of Tumor Necrosis Factor-alpha in Chronic Schistosomiasis." Fancy Gap Immunological Meeting, Fancy Gap, Virginia.
- Adewusi, OI., 1994. "Women of Other Cultures ", Ferris Professional Women's Conference, Big Rapids, MI
- Adewusi, O.I., 1994. "Women's Issues and the Healing of Racism" Big Rapids, MI.
- Adewusi, Olukemi 1992. "Effects of Ivermectin on the Cyclophillidean Tapeworm, *Railletina salmoni*." Annual Midwestern Conference of Parasitologists, Eau Claire, Wisconsin.
- Adewusi, Olukemi 1991. "The Role of Eosinophilic Lysophospholipase in Immune Response against *Trichinella spiralis*." International Symposium of Tropical Diseases, Haikou, Hainan, People's Republic of China.
- Adewusi, Olukemi 1990. "Animals and Parasites," Annual Meeting of American Association of Laboratory Animal Science, Lansing MI.
- Adewusi, Olukemi 1990. "The Protective Role of Eosinophils in Selected Helminth Infections." Department of Immunology and Microbiology, California State University, San Bernardino, California.
- Adewusi, Olukemi 1989. "The Effect of Anti-thymocyte Serum on the Production of Lysophospholipase in Mice Infected with *Trichinella spiralis*" Ferris State University Science Week.
- Adewusi, K.I. 1986. "Eosinophil Mediated Damage to Parasites via Lysophospholipase Activity." Virginia Commonwealth University: Faculty Research Session.
- Adewusi, K.I. and Goven, A.J. 1986. "Enhanced Synthesis of Phospholipase B in mice infected with *Trichinella spiralis*: Evidence for cell cooperation." American Society for Microbiology, Boston MA.
- Adewusi, K.I. and Goven, A.J. 1986. "Effect of Anti-thymocyte serum on phospholipase B activity in mice infected with *Trichinella spiralis*. Southwestern Association of Parasitologists.
- Adewusi, K.I. and Goven, A.J. 1984. " Phospholipase B: Confirmation of the Eosinophil as the Sole Leukocyte Source in an Inflammatory Reaction." Southwestern Association of Parasitologists.

Attendance

- Annual Meeting of American Society of Tropical Medicine and Hygiene, Denver, CO November 2002
- Lily Conference on College and University Teaching, Ferris State University, September 2002
- AAC&U General Education and The Assessment of Student Learning, Dallas, TX. February 2002
- National Association of Biology Teachers' Convention, Montreal, Canada November 2001
- Lily Conference on College and University Teaching, Ferris State University, September 2001
- Association of Biology Education Conference University of Chicago, June 2001
- Critical Thinking Workshop/Think Tank session with Richard Paul, Ferris State March 2001
- McGraw/Hill General Biology Road show, Chicago, IL March 2001
- Diversity in the New Millennium. Eastern Michigan University, Ypsilanti March 2000
- National Science Foundations' Regional Grants Conference, Lawrence, Kansas October, 1998
- Diversity Conference, Central Michigan University, Mt. Pleasant MI, October 1997.
- CDC, Atlanta, GA November 1997
- AAC&U Diversity Network Workshop, Ann Arbor, MI April 1997
- Minority Equity Conference Western Michigan University, Kalamazoo, MI March 1997.
- Campus Climate Imperatives: Building a Just Responsive Community, Central Michigan University, Mt. Pleasant, MI October 1997
- Project Kaleidoscope, a NSF workshop on revitalizing undergraduate biology curriculum, Morehouse College, Atlanta, GA, November 1996.
- International Symposium on Tropical Diseases, Haikou, China November 1991.
- AAAS Symposium on "Biology of Parasitism", New Orleans, LA February 1990.

Chautauqua courses for college teachers:

- Molecular Epidemiology (May 2001)
- Internet and the World Wide Web (May 1997).
- Virology in the Nineties (1993)
- Recombinant DNA: Technology and Application (May 1991),
- Advances in Immunology (February 1989)

Ferris State University Workshops:

- Connecting with the Learners, Summer 2000
- Comprehensive Guidance Program: Re-Awakening the Soul of Education, February 2000
- Faculty winter institute: Development of web-based instruction using Webct, January 1999
- Health Professions Education Futures Conference, Holiday Inn Conference center, March 1997.
- Antibody Mutagenesis *In vitro.*, Biology Lecture Series November 1997
- Cellular Schizophrenia, Biology Lecture Series , February, 1998

CIVIC AND COMMUNITY ACTIVITIES

- Monday/Tuesday Night Technology (presentation of hands-on biology lab experience to area middle school students) 1999 – present
- K-12 Science Olympiad (judge) 1998

Fadayomi

- Odyssey of the Mind (judge and facilitator) 1998
- EXCEL (Founding member. Parental organization for enhancement of education of academically gifted K-12 students.) 1997 - 2001
- Girls' Scout (troop leader) 1994 - 96
- Big Rapids Forum on the Healing of Racism 1992 - 94
- Michigan Department of Education Workshops. (ACT preparatory workshop for economically disadvantaged high school students in rural areas) 1992.
- Wade McCree Program (Presented biology workshops for minority students from urban Detroit) 1992, 1993.
- Martin Luther King Jr./Caesar Chavez/Rosa Parks College day program (Provided hand-on experience for minority high school students) 1990 - 92.
- Muskegon Area Explorations in Math and Science (presenter). A conference for 7th and 8th Grade girls 1990.

January 2014

Clifton V. Franklund

Personal Information:

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Web Site: <http://franklund-micro.com>

Twitter: [@Dr_Franklund](https://twitter.com/Dr_Franklund)

Blog: <http://www.wordpress.com/assessmentinaction>

Professional Employment:

Associate Professor	Department of Biological Sciences, Ferris State University, Big Rapids, MI 2009 – present
Assistant Professor	Department of Biological Sciences, Ferris State University, Big Rapids, MI 2006 – 2009
Assistant Professor	Department of Biological Sciences, California State University, Long Beach, Long Beach, CA 2000 – 2006
Research Associate	Department of Microbiology and Immunology, Virginia Commonwealth University, Richmond, VA 1999 – 2000
Adjunct Professor	Division of Natural Sciences, Piedmont Virginia Community College, Charlottesville, VA 1996 – 1999

Post-Doctoral Training:

University of Virginia, School of Medicine, Department of Microbiology. Charlottesville, Virginia 22908. February 1997 to 1999. Was a research associate in the laboratory of Dr. Joanna Goldberg, Associate Professor of Microbiology.

University of Virginia, School of Medicine, Department of Microbiology. Charlottesville, Virginia 22908. January 1991 to January 1997. Was a research associate in the laboratory of Dr. Robert J. Kadner, Professor of Microbiology.

Education:

Medical College of Virginia/Virginia Commonwealth University, Health Sciences Division. Richmond, Virginia 23298. August 1986 to December 1990. Ph.D. Department of Microbiology and Immunology. Advisor: Dr. Phillip Hylemon, Professor of Microbiology.

North Dakota State University, Fargo, North Dakota 58105. August 1984 to July 1986. M.S. Department of Bacteriology. Advisor: Dr. Thomas Glass, Associate Professor of Bacteriology.

Concordia College, Moorhead, MN 56560. August 1980 to May 1984. B.A. Major: Biology. Minor: Philosophy.

Professional Affiliations:

American Society for Microbiology, Michigan Regional Branch of the American Society for Microbiology, Sigma Xi Honor Society, and the Anaerobe Society of the Americas

Professional Roles:

Academic Affairs assessment coordinator
Ferris State University Quality Matters Trainer
Ferris State University Online Instruction Trainer
Ferris State University Blackboard Learn 9.1 Mentor (assigned 33 faculty members)
Assessment coordinator for the department of Biological Sciences
Co-program coordinator for the B.S. in Biological Science

Awards:

Top 25 STEM Professor in Michigan (2013)
Ferris State University Distinguished Teacher of the Year (2012)
Softchalk Higher Education Online Challenge Winner (2011)
Exemplary On-Line Course, Web Enhanced (2007)

Certificates:

Certificate of Online Adjunct Teaching, University of Maryland (2013)
Assessment Specialist Graduate Certificate, James Madison University (Begun 2013)

Courses Taught at Ferris State University:

BIOL108: *Medical Microbiology*. (2006 - present)

This three-unit course is taught every semester and is part of the core curriculum for allied health sciences majors at Ferris State University. The class focuses upon the diversity of microbial life forms, the basis of a protective immune defense, and a brief survey of important microbial pathogens. The laboratory covers essential microbiological techniques and includes a group-based directed research project on a topic of the students' choosing.

BIOL286: *General Microbiology*. (2006 - present)

This three-unit course is taught every semester and is part of the curriculum for the clinical laboratory sciences program at Ferris State University. The lectures serve as a brief introduction to the microbial world including microbial structure, function, metabolism, classification, genetics, control of microbial growth and immunity. The laboratory provides practical experience with fundamental concepts, techniques and instrumentation and includes fieldtrips to the Big Rapids wastewater treatment plant. I am also attempting to coordinate visits to the Yoplait plant in Reed City, the Big Rapids hospital diagnostic lab, and the Big Rapids water treatment plant.

BIOL387: *Microbiology and Immunology*. (2008 and 2009)

This three-unit course is taught every semester and is part of the curriculum for the clinical laboratory sciences program at Ferris State University. The lectures serve as a brief introduction to the microbial world including microbial structure, function, metabolism, classification, genetics, control of microbial growth and immunity.

BIOL472: *Proteins*. (2013)

This three-unit course is taught every other year and is part of the curriculum for the Biotechnology program at Ferris State University. The class covers protein structure, function, purification, and characterization with an emphasis on lab applications, problem solving, and trouble-shooting.

Courses Taught at Other Institutions:

MICR320: *Bacterial Pathogenesis*. CSULB (2000 – 2006)

This five-unit course is taught every semester and is part of the core curriculum for Microbiology majors at CSULB. Lectures were focused upon molecular mechanisms of host-parasite interactions in a broad range of human pathogens.

MICR471: *Bacterial Physiology*. CSULB (2000 – 2006)

This is a three-unit course that is taught once per year during the spring semester. Using a comparative approach, the growth, metabolism, nutrition, and ecology of bacteria and archaeobacteria are discussed. Recent publications are used to compare and contrast the diverse strategies employed by prokaryotes to adapt to their environment.

BIOL696: *Research Methods*. CSULB (2002 – 2006)

This three-unit, course is offered during the fall semester for graduate students in the process of completing their thesis. Topics covered include experimental design, data presentation, computer graphics, and technical writing. The class culminates with formal oral, written, and poster presentation of their research.

BIOL220H: *Introduction to Bioinformatics*. CSULB (2004)

This two-unit, team-taught course is offered during the fall semester to honors students in the department. Topics covered include the nature of biological information, database design and queries, sequence comparisons, phylogenetic analyses, and predictions of structure and function based upon sequence data. One half of the course time is dedicated to using current computer algorithms for actual sequence analyses.

MICR200: *General Microbiology for Health Professionals*. CSULB (2005)

This is a general microbiology course for those planning careers in nursing, health care and education, and foods and nutrition. This course offers a broad overview of the structure, function, and diversity of microorganisms with an emphasis on their roles in human health. I served as a laboratory instructor.

NAS185: *Microbiology*. Piedmont Virginia Community College (1997 – 1999)

This four-unit course provided an introduction to microorganisms, their metabolism, and involvement in human disease. Emphasis was placed upon prokaryotic metabolism and genetics as well as the molecular and cellular aspects of the human immune system.

BIO101/102: *Introductory Biology Laboratory*. Piedmont Virginia Community College (1996 –1999)

Laboratory sessions included exercises spanning Botany, Animal Physiology, Biochemistry, Genetics, and Molecular Biology. As laboratory instructor, I prepared, presented, and graded all lab materials, quizzes, and practical exams.

Research Funding:

Faculty Research Grant – Lipopolysaccharide sialation in *Fusobacterium nucleatum*

Faculty Research Committee, Ferris State University 2007

Role: P.I.

3 S06 GM 063119-02S2 (Kingsford, Laura) 2003 - 2005

Support for Continuing Research Excellence (SCORE)

Role: P.I.

2 R25 GM 0089-04 (Bauer, Roger) 2003 – 2004

Bridges to the Future: Baccalaureate Bridge Program

Role: Faculty participant.

Committee Appointments at Ferris State University:

Department:

Department Planning Committee (2011-present) – currently serving as chair
 Department Awards Committee (2012-present)
 Geneticist Faculty Search Committee (2012-2013)
 Microbiologist Faculty Search Committee (2010-2011)
 Developmental Biologist Faculty Search Committee (2007-2008)
 Department Curriculum Committee (2007-2009)
 Department Assessment Committee (*ad hoc*) (2009-present) – currently serving as chair

College:

College of Arts and Sciences Dean Search Committee (2011-2012)
 College of Arts and Sciences Planning Committee (2011-present)
 College of Arts and Sciences Assessment Committee (2012-present, current chair)
 College of Arts and Sciences Assessment Committee (2007-2013)

University:

Vice-President of Student Affairs Search Committee (2013, co-chair)
 National Competitive Scholarships Committee (2006-2007)
 Human Subjects Review Committee (2006-2013)
 General Education Scientific Understanding Committee (2008-2010)
 University Assessment Committee (2012-present, current chair)

Directed Student Research at Ferris State University:

<u>Student Name</u>	<u>Program</u>	<u>Tenure</u>	<u>Current Position</u>
1. Peter Wissink	Pre-medicine	2013	Calvin College
2. Jennifer Franklund	Biology	2012	Southern Illinois Univ.
3. Tracy Elliott	Pre-Dentistry	2011	Student at FSU
4. Ewa Slotwinski	Biotechnology	0211	Student at FSU
5. Alicia Weeks	MSTS	2011	High school
6. Jason Workman	Biotechnology	2010	Student at FSU
7. Allison Wyatt	Biotechnology	2010	Student at FSU
8. Jeremy Way	Pre-Medicine	2009	Student at FSU
9. Akshay Chellappa	Biotechnology	2009	Student at FSU
10. Erika Dittmar	Pre-Medicine	2008	USDA Forest Service
11. Ashley Pointdexter	MSTC	2008	High school
12. Bridgette Buse	MSTC	2008	High school
13. David Bosak	College of Optometry	2008	DO program
14. Brad Christopherson	College of Optometry	2008	DO program

I directed an additional 30 students while a faculty member at California State University, Long Beach

Selected Professional Development Training Attended:

New Faculty Orientation Week
Using RSS Feeds for Teaching or Research
Ways to Conduct & Manage Class Discussions
CAS Outcomes-Assessment
Motivating Students
McGraw-Hill Microbiology Symposium, Atlanta, GA
Managing a College Classroom--Control, Community and Discipline
SLI 2007, Creating a Learning-Centered University
Conducting Effective Class Discussion
Faculty Writing Institute
Online Instructor Certification
2008 NC State Undergraduate Assessment Symposium
Making a Difference in Student Learning: Assessment as a Core Strategy, HLC (2009)
New Faculty Orientation Week, Planning session (2011 and 2012)
Inquiries into Teaching and Learning (2010 and 2011)
Lilly North Conference, Traverse City, MI. 2007, 2008, 2009, 2010
IUPUI Assessment Institutes (2012 and 2013)
North Central Association – HLC (2012 and 2013)
HLC-NCA Assessment Academy (2013)
Improving the Validity and Reliability of Your Tests or Quizzes (2010)
Planning an Assessment of Student Learning (2011)
Inquiries into Teaching and Learning dinner (2011)
Welcome Back! Faculty Professional Development Day (2012 and 2013)
Evidence-Based Teaching: A Journal Club on Research in Teaching and Learning (2011 and (2012)
Best Practices Workshop (2012)
Quality Matters Training (2012)
Blackboard Learn 9.1 Training (both modules 1 and 2) (2012)

Abstracts:

1. Creating Institutional Processes that Enhance Faculty Engagement in Learning Assessment. HLC-NCA Assessment Workshop. 2013.
2. **Franklund, C.V.** Facilitating Collaborative Learning with Google Apps. Lilly Conference on College and University Teaching. 2010.
3. Woodman, H., **C.V. Franklund**, and C. Conley-Sowels. Rubrics + Readability = Retention -- The 3 Rs: Making the Connection. Lilly Conference on College and University Teaching. 2010.
4. Woodman, H., **C.V. Franklund**, and C. Conley-Sowels. Rubrics Rock! Using Rubrics to Assess Authentic Student Learning. Texas A&M Assessment Conference. 2010.
5. Woodman, H., **C.V. Franklund**, and C. Conley-Sowels. Rubrics Rock! Rubistar and Beyond: Rubrics to Use Monday Morning. Lilly Conference on College and University Teaching. 2009.
6. **Franklund, C.V.** Using Computer-Assisted Formative Feedback to Enhance Learning in an Introductory-Level Microbiology Course. Lilly Conference on College and University Teaching. 2008.
7. Nolan, D., H. Abdelhadi, and **C.V. Franklund**. Cloning and Characterization of the *recA* Gene from *Fusobacterium nucleatum* 10953. National Meeting of the American Society for Microbiology. 2003
8. Raps, A., and **C.V. Franklund**. Cloning and Analysis of a Lipopolysaccharide Core Gene from *Fusobacterium nucleatum*. National Meeting of the American Society for Microbiology. 2002.

9. Raps, A., and **C.V. Franklund**. Cloning and Analysis of a Lipopolysaccharide Core Gene from *Fusobacterium nucleatum*. Southern California Branch Meeting of the American Society for Microbiology. 2001.
10. Krebs, T., **C.V. Franklund**, and J.B. Goldberg. Function Analysis of Enzymes in Lipopolysaccharide Biosynthesis. Annu. Meet. of the Virginia Branch of the Amer. Soc. for Microbiol. 1999. (Honorable Mention).
11. Dean, C.D., **C.V. Franklund**, J.D. Retief, M.J. Coyne, Jr., K. Hatano, D.J. Evans, G.B. Pier, and J.B. Goldberg. Sequence Analysis of the O Antigen Locus from the Serogroup O11 *Pseudomonas aeruginosa* Strain PA103. Abstr. Annu. Meet Am. Soc. Microbiol. 1998.
12. **Franklund, C.V.** and J.B. Goldberg. Cloning and Characterization of *gltX* from *Pseudomonas aeruginosa*. Abstr. Annu. Meet. Am. Soc. Microbiol. 1998.
13. **Franklund, C.V.** and R.J. Kadner. Regulation of *btuB* in *Escherichia coli*. Abstr. Annu. Meet. Am. Soc. Microbiol. 1996.
14. Baron, S. F., **C. V. Franklund**, and P. B. Hylemon. Cloning, Sequencing, and Expression of the Gene coding for 7 α -hydroxysteroid dehydrogenase from *Eubacterium* sp. VPI 12708. Southeastern Microbial Physiology and Genetics Conference 1994.
15. Baron, S. F., **C. V. Franklund**, and P. B. Hylemon. Characterization of the Bile Acid-Inducible NADH:Flavin Oxidoreductase Gene from *Eubacterium* sp. VPI 12708. Annu. Meet. of the Virginia Branch of the Am. Soc. for Microbiol. 1993.
16. Baron, S. F., **C. V. Franklund**, and P. B. Hylemon. Characterization of the Bile Acid-Inducible NADH:Flavin Oxidoreductase Gene from *Eubacterium* sp. VPI 12708. Abstr. Annu. Meet. Am. Soc. Microbiol. 1993.
17. **Franklund, C.V.**, and P.B. Hylemon. Purification and Characterization of a 7 α - Hydroxysteroid Dehydrogenase from *Eubacterium* sp. Strain VPI 12708. Annu. Meet. of the Virginia Branch of the Am. Soc. for Microbiol. 1989. (Outstanding Speaker Award)
18. **Franklund, C.V.**, and P.B. Hylemon. Evidence for a Multiprotein Complex Containing the Cholera-Inducible NADH:Flavin Oxidoreductase from *Eubacterium* sp. Strain VPI 12708. Abstr. Ann. Meet. Am. Soc. Microbiol. 1988.
19. **Franklund, C.V.**, and P.B. Hylemon. Evidence for a Multiprotein Complex Containing the Cholera-Inducible NADH:Flavin Oxidoreductase from *Eubacterium* sp. Strain VPI 12708. Annu. Meet. of the Virginia Branch of the Amer. Soc. for Microbiol. 1988.
20. **Franklund, C.V.**, and T.L. Glass. Glucose Uptake by the Cellulolytic Rumen Anaerobe *Bacteroides succinogenes* S85. Annu. Meet. of the North Dakota Branch Am. Soc. Microbiol. 1986.
21. **Franklund, C.V.**, and T.L. Glass. Glucose Uptake by the Cellulolytic Rumen Anaerobe *Bacteroides succinogenes* S85. Abst. Ann. Meet. Am. Soc. Microbiol. 1986.

Peer Reviewed Publications:

1. Pandak, W.M., P. Bohdan, **C. Franklund**, D.H. Mallonee, G. Eggertsen, I. Björkhem, Z.R. Vlahcevic, and P.B. Hylemon. Expression of Sterol 12 α -Hydroxylase Alters Bile Acid Pool Composition in Primary Rat Hepatocytes and *In Vivo*. *Gastroenterology* **120**:1801-9 (2001).
2. Dean, C.D., **C.V. Franklund**, J.D. Retief, M.J. Coyne, Jr., K. Hatano, D.J. Evans, G.B. Pier, and J.B. Goldberg. Characterization of the O Antigen Locus from the Serogroup O11 *Pseudomonas aeruginosa* Strain PA103: Identification of the O Antigen Polymerase Gene. *J. Bacteriol.* **181**: 4275–4284 (1999).
3. **Franklund, C.V.**, and J.B. Goldberg. Cloning and Characterization of *gltX* from *Pseudomonas aeruginosa* PAK. *J. Bacteriol.* **181**:3582-3586 (1999)

4. **Franklund, C.V.** and R.J. Kadner. Multiple Transcribed Elements Control Expression of the *Escherichia coli* *btuB* Gene. *J. Bacteriol.* **179**:4039-4042 (1997)
5. Aitchison, Paul M., Spencer B. Gay, **C.V. Franklund**, and J.J. Jackson. A Web-based End of Rotation Quiz. *Acad. Radiol.* **4**: 860-61 (1997).
6. **Franklund, C.V.**, S.F. Baron, and P.B. Hylemon. Characterization of the *baiH* Gene Encoding a Bile Acid-Inducible NADH:Flavin Oxidoreductase from *Eubacterium* sp. Strain VPI 12708. *J. Bacteriol.* **175**:3002-3012 (1993).
7. Baron, S.F., **C.V. Franklund**, and P.B. Hylemon. Cloning, Sequencing, and Expression of the Gene Coding for Bile Acid 7-Hydroxysteroid Dehydrogenase from *Eubacterium* sp. Strain VPI 12708. *J. Bacteriol.* **173**:4558-4569 (1991).
8. Hylemon, P.B., P.D. Melone, **C.V. Franklund**, E. Lund, and I. Björkhem. Mechanism of Intestinal 7-dehydroxylation of Cholic Acid: Evidence that Allo-Deoxycholic Acid is an Inducible Side-Product. *J. Lipid Res.* **32**: 89-96 (1991).
9. **Franklund, C.V.**, P. de Prada, and P.B. Hylemon. Purification and Characterization of a Microbial, NADP-Dependent Bile Acid 7-Hydroxysteroid Dehydrogenase. *J. Biol. Chem.* **265**: 9842-9849 (1990).
10. White, W.B., **C.V. Franklund**, J.P. Coleman, and P.B. Hylemon. Evidence for a Multigene Family Involved in Bile Acid 7-Dehydroxylation in *Eubacterium* sp. Strain VPI 12708. *J. Bacteriol.* **170**: 4555-4561 (1988).
11. **Franklund, C.V.**, and T.L. Glass. Glucose Uptake by the Cellulolytic Rumenal Anaerobe *Bacteroides succinogenes*. *J. Bacteriol.* **169**: 500-506 (1987).

Non-Peer Reviewed Publications:

1. Lathrop, J.T., **C.V. Franklund** and R.J. Kadner. Communication Between Membranes in TonB-Dependent Transport Across the Bacterial Outer Membrane. In W.N. Kohings, H.R. Kaback and J.S. Lolkema (eds). *Handbook of Biol. Phys.* Vol. 2. Elsevier Press (1996).
2. **Franklund, C.V.** *Microbiology*. Chancellors Learning Systems, Fishers, IN. (2004).

DAVID M. GRIFFITH

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ASC 2004
Ferris State University
Big Rapids, MI 49307
(231) 591-5855
davidgriffith@ferris.edu

521 Linden St
Big Rapids, MI
49307

EDUCATION

Ph.D. in Biology, University of Illinois at Chicago, 1990
Concentration: Evolution and Environment
Dissertation: Ecology and evolution of predatory behavior in the carabid cave beetle *Neaphaenops tellkampfi*

B.S. in Biology, Hillsdale College, Hillsdale, Michigan, 1983

PROFESSIONAL EXPERIENCE

Visiting Assistant Professor of Biology, Ferris State University, Big Rapids, MI.	2003-present
Substitute Teacher and stay at home dad, Pike County (606) 433-9300 and Pikeville Independent Boards of Education (606) 432-8161.	1997-2003
Adjunct Professor of Biology, Prestonsburg Community College, Prestonsburg, Kentucky	1996-1997
Assistant Professor of Biology, Pikeville College, Pikeville, Kentucky	1993-1996
University Lecturer in Biology, Governors State University, University Park, Illinois	1990-1993

COURSES TAUGHT

Ferris State University: Biol 121: General Biology (majors), Biol 205: Human Anatomy & Physiology. Biol 344: Entomology; Biol 442: Ecology

Pikeville College: Human Anatomy, Ecology, Genetics, Principles of Biology I and II for majors, Introduction to Biology (non-majors), Invertebrate Zoology, Special Topics (Cave Ecology), and Comparative Anatomy.

Governors State University: General Biology, Human Physiology (a two semester sequence for Nursing majors), General Zoology, Human Genetics (non-majors), and Ecology.

Prestonsburg Community College: Human Anatomy and Physiology

PUBLICATIONS

Griffith, D. and T. Poulson, 1993. Mechanisms and consequences of intraspecific competition in a carabid cave beetle. *Ecology* **74**: 1373-1383

Griffith, D. and J. Brown. 1992. A null model of patch assessment with an application to a carabid cave beetle. *Oikos* **64**: 523-526.

Griffith, D. 1991. The effects of substrate moisture on survival of adult cave beetles (*Neaphaenops tellkampfi*) and cave cricket eggs (*Hadenoeecus subterraneus*) in a sandy deep cave site. *Bulletin of the National Speleological Society* **53**: 98-103.

Griffith, D. 1990. Laboratory studies of predatory behavior in two subspecies of the carabid cave beetle *Neaphaenops tellkampfi*. *International Journal of Speleology* **19**: 29-38.

GRANTS

National Speleological Society Grant: Ecology of a terrestrial cave community; January-December 1986. \$140.00

Karst Research Grant, Cave Research Foundation: The dynamics of a terrestrial cave predator-prey system: abiotic and biotic interactions; January-December 1987. \$1,000.00

University of Illinois at Chicago Travel Grant, August 1987. \$200.00

PRESENTATION OF PAPERS

“Ecology of a Terrestrial Cave Community.” Presented at the Sigma Xi Graduate Student Forum, UIC, March, 1986.

“The Dynamics of a Terrestrial Cave Predator-prey System: Biotic and Abiotic interactions.” Presented to the UIC Committee on Evolutionary Studies, April, 1986.

“Coevolution in a Cave Predator-Prey system.” Presented at the National Speleological Society Annual Convention, Marquette, Michigan, June, 1987.

“Measuring Patch Assessment by a Carabid Cave Beetle: A Model and a Test.” Presented at the 76th Annual Ecological Society of America meeting, San Antonio, Texas, August, 1991.

PUBLISHED ABSTRACTS

Griffith, D. 1988. Evolutionary and ecological interactions between the cave beetle *Neaphaenops tellkampfi* (Coleoptera: Carabidae) and the cave “cricket” *Hadenoeus subterraneus* (Orthoptera: Rhaphidophoridae) in Mammoth Cave National Park. Abstracts of the fourteenth annual scientific research meeting, Great Smoky Mountains National Park, May 12-13, 1988.

PUBLICATIONS IN NON-REFEREED JOURNALS

Griffith, D. 2004. Mark-recapture studies of cave beetles: a review and new methods. Cave Research Foundation Annual Report.

Griffith, D. 1985. Investigation of a predator-prey system found in Great Onyx Cave, Kentucky. Cave Research Foundation Annual Report.

Poulson, T., D. Griffith, and K. Schmidt. 1991. Energetic advantage of interspecific competition in *Neaphaenops t. tellkampfi*. Cave Research Foundation Annual Report.

COMMITTEE WORK

Governors State University: Division of Science Safety Committee (we developed a new set of rules and guidelines for safety in the science laboratories)

Pikeville College: Special Events Committee

PERSONAL DATA

Married to Jeannette; Children: Joseph and Matthew. Member of Tri-Beta Biology Honor Society, Captain of Hillsdale Soccer Club, Life Scout, Youth Soccer Coach for the Pikeville Area YMCA, 1993-2003.
JV Soccer Coach and Assistant Varsity Soccer Coach, Reed City High School, 2006
Hobbies: Chinese Philosophy and Language (Mandarin); Soccer, Nature Photography

PROFESSIONAL ASSOCIATIONS

Michigan Entomological Society
National Speleological Society
Human Anatomy & Physiology Society

REFERENCES

Dr. Robert Friar
Professor of Biology
Ferris State University
ASC 2019
Big Rapids, MI 49307
231-591-2542

Dr. James Hoerter
Professor of Biology
Ferris State University
ASC 3087
Big Rapids, MI 49307
231-591-2563

Mr. John Johnson
Adjunct Instructor
Biology Department
Ferris State University
Big Rapids, MI 49307
231-591-5849

Dr. Scott M. Herron: Curriculum Vitae

Scott M. Herron

Associate Professor of Biology, Ferris State University
820 Campus Dr. ASC 2017, Big Rapids, Michigan 49307-2225
Phone 231-591-2087; fax 231-591-2540, herrons@ferris.edu

Education:

- 2002 **Southern Illinois University**, Carbondale, IL - **Ph.D., Plant Biology**
Honor: Phi Kappa Phi, GPA 4.0
Specialization: Ethnobotany, Plant Taxonomy, and Cultural Anthropology
Dissertation: Ethnobotany of the Anishinaabek Northern Great Lakes Indians
Advisor: Dr. Donald Ugent
- 1998 **Grand Valley State University**, Allendale, MI - **B.S., Biology & Botany.**
Honor: Cum Laude, GPA: 3.80

Botanical Work Experience

- 1997 Frederik Meijer Botanical Garden; *Horticulture Intern.* Grand Rapids, Michigan.
1996-97 The GVSU Arboretum; *Arborist Intern.* Office of the Vice President for Finance and Administration, Grand Valley State University.
1996 Motman's Greenhouse; *Horticultural Assistant.* Grand Rapids, Michigan.

Teaching Appointments:

- 2008-10 ***Visiting Associate Professor;*** University of Michigan Biological Station, Pellston, Michigan. College of Literature, Science and the Arts, University of Michigan
2008- ***Tenured Associate Professor;*** Biological Sciences Department. Ferris State University, Big Rapids, Michigan.
2007- ***Associate Professor;*** Biological Sciences Department. Ferris State University, Big Rapids, Michigan.
2004-07 ***Assistant Professor;*** Biological Sciences Department. Ferris State University, Big Rapids, Michigan.
2004-08 ***Visiting Assistant Professor;*** University of Michigan Biological Station, Pellston, Michigan. College of Literature, Science and the Arts, University of Michigan
2003 ***Lecturer of Ethnobotany;*** University of Michigan Biological Station, Pellston, Michigan. Department of Ecology and Evolutionary Biology, University of Michigan
2002-04 ***Adjunct Assistant Professor;*** Biological Sciences Department. Ferris State University, Big Rapids, Michigan.
2001-02 ***Part-time Biology Instructor;*** Life Science Department. John A. Logan College, Carterville, Illinois.
2001 ***Co-coordinator;*** Economic Botany Seminar Series with Dr. Don Ugent. Department of Plant Biology. Southern Illinois University, Carbondale, Illinois.
1997-98 ***Supplemental Instructor, Peer Mentor;*** Minority Science Education Center. Office of Minority Affairs. Grand Valley State University, Allendale, Michigan.

Courses Taught:

- 2009-10:
Integrated Ecology (INBI 303): 4 credits- 1 lecture and 1 lab section (Grand Rapids)
Basic Botany (Biology 113): 3 credits- 1 lecture and 1 lab section
Microbial Ecology (Biology 218): 3 credits- 1 lecture and 1 lab section
Plant Propagation & Horticulture Seminar (Horticulture 152 & 250): 2+1 credits- 1 lecture and 1 lab section, 1 seminar section
Ethnobotany (EEB 455): 5 credits- Lecture/Lab/Field Course (UMBS Spring Term)
- 2008-09:
Integrated Ecology (INBI 303): 4 credits- 1 lecture and 1 lab section
Basic Botany (Biology 113): 3 credits- 1 lecture and 1 lab sections

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- Microbial Ecology (Biology 218): 3 credits- 1 lecture and 1 lab section
Plant Propagation & Horticulture Seminar (Horticulture 152 & 250): 2+1 credits-
1 lecture and 1 lab section, 1 seminar section
Ethnobotany (EEB 455): 5 credits- Lecture/Lab/Field Course (UMBS Spring Term)
- 2007-08:
Integrated Ecology (INBI 303): 4 credits- 1 lecture and 1 lab section
Basic Botany (Biology 113): 3 credits- 1 lecture and 1 lab sections
Microbial Ecology (Biology 218): 3 credits- 1 lecture and 1 lab section
Plant Propagation & Horticulture Seminar (Horticulture 152 & 250): 2+1 credits-
1 lecture and 1 lab section, 1 seminar section
Ethnobotany (EEB 455): 5 credits- Lecture/Lab/Field Course (UMBS Spring Term)
- 2006-07:
Integrated Ecology (INBI 303): 4 credits- 1 lecture and 1 lab section
Basic Botany (Biology 113): 3 credits- 1 lecture and 2 lab sections
Microbial Ecology (Biology 218): 3 credits- 1 lecture and 2 lab sections
Plant Propagation & Horticulture Seminar (Horticulture 152 & 250): 2+1 credits-
1 lecture and 1 lab section, 1 seminar section
Ethnobotany (EEB 455): 5 credits- Lecture/Lab/Field Course (UMBS Spring Term)
- 2005-06:
Non-Majors Biology (Biology 103): 4 credits- 1 lecture and 3 lab sections
Basic Botany (Biology 113): 3 credits- 1 lecture 2 lab sections
Microbial Ecology (Biology 218): 3 credits- 1 lecture and 2 lab sections
Plant Propagation (Horticulture 152): 2 credits-1 lecture and 1 lab section
Ethnobotany (EEB 455): 5 credits- Lecture/Lab/Field Course (UMBS Spring Term)
- 2004-05:
Non-Majors Biology (Biology 103): 4 credits- 1 lecture and 3 lab sections
Basic Botany (Biology 113): 3 credits- 1 lecture 2 lab sections
Microbial Ecology (Biology 218): 3 credits- 1 lecture and 2 lab sections
Plant Propagation (Horticulture 152): 2 credits-1 lecture and 1 lab section
Ethnobotany (EEB 455): 5 credits- Lecture/Lab/Field Course (UMBS Spring Term)
- 2003-04:
Non-Majors Biology (Biology 103): 4 credits- 1 lecture and 3 lab sections
Microbial Ecology (Biology 218): 3 credits- 1 lecture and 2 lab sections
Non-Majors Biology (Biology 103): 4 credits- 1 lecture and 2 lab sections
Ethnobotany (EEB 455): 5 credits- Lecture/Lab/Field Course (UMBS Spring Term)
- 2002-03:
Non-Majors Biology (Biology 103): 4 credits- 1 lecture and 3 lab sections
Majors Biology (Biology 121): 4 credits- 1 lab section
Non-Majors Biology (Biology 103): 4 credits- 1 lecture and 2 lab sections
Microbial Ecology (Biology 218): 3 credits- 1 lecture and 1 lab section
Ethnobotany (EEB 455): 5 credits- Lecturer/TA (UMBS Spring Term)
- 2001-02:
Non-Majors Biology (Biology 100): 3 credit hours- 1 section lecture and lab
Human Anatomy and Physiology (Biology 106): 4 credit hours- 1 section lecture and lab
Non-Majors Biology (Biology 100): 3 credit hours- 2 lecture and 2 lab sections

Grants

- 2010 Student Research Grant with Lauren Mitten and Joshua Byers. FSU College of Arts and Sciences- \$1000 (Pending)
- 2010 Lower Michigan Wild Rice Camp (workshop) September 2010. Ferris Foundation Exceptional Merit Grant, \$5860
- 2010 Travel and Presentations to Ecological Society of America's Annual Meeting, Pittsburgh, Pennsylvania, August 1-6, 2010. Timme Travel Grant, \$850
- 2009 Lower Michigan Wild Rice Camp (workshop) September 10-13. Great Lakes Regional Water Program. Co-PI with Patrick Robinson, University of Wisconsin-Extension, Green Bay, and Great Lakes Regional Water Program, \$6000

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- 2009 Faculty and Staff Diversity Mini-Grant (lead investigator), Raising Expectations with Handicapped Accessible Raised Bed Gardens, \$4000
- 2009 Biology Department Travel Grant-Michigan Academy Annual Meeting, Presentation by Dr. Herron's research team of undergraduates: Crystal Phillips, Chris LaVelle, Michael Reynolds, and Lauren Mitten, \$300
- 2008 Student Research Grant-Crystal Phillips, Chris LaVelle, Michael Reynolds, FSU College of Arts and Sciences- \$2000
- 2007 Great Lakes Regional Water Program; Wild Rice Camp (White Earth, MN) Travel Grant, University of Wisconsin Extension, \$750
- 2007 Political Engagement Project Resource Grant (Integrated Ecology course), FSU- \$242
- 2006 Political Engagement Project Resource Grant (Integrated Ecology course), FSU- \$250
- 2006 Special Opportunity Grant for Wild Rice Coalition & Conference, Great Lakes Aquatic Habitat Network & Fund, Tipp of the Mitt Watershed Council, Petoskey, Michigan- \$400
- 2005-06 Environmental Leadership Program Activity Fund award recipient-\$6000
- 2006 Professional Development Grant, FSU Academic Senate; Wild Rice Restoration and Preservation: Professional Development in Ecology-\$1213
- 2006 Student Research Grant-Elizabeth Mansfield, FSU College of Arts and Sciences- \$500
- 2005 Student Research Grant-Melissa Holman, FSU College of Arts and Sciences- \$500
- 2002 Travel Grant from Dean of Arts and Science to present a paper at Great Lakes United Indigenous Peoples Hub Workshop on Indigenous Organizational Development sponsored by the Great Lakes Aquatic Habitat Network and Fund, Sugar Island Cultural Camp, Sault Ste. Marie, MI.-\$500
- 2000 James E. Ozment Achievement Award in Natural History. Southern Illinois University Foundation and the College of Science.-\$600
- 1998 Michigan Botanical Club Annual Spring Foray Award. White Pine Chapter Foundation. - \$1000
- 1997 Salski Award Grant. Department of Biology, Grand Valley State University.-\$500

Research Fellowships & Professional Awards:

- 2010 Cambridge Who's Who VIP Member, Executive Professionals
<http://www.cambridgewhoswho.com/Members/MI/Scott-Herron-983839.html>
- 2008-10 Carnegie/AASCU Scholar of Political Engagement
- 2006- Golden Key International Honor Society Honorary Member
- 2005- Environmental Leadership Program, senior fellow
- 2004-05 Environmental Leadership Program, national fellow
- 2005-06 Featured Teacher in 2005-06 Edition of Marquis Who's Who in Science and Engineering
- 2001-02 Dissertation Research Assistantship (DRA) Fellowship. *Graduate School*, Southern Illinois University-Carbondale.
- 1998-01 Illinois Minority Graduate Incentive Program (IMGIP) Fellowship. *State of Illinois*, Southern Illinois University-Carbondale.
- 1998 Thomas M. Seykora Award for Outstanding Volunteer Contribution. *Grand Valley State University*
- 1996-97 Outstanding Biology Student Awards. *Grand Valley State University*.

Professional Development Activities:

- 2009 Ethnobiology & Wild Rice Presentation. Protectors of the Earth Youth Camp. Seventh Generation Cultural Center. Saginaw Chippewa Indian Tribe of Mt. Pleasant. July 29th.
- 2008 Political Engagement Project Meeting (national report to PEP and NY Times) at New York Times Headquarters, Manhattan, NY, January 25, 2008. Ferris report to PEP, NYT given with co-authors: Anthony Baker and Connie Meinholdt
- 2006-10 *Native Wild Rice Coalition, Co-Chair*; Regional coalition of governmental agencies, universities, tribal community colleges, graduate student researchers, tribal community members, non-profits, tribal governments and community groups funded through grants and administrated through the University of Wisconsin Extension through the Great Lakes Regional Water Program. Co-Chair, Patrick Robinson, UWEX-Green Bay.

Dr. Scott M. Herron: Curriculum Vitae

- 2007 Traditional Wild Rice Camp, August 30-September 2. White Earth, Minnesota. Hosted by the Sah-kay-tay Indigenous Preservation Society.
- 2007 *Native Wild Rice Coalition*, Strategic Planning Meeting, March 6; College of Menominee Nation, Keshena, Wisconsin.
- 2006 Pere Marquette Sea Lamprey Symposium on October 14, 2006 at West Shore Community College.
- 2006 56th Annual Meeting of the Eastern Region of the International Plant Propagators Society on October 4-7, 2006 at the Amway Grand Plaza Hotel in Grand Rapids, Michigan.
- 2006 *Wild Rice Conference brochure and website*; Design and development with Patrick Robinson and Rebecca Power-University of Wisconsin Extension; summer 2006. <http://www.uwex.edu/ces/regionalwaterquality/wildrice/index.htm>
- 2006 *Northern Michigan University Special Topics Course Proposal, Manoomin Niikaanisag: Wild rice and all its relations*; 3/13/06; approved as NAS 298 for 3 credits through the NMU Center for Native American Studies; Instructor Donald Chosa; 9 students enrolled and completed the class held at Wild Rice Conference.
- 2005 Professional Development Plan revised for the Environmental Leadership Program.
- 2004 Professional Development Plan developed and peer reviewed for the Environmental Leadership Program.
- 2003-06 Protectors of the Earth Youth Camp executive committee: Chair of Equipment and Supplies committee (2003-2005); Member of Evaluation Team (2003-2006); Chaperone and Camp Counselor (2003-2004)

Published Papers

- 2010 Herron, S.M.; Human History (Chapter 1) in *The Changing Environment of Northern Michigan: A Century of Science and Nature at the University of Michigan Biological Station*; editors: Knute Naddelhoffer, Alan Hoag & Brian Hazlett. University of Michigan Press.
- 2009 Robinson, P., Herron, S., Power, R., and D. Zak; *A regional multicultural approach to sustaining wild rice*. *Journal of Extension*, Vol. 47 (6):1-5. http://www.joe.org/joe/2009december/pdf/JOE_v47_6iw6.pdf
- 2003 Herron, S.M.; Catnip, *Nepeta cataria*, a morphological comparison of mutant and wild type specimens to gain an ethnobotanical perspective. *Economic Botany*, Vol. 57(1): 135-142.
- 2003 Herron, S.M.; American Indian use of the natural resources in the Muskegon River watershed (Pre-contact). *River View: News from the Muskegon River Watershed Assembly*. Vol. 1(8): 3.
- 2000 Herron, S.M.; Ethnobotanical Crisis as the US Government Attempts to Utilize Biowarfare to Unwisely Combat the War on Drugs. *Ethnobotanical Leaflets*, Spring-Summer 2000, www.siu.edu/~ebl/scott.htm.
- 1999 Herron, S.M.; The Natural History of Mahogany. *Ethnobotanical Leaflets*, Spring 2000, www.siu.edu/~ebl/leaflets/mahogany.htm.
- 1998 Herron, S.M.; Medicinal Plants Usage of the Anishinaabek Great Lakes Indians. Ningiziwaush Press, Detroit, Michigan.
- 1996 Herron, S.M. and M. L. Hulls; *Within the Depths of Peyote*. A video produced, edited, filmed, and narrated by Scott Herron and Michelle Hulls. SHMH Productions, Allendale, Michigan.

Published Abstracts

- 2010 Dr. Scott Herron, Josh Byers, Brenna Chencinski, Andrea Lodholtz, Lauren Mitten, Nicole Patrosso, Michael Reynolds, and Sarah Thompson. *The Importance of Wild Rice Camps for the Continued Research and Harvesting of Wild Rice in Lower Michigan*. Michigan Academician: Papers of the Michigan Academy of Science, Arts and Letters. Volume XXXX (4). http://webcache.googleusercontent.com/search?q=cache:usNE3pJXT_cJ:themichiganacademy.org/Content/Documents/Document.ashx%3FDocId%3D115280

Dr. Scott M. Herron: Curriculum Vitae

- 2009 Phillips, C. and S. Herron. COS 97-10: *Wild Rice population resiliency in response to fungal smut pathogen*. 94th Ecological Society of America Annual Meeting. <http://esameetings.allenpress.com/2009/Paper16743.html>
- 2009 Mitten, L. and S. Herron. COS 94-3: *Viability and germination studies to elucidate the dynamics of wild rice restoration from northwestern to southeastern populations in the Great Lakes region*. 94th Ecological Society of America Annual Meeting. <http://esameetings.allenpress.com/2009/Paper18425.html>
- 2009 Mitten, D. and S. Herron. COS 5-4 *The politics of green: Civically engaging undergraduate students*. 94th Ecological Society of America Annual Meeting. <http://esameetings.allenpress.com/2009/Paper18442.html>
- 2009 Herron, S. M., P. Robinson, and R. LaBine. COS 115-2 *Incorporating traditional ecological knowledge into wild rice research, education and management efforts in the Great Lakes region*. 94th Ecological Society of America Annual Meeting. <http://esameetings.allenpress.com/2009/Paper17575.html>
- 2009 Crystal Phillips, Michael Reynolds, Chris LaVelle, Lauren Mitten, and Scott M. Herron. *Wild Rice Viability and Germination Testing to Compare Southern and Northern Ecotypes of Northern Wild Rice, Zizania aquatica Var. angustifolia, for Restoration Potential in Michigan*. Michigan Academician: Papers of the Michigan Academy of Science, Arts and Letters. Volume XXXIX (4):263-264. <http://www.thefreelibrary.com/Botany+and+plant+ecology.-a0219833051>
- 2008 Herron, S. M. *The use of ecological Detrended Correspondence Analysis (DCA) in evaluating the dissemination of ethnobotanical knowledge within the Anishinaabek Great Lakes Indian culture*; Michigan Academician, Volume XXXVII(4). *A Published Abstract* from presentation at Michigan Academy of Science, Arts, and Letters Annual Meeting; *Botany and Plant Ecology Section*, at Oakland University on March 3, 2006
- 2008 Herron, S., P. Robinson, E. Hoagland, W. Paulson, P. David, D. M. Zak, and R. Power. PS 87-151: *Native Wild Rice Coalition's cultural and ecological restoration*. 93rd Ecological Society of America Annual Meeting. <http://eco.confex.com/eco/208/techprogram/P14632.HTM>
- 2008 Herron, Scott. *Coalition Building as a Model to Address Regional Environmental Issues in Restoration Ecology: A Case Study to Sustain Wild Rice*. Michigan Academician: Papers of the Michigan Academy of Science, Arts and Letters. Volume XXXVIII (4):16. http://goliath.ecnext.com/coms2/gi_0199-10351687/Botany-plant-ecology.html

University Service Load:

- 2009-11 Biology Curriculum Committee
- 2008-09 American Democracy Project (ADP)-Political Engagement Project (PEP) Council
- 2008-11 College of Arts and Sciences Diversity Committee
- 2007-10 Senate Diversity Committee, Chair (2007-2009)
- 2007-08 Equity Conference Planning Committee, hosted by FSU March 30-April 2, 2008.
- 2004-10 Biology Education Coordinator and Advisor
- 2007-09 Diversity Planning Committee, University-wide committee chaired by Dr. David Pilgrim.
- 2006-07 University Chief Diversity Officer hiring committee (hired David Pilgrim).
- 2005-10 College of Arts and Sciences' Education Program Coordinators (Secondary Education) committee
- 2005-06 Diversity Incidents Team, FSU campus wide committee advocating justice, equality, and equity within the campus community 2005-2006
- 2005 Program Review Panel Member (Elementary Education BS of Science Degree)
- 2005 Program Review Panel Member (Ornamental Horticulture Technology AAS Degree)
- 2004-05 College of Arts and Sciences' Integrated Science Teaching Minor (Elementary Education) committee
- 2004 Biology Department's Lab Prep Supervisor hiring committee (hired Andrea Bruziaz)
- 2004-05 Biology Department's Vertebrate Biologist hiring committee (hired Dr. Joseph Lipar)
- 2004-05 Biology Department's Cell and Molecular Biology hiring committee (hired Dr. Brad Isler)
- 2004-05 Biology Department's General Biology hiring committee (hired Dr. Paul Klatt)
- 2004-07 Biology Department Planning Committee

Dr. Scott M. Herron: Curriculum Vitae

- 2003, 06 Biology Department Microscope Committee
2003-06 Student Affairs/Academic Affairs Divisions Hispanic (Minority) Recruitment Initiative
2002-04 Office of Minority Student Affairs - American Indian consultant and advisor,
2002-06 Rankin Center Art Gallery – American Indian art acquisition project
2002-05 American Indian and ethnic minority recruiter; Admissions and Records under Assistant Director Cathryn Claerhout and Vice President Dan Burcham.

Current Professional and Academic Association Memberships:

- 2005-10 Ecological Society of America; *Traditional Ecological Knowledge section member; Plant Population Ecology Section member; Education Section member; Environmental Justice section member; Microbial Ecology Section member*
2004-10 Michigan Academy of Science, Arts, and Letters; *Botany and Plant Ecology Section Vice-Chair (2005-07); Co-Chair (2007-09).*
2000-10 Society of Ethnobiology.
1998-10 Society for Economic Botany; member- *Student Advisory Committee member (1999-2002)*
2003-05 American Association of Plant Taxonomists
2001-03 Phi Kappa Phi Honor Society
2001-03 Society of Ecological Anthropology
1998-02 WDBX 91.1 FM-Carbondale, IL – “Native Voices”- American Indian Radio Show; *Co-host and co-producer.*
1998-00 American Indian Association; *Vice President.* Southern Illinois University.
1994-98 Native American Student Association; *President, Senior Advisory Council Member, Director of Subcommittees.* Grand Valley State University.
1995-98 Minority Student Organization Council; *Board Member.* Grand Valley State University.

Professional Presentations:

- 2010 *Translating Wetland Field Experiences into Classrooms at Get Wet and Wild: Aquatic Academy for Teachers.* Muskegon River Watershed Assembly, Camp Newaygo <http://www.mrwa.org/repository/pdf/brochure-2010.pdf> (workshop leader).
2010 Dr. Scott Herron, Josh Byers, Brenna Chencinski, Andrea Lodholtz, Lauren Mitten, Nicole Patrosso, Michael Reynolds, and Sarah Thompson 2010. *The Importance of Wild Rice Camps for the Continued Research and Harvesting of Wild Rice in Lower Michigan.* Michigan Academy of Science, Arts and Letters: Botany and Plant Ecology Section, Calvin College (oral).
2009 Phillips, C. and S. Herron. COS 97-10: *Wild Rice population resiliency in response to fungal smut pathogen.* 94th Ecological Society of America Annual Meeting. (oral).
2009 Mitten, L. and S. Herron. COS 94-3: *Viability and germination studies to elucidate the dynamics of wild rice restoration from northwestern to southeastern populations in the Great Lakes region.* 94th Ecological Society of America Annual Meeting. (oral).
2009 Mitten, D. and S. Herron. *COS 5-4 The politics of green: Civically engaging undergraduate students.* 94th Ecological Society of America Annual Meeting. (oral).
2009 Herron, S. M., P. Robinson, and R. LaBine. *COS 115-2 Incorporating traditional ecological knowledge into wild rice research, education and management efforts in the Great Lakes region.* 94th Ecological Society of America Annual Meeting. (oral).
2009 A hands-on learning approach-wild rice conservation, harvesting, restoration, processing, and environmental analyses research at an undergraduate teaching university in Michigan. Scott Herron, Andrea Lodholtz, Crystal Phillips, Michael Reynolds, Chris LaVelle, and Patrick Robinson. National Water Conference, St. Louis, MO (poster).
2009 Multistate Knowledge of Wild Rice Cultural and Ecological Knowledge. Scott Herron, and Patrick Robinson. National Water Conference, St. Louis, MO (oral).
2009 Wild Rice Restoration and Preservation: Michigan’s Aquatic Gardens. Michigan Wildflower Conference, Kellogg Center, East Lansing. (invited oral plenary).
2009 Wild rice viability and germination testing to compare southern and northern ecotypes of northern wild rice, *Zizania aquatica* var. *angustifolia*, for restoration potential in

Dr. Scott M. Herron: Curriculum Vitae

- 2008 Michigan. Scott Herron, Crystal Phillips, Michael Reynolds, Chris LaVelle, and Lauren Mitten. Michigan Academy of Science, Arts, and Letters, Wayne State University (oral)
2008 *Native Wild Rice Coalition's cultural and ecological restoration*. Scott Herron (presenter), Patrick Robinson, Earl Hoagland, William Paulson, Peter David, Deborah Zak, and Rebecca Power. Ecological Society of America Annual Conference, Milwaukee, Wisconsin, August 2008. (poster).
- 2008 Wild Rice Roundtable Discussion. Ecological Society of America Annual Conference, Milwaukee, Wisconsin, August 2008.
- 2008 *The role of traditional drums in the bridging of traditional ecological knowledge from the past to the future*. Scott Herron, Society for Ethnobiology Annual Conference, Fayetteville, AR, April 17, 2008. (oral).
- 2008 *Wild rice ecosystems: The place to be for bird watching and food harvesting!* Scott Herron, Michigan Botanical Club-White Pine Chapter, Grand Valley State University, March 22, 2008. (oral).
- 2007 *Sustaining wild rice through multicultural partnerships*. Patrick Robinson, Rebecca Power, and Scott Herron, Outreach Scholarship Conference, University of Wisconsin-Madison, October 8, 2007. (oral).
- 2007 *Wild Rice Coalition building in the Great Lakes*. Scott Herron and Patrick Robinson, Society of Ethnobiology 30th Annual Conference, University of California-Berkeley, CA, March 28-31, 2007. (oral).
- 2007 *Coalition building as a model to address regional environmental issues in restoration ecology: A case study to sustain wild rice*. Scott Herron and Patrick Robinson, Michigan Academy of Science, Arts, and Letters, *Botany and Plant Ecology Section*, at Ferris State University on March 9, 2007. (oral).
- 2007 *What is Ethnobotany? Career prospects and educational pathways (workshop)*; Protectors of the Earth Youth Camp; Bay Mills Community College on July 31, 2007.
- 2006 *The Journey Ahead: Building a Regional Network to Sustain Wild Rice/Manoomin (keynote address)*; Wild Rice Restoration and Preservation Conference; Lac Vieux Desert Resort and Conference Center in Watersmeet, Michigan, August 7-10, 2006.
- 2006 *Native Harvested Plants: Ethnobotany of the Lake Superior Anishinaabek (workshop)*; Protectors of the Earth Youth Camp; Bay Mills Community College on August 1, 2006.
- 2006 *Wild Rice Restoration and Coalition Building on Hamlin Lake & the Ludington Area*; Hamlin Township Hall in Ludington on June 22, 2006.
- 2006 *Wild Rice's status in Michigan & Houghton Lake: What is happening in the restoration and coalition movements*; Houghton Lake Improvement Board meeting on April 25, 2006
- 2006 *Wild Rice Restoration and Coalition Building on the Muskegon River Watershed*; Grand Valley State University Annis Water Institute in Muskegon on April 10, 2006.
- 2006 *The use of ecological Detrended Correspondence Analysis (DCA) in evaluating the dissemination of ethnobotanical knowledge within the Anishinaabek Great Lakes Indian culture*; Michigan Academy of Science, Arts, and Letters Annual Meeting; *Botany and Plant Ecology Section*, at Oakland University on March 3, 2006. (oral).
- 2005 *The role of forensic insects in deposition of pollen at a death scene*. Rebecca J Kirby, Anita L. Guedea, Phillip L. Watson, Roger E. Mitchell and Scott M. Herron. American Academy of Forensic Sciences meeting in New Orleans in February 2005.
- 2005 *Wild Rice Coalition Building*; Ziibiwing Museum of the Saginaw Chippewa Indian Tribe in Mt. Pleasant, MI on December 1, 2005 (oral).
- 2004 *Ethnobotany of the Lake Superior Anishinaabek (workshop)*; Protectors of the Earth Youth Camp; Sugar Island Culture Camp on Sugar Island, near Sault Ste. Marie, August 1-6, 2004.
- 2004 *Wild Rice Restoration & Population Ecology on the Muskegon River Watershed*; Scott Herron and Gale Nobes, Michigan Academy of Science, Arts, and Letters Annual Meeting; *Botany and Plant Ecology Section* at Grand Valley State University on March 5-6, 2004. (oral).
- 2003 *Outdoor Life & Survival Skills of the Great Lakes Indians (workshop with Bucko Teeple)*; Protectors of the Earth Youth Camp; Clear Lake Camp near Shingleton, Michigan, August 8-16, 2003.

Bradley Jacob Isler

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Professional Experience

Associate Professor of Biology and Biotechnology Program Coordinator, Ferris State University, Big Rapids, Michigan, 2005 - present

- Responsible for the instruction of several biology and biotechnology courses
- As coordinator of the biotechnology program, responsible for recruiting, advising, and supervision of curricular activities
- Current research project: A study of the genetic differences between normally sighted and anophthalmic rats

Research Geneticist, U.S. Meat Animal Research Center, Clay Center, Nebraska, 2003 - 2005

- Postdoctoral position
- Area of focus: Quantitative and molecular genetics of sheep
- Primary research project: Investigation of genomic regions associated with carcass and meat quality traits in sheep
- The U.S. Meat Animal Research Center is a unit of the United States Department of Agriculture and the Agricultural Research Service

Education

The Ohio State University, Columbus, Ohio, 1997 - 2003

- Ph.D. in Animal Genetics, March 2003
- M.S. in Animal Genetics, December 1998
- Area of focus: Quantitative and molecular genetics of swine
- Cumulative GPA: 3.70 / 4.00
- Advisor: Dr. Keith Irvin
- Ph.D. dissertation title: An investigation of the associations between several candidate genes and reproductive traits in swine
- M.S. thesis title: Association between the estrogen receptor gene and reproductive components in swine

Iowa State University, Ames, Iowa, 1996 - 1997

- Attended graduate school
- Major: Molecular, Cellular, and Developmental Biology
- Cumulative GPA: 4.00 / 4.00
- Advisor: Dr. Donald Beitz

Ohio Northern University, Ada, Ohio, 1992 - 1996

- B.S. in Biochemistry, with High Distinction
- Biochemistry degree certified by the American Chemical Society
- Cumulative GPA: 3.80 / 4.00

Teaching Experience***Associate Professor of Biology, Ferris State University, August 2005 - present***

- Biology 101 (Genetics: Human Aspects)
 - Course designed for non-science majors
 - Taught fall semesters 2005-09
- Biology 122 (General Biology 2)
 - Second course in the two semester general biology series
 - Taught spring semesters 2005-06, summer semesters 2006-09
- Biology 174 (Introduction to Biotechnology)
 - Course designed to introduce students to the biotechnology program at Ferris State and the biotechnology industry as a whole
 - Newly developed fall 2006
 - Taught fall semester 2006-07
- Biology 375 (Principles of Genetics)
 - Junior-level general genetics course for biology and biotechnology students. Serves a prerequisite for many other courses.
 - Taught spring semester 2008-present
- Biology 491 (Biotechnology Internship)
 - Internship course for biotechnology students.
 - Taught as needed, usually in summer.
 - Redesigned in summer 2009.
- Biology 475/490 (Bioinformatics)
 - Course designed to explore the newly emerging field of bioinformatics, which combines molecular biology and information technology
 - Newly developed spring 2006
 - Taught spring 2006

Instructor, The Ohio State University, 2002

- Animal Sciences 320 (Principles of Genetic Improvement)
 - Course designed to introduce students to the basics of animal breeding and genetics
 - Fully responsible for all aspects of course
 - Taught winter semester 2002

Teaching Assistant, The Ohio State University, 1997 - 2001

- Animal Sciences 320 (Principles of Genetic Improvement)
 - Prepared and taught daily lectures during professor's absence
 - Prepared and graded student examinations and quizzes
 - Managed supplemental student project (cow herd computer simulation)
- Animal Sciences 543 (Swine Production)
 - Assisted students in laboratories
- Animal Sciences 600 (Capstone Current Issues and Writing Course)
 - Assisted students in preparation of group presentations
 - Prepared and graded student examinations
 - Presented a special lecture on biotechnology and the future of animal agriculture

Teaching Assistant, Iowa State University, August 1996 - December 1996

- Biology 201L (General Biology Laboratory)
 - Prepared and taught weekly lectures and laboratory experiments
 - Prepared and graded examinations, quizzes, and reports

Research Experience

Associate Professor of Biology, Ferris State University, 2005 - present

- Investigating the genetic differences between normally sighted and anophthalmic rats
- Four biotechnology students and one high school student have assisted with this project

Research Geneticist, U.S. Meat Animal Research Center, 2003 - 2005

- Investigated the relationship between regions of the sheep genome and economically important traits
- Performed a genome scan for quantitative trait loci that are associated with production and carcass traits in sheep
- Investigated the PRNP locus in sheep, which codes for the prion protein and is related to scrapie, one of the transmissible spongiform encephalopathies

Research Assistant, Department of Animal Sciences, The Ohio State University, 1997 - 2003

- Studied the effect of candidate genes on reproductive tract components in several breeds of swine
 - Study involved the discovery and analysis of novel polymorphisms in a variety of candidate genes: estrogen receptor- α , estrogen receptor- β , paternally expressed 1, paternally expressed 3, H19, prolactin receptor, and retinol binding protein-4
- Studied the genetic and meat quality issues surrounding the Rendement Napole condition in swine

Research Assistant, Molecular, Cellular, and Developmental Biology Program, Iowa State University, 1996 - 1997

- Participated in the molecular, cellular, and developmental biology rotation program
- Studied a variety of topics in molecular and cellular biology, including the role of G-proteins in tumor formation, the porcine PIT-1 gene, and methods to increase the concentration of conjugated linoleic acid in the rumen of dairy animals

University and Community Service

- Biotechnology program coordinator, 2005-present
- Summer registration advisor, 2006-present
- Co-advisor for Delta Nu Alpha (biotechnology student organization), 2006-present
- Biotechnology Summer Academy for high school students
 - Camp director, 2007-09
 - Camp assistant, 2006
- Invited presentations
 - 2007 FSU-Grand Rapids Career Pathways Teachers Academy, summer 2007
 - Honors program “Lunch and Learn” series, fall 2007
 - CARE 102 Career and Education Planning course, fall 2007
- Search committee membership
 - Biology department head, September-November 2006
 - One year developmental biologist, summer 2007
 - Tenure-track developmental biologist, 2007-08 and 2008-09
 - Tenure-track anatomist and physiologist, 2008-09.
 - General biology advisor, summer 2008.
 - One year protein biochemist, summer 2009.
- General committee membership
 - University institutional animal care and use (IACUC), 2006-present
 - Honors program nationally competitive scholarship, 2007-present
 - College of Arts and Sciences standards and policies, 2006- 009
 - College of Arts and Sciences advising excellence, 2007-present
 - College of Arts and Sciences sabbatical leave committee, fall 2009-present
 - Biology department planning, 2007-present
 - Biology department awards committee, 2008-present
- Ferris State faculty representative for the Udall Scholarship
- Recruitment activities.
 - Honors symposium, February 2006.
 - Phone recruitment drive, Spring 2009
- Judge for the local competition of the International Engineering and Science Fair, March 2008 and 2009.

Honors and Awards

- L.E. Kunkle Award, 2003
 - Awarded annually to the outstanding animal sciences graduate student at the Ohio State University
- Charles E. Thorne Memorial Scholarship, 2001
 - Awarded to a single outstanding graduate student selected from all agricultural science graduate students at The Ohio State University
- National Swine Improvement Federation Outstanding Graduate Student Award, 1999
 - Awarded annually to the outstanding swine genetics graduate student in the United States
- Gamma Sigma Delta National Agriculture Honorary, 1999

Grants

- College of Arts and Sciences Dean's grant. A study of the genetic differences between normally sighted and SDF/Fsp-*anop* anophthalmic rats. \$4287. 2007-2008.
- Ohio Pork Producers Council. \$4,500. Examination of the Relationship between Several Candidate Genes and Reproductive Traits in Swine. 2001-2002

Reviewerships

- *Journal of Animal Science* Editorial Board, 2009- present
- *Human Heredity*, Cummings, Eighth Edition
- *Theriogenology*

Professional Memberships

- American Society of Animal Science, 1997-present

Publications and Presentations

Isler, B.J., B.A. Freking, R.M. Thallman, M.P. Heaton and K.A. Leymaster. 2006. Evaluation of associations between prion haplotypes and growth, carcass, and meat quality traits in a Dorset x Romanov population. *Journal of Animal Science*. 82: 783-788.

Isler, B.J., B.A. Freking, K.A. Leymaster, and M.A Heaton. 2004. Investigation of the association between prion genotype and economically important traits in sheep. *Journal of Animal Science*. 83(Suppl. 2): 44 (Abstract).

Isler, B.J., B.A. Freking, and K.A. Leymaster. 2004. 2003-2004 U.S. Meat Animal Research Center annual report to NC-109. Paper presented at the 2004 NC-109 annual sheep research meeting in Duluth, Minnesota.

- Isler, B.J., K.M. Irvin, S.M. Neal, S.J. Moeller, and M.E. Davis. 2002. Examination of the relationship between the estrogen receptor gene and reproductive traits in swine. *Journal of Animal Science*. 80:2334-2339.
- Isler, B.J., K.M. Irvin, S.M. Neal, S.J. Moeller, and M.E. Davis. 2002. Examination of the relationship between the paternally expressed gene 3 and reproductive tract components in swine. *Proceedings of the 7th World Congress of Genetics Applied to Livestock Production*. CD-Rom Communication. N° 08-28.
- Isler, B.J., K.M. Irvin, S.M. Neal, S.J. Moeller, and M.E. Davis. 2002. Investigation of the relationship between the estrogen receptor beta gene and reproductive components in swine. *Journal of Animal Science*. 80(Suppl. 1): 378 (Abstract).
- Isler, B.J., K. M. Irvin, M.F. Rothschild, and G.J. Evans. 2001. Examination of the relationship between the prolactin receptor gene and reproductive components in swine. *Research and Reviews: Swine 2001*, OARDC special circular 185. 83-86.
- Isler, B.J., K. M. Irvin, M.F. Rothschild, and G.J. Evans. 2000. Association between the prolactin receptor gene and reproductive components in swine. Poster presented at the 2000 Annual Conference of the National Swine Improvement Federation.
- Isler, B.J., K. M. Irvin, M.F. Rothschild, and G.J. Evans. 2000. Association between the prolactin receptor gene and reproductive components in swine. *Proceedings of the 27th Conference of the International Society of Animal Genetics*. CD-Rom Communication. N° C032. (Abstract).
- Isler, B.J., K.M. Irvin, S.M. Neal, S.J. Moeller, M.E. Davis, and D.L. Meeker. 1999. Examination of the relationship between the estrogen receptor gene and reproductive traits in swine. Presentation at the 1999 Annual Conference of the National Swine Improvement Federation.
- Isler, B.J., K. M. Irvin, S. M. Neal, S.J. Moeller, M.E. Davis, and D.L Meeker. 1999. The effect of estrogen receptor genotype, breed, and parity on litter traits and reproductive tract traits in swine. *Journal of Animal Science*. 77(Suppl. 1): 131 (Abstract).
- Isler, B.J., K. M. Irvin, S. M. Neal, S.J. Moeller, and M.E. Davis. 1999. Association between the estrogen receptor gene and reproductive components in swine. *Journal of Animal Science*. 77(Suppl. 1): 32 (Abstract).
- Isler, B.J., K. M. Irvin, S. M. Neal, S.J. Moeller, M.E. Davis, and D.L Meeker. 1999. The effect of the estrogen receptor gene on litter traits in swine. *Research and Reviews: Poultry and Swine*, OARDC special circular 171. 50-53.
- Isler, B.J., K. M. Irvin, and S. M. Neal. 1999. Examination of the relationship between the estrogen receptor gene and reproductive tract components in swine. *Research and Reviews: Poultry and Swine*, OARDC special circular 171. 54-59.

Isler, B.J., K. M. Irvin, and S. M. Neal. 1998. Investigation of the estrogen receptor gene and its association with reproductive tract traits in swine. Research and Reviews: Poultry and Swine, OARDC special circular 164. 49-51.

Isler, B.J., K. M. Irvin, and S. M. Neal. 1998. Investigation of the estrogen receptor gene and its association with reproductive tract traits in swine. Ohio Swine Day 98 Proceedings: Issues For a Healthy Pork Industry.

Irvin, K.M., S. M. Neal, S. J. Moeller, D. L. Meeker, B. J. Isler, R. Emmett, S. Kacirek, and M. Barhorst. 1997-98 Ohio annual report to NC-220. Paper presented at the 1998 NC-220 Annual Meeting in Auburn, Alabama.

PAUL H. KLATT

CURRENT POSITION

Ferris State University. Associate Professor of Biology. 2008-present.

EDUCATION

North Dakota State University. Ph.D. Zoology. 2002. Major Professor: Dr. Nuechterlein.

Eastern Kentucky University. MS. Biological Sciences. 1992. Major Professor: Dr. Ritchison.

University of Illinois at Urbana-Champaign. BS. Psychology. 1988.

TEACHING EXPERIENCE

Ferris State University

- 2008-present, Associate Professor of Biology

- 2005-2008, Assistant Professor of Biology

<u>Course</u>	<u>Description</u>	<u>Enrollment</u>
Biology 121	General Biology I (2005-2008)	100
Biology 122	General Biology II (2006-2009)	100
Biology 347	Environ. Conservation (2006-2008)	40
Biology 348	Animal Behavior (2007-2009)	40
Biology 492	Biology Internship (2007-2009)	4

University of North Dakota

- 2002-2005, Visiting Assistant Professor of Biology

<u>Course</u>	<u>Description</u>	<u>Enrollment</u>
Biology 338	Animal Behavior (2002-2004)	40
Biology 332	General Ecology (2002, 2003)	100
Biology 370	Vertebrate Zoology (2003-2005)	40
Biology 432	Fish and Wildlife Disease (2004)	30

North Dakota State University

- 1997-2002, Graduate Teaching Assistant, General Biology, General Zoology, and Human Anatomy and Physiology.

- instruction of labs, writing and grading exercises and quizzes

<u>Course</u>	<u>Description</u>	<u>Enrollment</u>
Zoology 360	Animal Behavior (2000)	70
Zoology 170	General Zoology (1997)	250

- taught full courses as a graduate student

University of Alberta

- 1993-1996, Graduate Teaching Assistant, Introductory Biology, General Zoology, Natural History of the Vertebrates, Mammalogy, and Ornithology.

- instruction of labs, writing and grading quizzes and lab practical exams

Eastern Kentucky University

- 1988-1991, Graduate Teaching Assistant and 1991-1992, Part-Time Faculty, Introductory Biology.

- instruction of labs, writing and grading exercises and quizzes

RESEARCH EXPERIENCE

FSU Student Research

Bobby Hathaway Jr. Continue counting, banding, and observing the birds of Pierce Cedar Creek. 2007.

Kari Kammer. Counting, banding, and observing the birds of Pierce Cedar Creek. 2006.

Research Associate with Bridget J.M. Stutchbury, Ph.D., York University. Incubation feeding and extra-pair paternity in Scarlet Tanagers. 2003-2005.

Doctorate Research - Territorial Behavior of Red-necked Grebes. 1993-2002.

Research Associate with Gary Ritchison, Ph.D., Eastern Kentucky University and David Westneat, Ph.D., University of Kentucky. Mate guarding and extra-pair paternity in Northern Cardinals. 1992-1993.

Master's Research - The effect of mate removal on the vocal behavior of male and female Eastern Screech-Owls. 1988-1992.

Undergraduate Research Assistant to Nancy Burley, Ph.D. and Lowell Getz, Ph.D., Dept. of Ecology, Ethology, and Evolution, University of Illinois at Urbana-Champaign. 1986-1988.

FSU SERVICE

- College of Arts and Sciences, Promotion Committee (2008-present).
- Developmental Biologist Search Committee (2007-present).
- Anatomy and Physiology Search Committee (2008-present).
- Academic Senate (2006-present).
 - Ad Hoc Emeriti sub committee (2006-present).
- Registered Student Organization Advisor to Ferris Recyclers (2006-present).
- Registered Student Organization Advisor to Table Tennis Club (2008-present).
- Ferris Foundation Grants and Gifts Committee (2006-present).
- Faculty Research Committee (2008-present).
- Faculty Development Committee Chair, Biological Sciences (2006-present).
- Biology, Environmental Biology Concentration Head (2006-present).
- Biology Department Head Search Committee (2005-2006).

ORGANIZATIONS AND HONORS

Pierce Cedar Creek Institute for Environmental Education

- Advisory Board and Research Review Committee (2006-present).

Association of Field Ornithology (2006).

Waterbird Society (2005).

American Ornithologist's Union (2003).

NDSU Wildlife Graduate Student of the Year (2000).

Dr. Harvey K. Nelson Award - excellence in aquatic biology, NDSU Zoology (1999).

NDSU Zoology Graduate Student Representative to the Faculty (1999-2000).

Raptor Research Foundation (1993).

Cooper Ornithological Society - student membership award (1991).

Phi Sigma National Biological Honor Society (1990).

Animal Behavior Society (1988).

GRANTS

Pierce Cedar Creek Institute, Hastings, MI. Continue counting, banding, and observing the birds of Pierce Cedar Creek. 2007. \$6,000.

Pierce Cedar Creek Institute, Hastings, MI. Counting, banding, and observing the birds of Pierce Cedar Creek. 2006. \$6,000.

Animal Behavior Society. The dispersion of Red-necked Grebes breeding in territories and colonies. 1997. \$300.

Canadian Circumpolar Institute, Edmonton, AB. Territory-size regulation in Red-necked Grebes. 1994. \$1,500.

PRESENTED PAPERS

2004 Annual meeting of the Cooper Ornithological Society - Female Scarlet Tanagers called when their mates were temporarily removed during incubation. Paul H. Klatt, University of North Dakota and Bridget J.M. Stutchbury, York University.

2003 Annual meeting of the American Ornithologists Union - Incubation feeding by male Scarlet Tanagers: a removal experiment (poster presentation). Paul H. Klatt, University of North Dakota and Bridget J.M. Stutchbury, York University.

2001 Annual meeting of The Animal Behavior Society - From colonial to solitary: territorial behavior and nesting dispersion in Red-necked grebes. Paul H. Klatt, North Dakota State University. W.C. Allee Student Award Session.

1996 Annual meeting of the Association of Field Ornithologists - Genetic evidence that Eastern Screech-Owls do not engage in extra-pair copulations (poster presentation). Sunni Lawless and Gary Ritchison, Eastern Kentucky University, Paul H. Klatt, University of Alberta, and David F. Westneat, University of Kentucky.

1993 Annual meeting of The Raptor Research Foundation - Effect of mate removal on the vocal behavior and movement patterns of Eastern Screech-Owls. Paul H. Klatt and Gary Ritchison, Eastern Kentucky University.

1992 Annual meeting of The American Ornithologists Union - Duetting behavior of male and female Eastern Screech-Owls. Paul H. Klatt and Gary Ritchison, Eastern Kentucky University.

1992 Annual meeting of The Animal Behavior Society - Effect of mate removal on the singing behavior of male and female Eastern Screech-Owls. Paul H. Klatt and Gary Ritchison, Eastern Kentucky University.

1991 Fall Meeting of The Kentucky Ornithological Society - Effect of mate removal on the singing behavior of male and female Eastern Screech-Owls. Paul H. Klatt and Gary Ritchison, Eastern Kentucky University.

1990 Meeting for The Kentucky Academy of Sciences - Activity levels and the natal dispersal of Eastern Screech-Owls. Gary Ritchison and Paul H. Klatt, Eastern Kentucky University, and James R. Belthoff, Clemson University.

1990 Midwest Regional Animal Behavior Conference - Activity levels and the dispersal of juvenile Eastern Screech-Owls. Gary Ritchison and Paul H. Klatt, Eastern Kentucky University, and James R. Belthoff, Clemson University.

PUBLICATIONS

- 1) **Klatt, Paul H.**, Bridget J.M. Stutchbury, and Melissa Evans. 2008. Incubation feeding by male Scarlet Tanagers: a mate removal experiment. *Journal of Field Ornithology* 79(1):1-10.
- 2) **Klatt, Paul H.** and Cynthia A. Paszkowski. 2005. Intruder pressure explains more of the variation in territory size than fish abundance for Red-necked Grebes (*Podiceps grisegena*) breeding on small boreal lakes. *Ornis Fennica* 82:129-136.
- 3) Paszkowski, Cynthia A., Beverly A. Gingras, Kayedon Wilcox, **Paul H. Klatt**, and William M. Tonn. 2004. Stable isotope analysis of trophic relations of the Red-necked Grebe on lakes in the western boreal forest. *Condor* 106:638-651.
- 4) **Klatt, Paul H.**, Gary L. Nuechterlein, and Deborah Buitron. 2004. Frequency and distribution of behaviour of Red-necked Grebes breeding in a colony and in classic territories. *Behaviour* 141:263-277.
- 5) **Klatt, Paul H.** 2003. Territorial behavior and nesting dispersion in Red-necked Grebes. *Waterbirds* 26(1):94-99.
- 6) Lawless, Sunni, Gary Ritchison, **Paul H. Klatt**, and David F. Westneat. 1997. The mating strategies of Eastern Screech-Owls: a genetic analysis. *Condor* 99:213-217.
- 7) Ritchison, Gary, **Paul H. Klatt**, and David F. Westneat. 1994. Mate guarding and extra-pair paternity in Northern Cardinals. *Condor* 96:1055-1063.
- 8) **Klatt, Paul H.** and Gary Ritchison. 1994. The effect of mate removal on the vocal behavior and movement patterns of male and female Eastern Screech-Owls. *Condor* 96:485-493.
- 9) **Klatt, Paul H.** and Gary Ritchison. 1993. Duetting behavior of Eastern Screech-Owls. *Wilson Bull.* 105:483-489.

REFERENCES

Karen Strasser, Ph.D., Biology Department Head, Associate Professor of Biology, Ferris State University, Big Rapids, Michigan 49307. 231-591-2543.

Phillip Watson, Ph.D., Candidate Tenure Committee Chair, Professor of Biology, Ferris State University, Big Rapids, Michigan 49307. 231-591-2558.

Michelle Skedgell, Executive Director, Pierce Cedar Creek Institute, Hastings, Michigan 49058. 269-721-4770.

Bridget J.M. Stutchbury, Ph.D., Research Associate, Professor of Biology, York University, Toronto, Ontario M3J 1P3. 416-736-2100.

CURRICULUM VITAE

ROGER E. MITCHELL II

Department of Biological Sciences
Ferris State University
820 Campus Dr.
Big Rapids MI 49307-2225
Phone: (616)-591-5879
E. Mail: mitchelr@ferris.edu

CAREER GOAL

To teach biology in a college or university setting, with botanical research as a secondary goal.

EDUCATION

B.S., Molecular Biology, 1984, University of Wisconsin (Madison).

- Only 2 classes short of a chemistry major.

Ph.D., Genetics, University of Minnesota (Twin Cities), 1992.

- Thesis advisor, Dr. Irwin Rubenstein. Informal advisor, Dr. David Somers.
- Thesis, "Expression of Zein Associated Protein Genes" in the developing endosperm of *Zea mays* L. (corn).
- Applied a wide range of molecular and tissue culture research techniques to plant systems.
- Classroom emphases: genetics, plant breeding, applied statistics.
- Corn breeding.

POSTDOCTORAL RESEARCH

1993, Louisiana State University, Department of Plant Pathology and Crop Physiology.

- Principal investigator, Dr. Norimoto Murai.
- Gene expression in common bean (*Phaseolus vulgaris* L.).

TEACHING EXPERIENCE

Georgia Southern University in Statesboro, Georgia, Temporary, full-time assistant professor of biology, Winter and Spring quarters, 1994. Courses taught:

- Bio. 151 lecture: Introductory biology for non-majors. Topics: biology as science, survey, ecology, genetics, molecular genetics.
- Bio. 152 lecture: Introductory biology for non-majors. Topics: evolution, biochemistry, plant biology, vertebrate anatomy and physiology.
- Bio. 370 lab: Cell biology lab for mid-level biology majors. Taught: microscopy, cell anatomy, enzymology.

CURRICULUM VITAE

Ferris State University in Big Rapids, Michigan, Temporary, full-time assistant professor of biology, 1994-95 and 95-96 terms. Tenure-track assistant professor of biology, Fall 1996, associate professor, fall 1999 to present, tenured, Fall 2001, Courses taught:

- Biol. 113, lecture and lab: Botany for horticulture majors. Topics: taxonomy, anatomy, physiology, biochemistry
- Biol. 121, lecture and lab: Introductory biology for biology majors. Topics: genetics, evolution, survey, ecology, plant biology.
- Biol. 122, lecture and lab: Introductory biology for biology majors. Topics: zoology, vertebrate anatomy and physiology, biochemistry, molecular genetics.
- Biol. 207 lab only: Forensic Biology for the criminal justice and the forensic biology programs. In Fall '04, I took over the teaching of the DNA-related labs in this course. Dr. Philip Watson teaches the lecture and the remainder of the labs.
- Biol. 353, lecture and lab: Plant physiology for biology majors. Topics: anatomy, water relations, biochemistry, photosynthesis, cellular respiration, growth and hormones.
- Biol. 407, lecture and lab: Forensic DNA lab for forensic biology majors (a track within the B.S. in Biology). This class was new and began in Winter '05. It teaches the theory and methods used by the modern forensic community to solve crimes using DNA evidence.
- Biol. 460 lecture: Senior seminar for biology majors. Students prepare posters and monographs that review a current topic in biology. Includes computer instruction.
- Biol. 471 lab: Recombinant DNA lab for biotechnology majors. Teaches modern methods including cloning, bacterial transformation, DNA purification, Southern hybridization, sequencing, PCR. Includes computer instruction.

RELATED EXPERIENCE

Teaching:

- Teaching assistant, University of Minnesota.
- Three years teaching research methods to undergraduates in graduate lab.
- Attended peer review of teaching workshop, winter '96.
- Attended the Research Link 2000 workshop for biology research, August '00. at Ferris State University in August 2000.

Computers:

- Proficient in wide range of computer word-processing, statistics, graphics, taxonomy, and presentation applications.
- Studied three computer programming languages.

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- Set up or upgraded several personal computers.
- Sold computers briefly.
- Teach Microsoft Word, Excel, and PowerPoint, as well as Adobe PhotoShop in two of my classes (BIOL. 353 and BIOL. 471), Fall '94 through present.

Communication:

- Competitive forensics and debate in high school.
- High school debate judge while in college.

UNIVERSITY SERVICE

- Committee service: terms are academic years (Fall and the following Winter/Spring semester), present is the '09 - '10 academic year:
 - Course:
 - Introductory lab revision committee ('94 - '95 and '96 - '97 through Fall '02), occasional meetings, replaced by:
 - Introductory lab preparation and coordination committee (Winter '03 through present), weekly meetings. Co-chair, then chair, Fall '04.
 - Introductory biology textbook selection committee (Winter '95 and winter '04).
 - Program:
 - Biotechnology program coordination committees ('94 - '95 through present).
 - Biotechnology program review committee ('97 - '98 through present).
 - Forensic Biology program coordination committee ('03 - '04 through present)
 - Department:
 - Department planning committee ('96 - '97 through '99 - '00 and '02 - '03 through '07 - '08), chair, last three terms.
 - Department curriculum committee ('98 - '99 through '01 - '02), chair, last two terms.
 - Department professional development committee ('96 - '97, '99-'00, and '00 - '01, chair, last term).
 - Four search committees, two for 9-month positions, one for a single tenure-track position, and one for four tenure-track positions (three filled).
 - Department tenure committee, chair ('03 - '04 through present, chair).
 - Candidate tenure committee, for Dr. Scott Herron ('03 - '04 through '07 - '08), Dr. Bradley Isler ('05 - '06 through present),

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Dr Joseph Lipar ('05 – '06 through present, chair) and (Dr. Changqi Zhu ('09 - '10 through present, chair).

- Interdepartmental:
 - Forensic science track in criminal justice development committee ('96 - '97).
- College:
 - Sabbatical leave committee ('01 - '02 through '06 - '07), chair, five terms ('02 - '03 through '06 - '07).
 - Standards and policies ('03 - '04).
- University:
 - University scientific understanding committee ('00 - '01 through '03 - '04), chair last term.
 - All university sabbatical leave committee ('04 - '05 and '05 – '06), chair, first term.
- Coordinator of introductory biology (BIOL. 121 and 122) labs. This position involves chairing the introductory biology lab committee, editing and writing new material for the lab manual, training new faculty in the labs, coordinating textbook selection, and coordinating and developing assessment for the courses.
- Helped plan, develop and teach first biotechnology workshop for high school students and teachers (Winter '95).
- Prepared poster for, and represented biotechnology program at, Autumn Adventure, a high school recruitment event (Fall '94 through its discontinuation after Fall '01).
- Supervised two biotechnology student interns in the summer of '97, and again in the summer of '98. Shared supervision of a fifth student in the fall of '98. Supervised two more biotechnology student interns in the summer of '99. Shared supervision of an eighth student Summer '02 through Winter '03.
- Supervised undergraduate student independent study, Winter '97, Winter '98, Fall '98, Fall '00, Winter '03, Summer '03, and fall '08 - Spring '09.
- Supervised high school (Math and Science Center) student projects, '00 - '01, '01 - '02, and '02 - '03.
- Supervised student assistants in my main research program on *Rosa* (rose) species breeding,
- Assessment projects.
 - I served on the committee that wrote the short pre/post test used for the BIOL. 121-122 sequence, and I organize its administration in the labs (Fall '07 - present). I am currently writing a new, expanded version. This test assesses student learning in the intro sequence, which is programmatically critical.

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- I wrote a brief pretest on biologically important chemistry, which I have administered to all of my classes since Fall '07 (some every time the class meets, some selected semesters only). Chemistry competence is highly predictive of student success in biology classes, and I use the results as a basis for advising individual students in BIOL. 353. The chemistry classes required for various biology degrees are also a critical programmatic issue, and I have sought cooperation of other instructors in administering this test in a range of courses.
- I administer the Biology Field Exam to my BIOL. 471 class, representing the seniors in the Biotechnology program. This comprehensive, nationally recognized, standardized exam is also administered to Biology BS students, so it serves as a final assessment of our department's graduating majors.
- I am developing a set of shared questions related to plant biology to administer as a part of regular graded exams in the two classes in which the topic is covered (BIOL. 121, mostly first-semester freshmen and BIOL. 353, juniors and seniors) to assess this topic from a programmatic standpoint.
- I have been selectively breaking down regular graded lecture exam and lab quiz questions to address specific course assessment issues. This most often relates to teaching methodology. For example, compare student performance in BIOL. 353 and 407 on material that is/is not included on sample or is/is not covered by their textbooks.

OTHER ACTIVITIES

- Regularly attend the American Academy of Forensic Sciences yearly meeting ('04, '05, '06) and attended a workshop on the forensic role in terrorism at Duquesne University ('04).
- Carry out lily breeding program and very large rose breeding program (fall '06 through present).
- Carried out lab research project on lily (*Lilium*) species taxonomy, utilizing DNA sequencing, Polymerase Chain Reaction (PCR), and other methods. This work is supported by grants from the North American Lily Society, the Wisconsin Regional Lily Society, and the Ferris State University professional development fund. Summer '06 - Fall '00. I presented a talk about this research at FSU in November '00.
- Carried out lab research project on rose (*Rosa*) species seed germination.
- I am very active on the Rose Hybridizing Society's open internet forum. I read it regularly during most of the year, and make contributions when I feel I have something to contribute. This serves to enhance my own research by exchanging information, to document my own work,

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and in an educational role, since the other participants often are not scientifically trained, and benefit from explanations of that aspect of the subject.

- I have produced materials on my rose breeding program that have been added to my faculty materials on the FSU web site. This helps to communicate and document my work, as well as providing exposure for FSU to the community of rose breeders.
- Carried out a lab research project on Wisconsin Fast Plants (*Brassica rapa*) salt tolerance.
- Carry out a lab research project on plant chromosome characterization.
- Member of several horticultural societies: North American Lily Society (NALS), Species Lily Preservation group (within NALS), Rose Hybridizers Association, American Rose Society.
- Wrote newsletter articles for, and served as assistant editor of, the Wisconsin Regional Lily Society newsletter.
- Served as flower exhibit chairman for Wisconsin Regional Lily Society.
- Served as an accredited judge for the North American Lily Society.
- Write fiction as a hobby.

PUBLICATIONS:

Peer-reviewed journal:

- Mitchell RE (2009) The Inheritance of Juvenile Recurrence in Rosa Species Hybrids. *Floriculture and Ornamental Biotechnology* 3 (Special Issue 1), 46-52

Non-peer-reviewed journals, newsletters, books, etc.:

- "Expression of Zein Associated Protein Genes," Roger E. Mitchell II, Ph.D. thesis, University of Minnesota, St. Paul Minnesota, Jan. 1992.
- "Lily hybridizing: Something for everyone," Roger E. Mitchell II, *Quarterly Bulletin of the North American Lily Society*, vol. 49, #1, March 1, 1995.
- Mitchell, R., "New Genes for Lilies," *Yearbook of the North American Lily Society*, 1997, pp. 67-68. Subject: genetic engineering of flower crops.
- Mitchell, R., "Colder-Climate Trumpets: Trumpet Lily Hybrids," *Yearbook of the North American Lily Society*, 1997, pp. 77-80. Subject: horticulture. I have been told by society members, including the yearbook editor, that this article was very well received.
- Mitchell, R., "Species DNA Research Report," *Quarterly Bulletin of the North American Lily Society*, March 1, 1998, Vol. 52, No. 1, pp. 8-9.
- Mitchell, R., "Lily Hybrids: Understanding Without Intimidation," *Yearbook of the North American Lily Society*, 1998, pp. 54-62. Subject:

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how classical genetics is used by breeders. I have received a lot of favorable feedback about this article, as well.

- Mitchell, R., "What Causes Lily Decline?," Yearbook of the North American Lily Society, 1999, pp. 20-35. Subject: horticulture. This article was the best received in the recent history of the yearbook, according to its editor.
- Mitchell, R., "Rose Hybridizing in the Summer Greenhouse," Rose Hybridizers' Association Newsletter, 2001. The RHA web site is www.rosehybridizers.org
- Mitchell, R., "Rose Hybridizing in the Greenhouse," in "Rose Hybridizing - The Next Step," Rose Hybridizers' Association, John and Mitchie Moe, editors, 2002.
- Mitchell, R., "Rose Hybridizing in Big Rapids, Michigan," Rose Hybridizers' Association Newsletter, 2006.
- Mitchell, R., "Accidental Ground Cover Roses," Rose Hybridizers' Association Newsletter, Spring 2006
- Mitchell, R., "High-Volume Growing and Selection of Rose Seedlings," Rose Hybridizers' Association Newsletter, Spring 2007.
- Mitchell RE (2008) Strategies to maintain species percentage in hybrids. Rose Hybridizers Association Newsletter 39 (1), 15-20
- Mitchell RE (2008) Managing Rose Seedlings. Rose Hybridizers Association Newsletter 39 (3), 7-8
- Mitchell RE (2008) Fertile Seed Parents and a Dilemma Involving Miniature Roses. Rose Hybridizers Association Newsletter 39 (4), 6-7
- Mitchell RE (2009) A miniature Note on Miniatures. Rose Hybridizers Association Newsletter 40 (1), 13
- Mitchell RE (2009) Breeding with *Rosa spinosissima* and its Relatives. Rose Hybridizers Association Newsletter 40 (1), 6-10
- Mitchell RE (2009) Breeding with *Rosa gallica* Relatives, Including 'Alike.' Rose Hybridizers Association Newsletter [published, I need to look up the information]
- Mitchell RE (2009) Classifying the Pimpinellifoliae. Rose Hybridizers Association Newsletter [published, I need to look up the information]

Meeting abstracts:

- "Transient expression of foreign genes in endosperm tissue," Roger E. Mitchell II and Irwin Rubenstein, Maize Genetics Cooperation Newsletter, #64, 1990.
- "Simplified cloning techniques utilizing kanamycin resistant plasmids," Roger E. Mitchell II, John Hunsperger, and Irwin Rubenstein, Maize Cooperation Newsletter, #64, 1990.

PROFESSIONAL MEETINGS ATTENDED:

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- North American Lily Society annual meetings ('96 - '03, '05, '06)
- World Federation of Lily Societies ('04)
- American Rose Society spring meeting ('06)
- Rose Hybridizers' Association meeting ('06)
- American Academy of Forensic Sciences annual meeting ('04 – '07)
- meeting on forensic response to biological terrorism ('04)

Curriculum vitae

Mary Rengo Murnik

Department of Biological Sciences
Ferris State University
Big Rapids, Michigan 49307

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FAX 231-591-2540
email: murnikm@ferris.edu

Education

Michigan State University, Ph.D., Zoology (Genetics)
Michigan State University, B.S. *With High Honor*, Zoology (Honors
College)
Marquette University, Biology

Professional Experience

Professor, Department of Biological Sciences, 1992-
Professor & Head, Dept. of Biological Sciences, Ferris State
University, 1980-92
Acting Head, Dept. of Physical Sciences, Ferris State University,
1983-84
Assistant Professor to Professor, Biology, Western Illinois
University, 1970-80
Sabbatical, Rutgers University, Dept. of Psychology (Behavior
Genetics), 1979
Assistant Professor, Fitchburg State College, Massachusetts,
1968-70

Professional Memberships

American Association for the Advancement of Science, Sigma Xi,
American Society of Genetics, National Science Teachers
Association, American Biology Teachers Association, National
Center for Science Education

Professional Subscriptions

Science, Genetics, The American Biology Teacher, Journal of
College Science Teaching, American Scientist, The Scientist,
Natural History, Science News, Discover, Scientific American

Courses Taught:

BIOL 101 Genetics: Human Aspects
BIOL 375 Principles of Genetics
BIOL 340 Evolution
FSUS 100 Ferris State University Seminar

Advisor: Pre-dental advising chair

Awards and Honors

Ferris Distinguished Teacher award, 2007
Dr. Martin Luther King "Social Justice Award", 2004
Ferris Faculty Merit Award, 2002, 2006
Ferris Professional Women *Woman of the Year*, 1998
Michigan Association of Governing Boards' Award for Teaching Excellence, 1998

Professional Workshops/Seminars Presented (recent)

2011 "Genes, bacteria environmental influences and your weight."
FSU Honors Program lunch + learn series
2008 "New insights about the nature of the gene", FSU Honors
Program lunch + learn series
2007 "Genomic Imprinting and Epigenesis", FSU STEM seminar

2005 "Strategies to encourage students to *think* biologically",
National Association of Biology Teachers annual meeting,
Milwaukee
2004 "Critical Thinking in College Biology Courses", 24th
International Conference on Critical Thinking, Palo Alto, CA
2004 "How to Think about Weird Things", with Judith Hooper,
Critical Thinking Conference for Educators, Ferris Applied
Technology Center, Grand Rapids
2004 "Rosalind Franklin, the Dark Lady of DNA", FSU Chemistry Club
seminar
2004 "Genetics, Development and Human Sexual Orientation"
presentation with Dr. Robert Friar to DSAGA
2003 "Rosalind Franklin, the Dark Lady of DNA, and You", Select 60
Lecture Series, FSU
2003 "Critical Thinking Tips for Teachers", Critical Thinking
Institute, Ferris State University
2003 "Critical Thinking in Science Courses", Critical Thinking in
Higher Education Conference, Northwest Michigan College,
Traverse City
2003 "Critical Thinking Tips for Teachers", Critical Thinking in
Higher Education Conference, Northwest Michigan College,
Traverse City
2002 "Pursuing careers in Science", Ferris YBBW 2002 Annual
Conference

Recent Professional Meetings and Workshops

- 2010 DAT Biology Test Construction Committee workshop, American Dental Association, Chicago
- 2010 OAT Biology Test Construction Committee workshop, American Dental Association, Chicago
- 2009 Drosophila Research Conference, Chicago
- 2009 DAT Biology Test Construction Committee workshop, American Dental Association, Chicago
- 2009 OAT Biology Test Construction Committee workshop, American Dental Association, Chicago
- 2008 DAT Biology Test Construction Committee workshop, American Dental Association, Chicago
- 2008 American Biology Teachers Annual Meeting, Boston
- 2007 Dental Admission Test Item Writing Workshop, American Dental Association, Chicago
- 2006 Teaching Evolution: Applying Critical Thinking and Other Effective Strategies, Chautauqua short course for College Science Teachers, Dayton
- 2006 OAT/DAT Biology Test Construction meeting, American Dental Association, Chicago
- 2005 Dental Admission Test Item Writing Workshop, American Dental Association, Chicago
- 2005 "Making a Difference", FSUS Faculty Development Conference, Ferris State University
- 2004 24th Annual International Conference on Critical Thinking, Palo Alto
- 2003 1st Annual Scientific Thinking Conference, Sonoma State University
- 2002 9th Annual National Academy on Critical Thinking, Sonoma State University
- 2002 Mentorship training in Critical Thinking, Sonoma State Univ.

Research projects with students (recent)

- 2007-8 Quinn, Ashley (Math/Science/Technical Center), Induction of sex-linked recessive lethal mutations by resorcinol in *Drosophila melanogaster*
- 2006-7 Sarkozi, Rebecca (Math/Science/Technical Center), Muller-5 analysis of the mutagenicity of resorcinol in *Drosophila melanogaster*
- 2006 Trombley, Jamie, Toxicity assays with *Drosophila melanogaster*
- 2005-6 Winowiecki, Jenice, Effects of resorcinol on the life cycle of *Drosophila melanogaster*

Reviewer, recent, textbooks

Jones Bartlett Publishers, Thomson Brooks/Cole, W.H. Freeman&Co,
Wm. C. Brown, Publishers, McGraw Hill Companies

Publications

Instructional Materials, recent

- 2010 Evolution: Lecture Guide, for BIOL 340- Evolution,
Ferris State University, 200 p. (annual editions since
2000)
- 2010 Genetics: a Lecture Guide for BIOL 375- Principles of
Genetics, Ferris State University, 333 p. (annual
editions)
- 2010 Genetics: Human Aspects, Lecture Guide for BIOL 101,
Ferris State University, 298 p. (annual editions)
- 2010 BIOL 101 Laboratory Manual, Ferris State University, 197 p.
(annual editions)

Professional Service since 2002

- Academic Program Review, Biology B.S., B.A. panel, 2008-9
- 2008-10 FSU Diversity Planning Committee
- 2008- FSUS Board
- 2008 Judge, Honors Senior Symposium, FSU Honors Program
- Faculty sponsor, Ferris Pre-dental Club, 2007-
- Faculty sponsor, Ferris Pre-dental Club, 1987-
- Dental Admission Test Constructor, Biology Content Area, American
Dental Association, 2006-
- Ferris Accreditation Task Force Committee, 2005-2006
- Ferris Distinguished Teacher Award Committee, 2003-2006
- Volunteer docent for Ferris State University "Jim Crow Museum",
2001-
- Judge MOISD Science Fair, Ferris State University, annually,
2001-8
- Scientific Understanding Outcomes and Assessment Committee, 2003-8
- Biology Department Search Committee (four tenure-track positions),
2004-2005
- Biology Department Planning Committee, 2001- 2004, 2006-8
- Faculty Mentor, Dr. Karen Strasser, 2002-6
- Faculty Mentor, Dr. Bradley Isler, 2005-9
- Member, Zimmer Tenure Committee, 2007-
- Chair, Strasser Tenure Committee, 2002-6
- Chair, Isler Tenure Committee, 2005-9
- Member, Klaat Tenure Committee, 2005-9
- Ferris Strategic Direction Committee 2002-3
- Academic Program Review, Secondary and Vocational Ed. B.S. panel,
2002-3
- Academic Program Review, Applied Biology B.S. panel, 2002-3

Faculty Panel, Student Leadership Conference, 2002-2004
Select 60, Ferris mentorship program, 2001-
Chair, Pre-Dental Advisory Committee, 1995-
Pre-Med Advisory Committee, 1995-

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(last update: 3 June 2009)

MICHAEL DENNIS RYAN

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**Born: 25 March 1947
Pittsburgh, PA**

**Married: Mary Balestra Ryan
Children: Shawn, Patrick,
Kevin, Michael**

Home Address:

**327 South Stewart Avenue
Big Rapids, MI 49307
(231) 796-2264**

TEACHING/RESEARCH EXPERIENCE

Professor Department of Biological Sciences Ferris State University	1987-88 to Present
Associate Professor Department of Biological Sciences Ferris State College	1981-82 to 1986-87
Visiting Associate Professor Department of Biology Central Michigan University Mt. Pleasant, MI	1983 Fall Semester
Assistant Professor Department of Biological Sciences Ferris State College	1977-78 to 1980-81
Laboratory Teaching Assistant Department of Microbiology SUNY at Buffalo, School of Medicine Buffalo, NY 14214	1974-75 to 1975-76
Microbiology Tutor School of Dentistry SUNY at Buffalo	1974-75 to 1975-76
Research Technician Department of Microbiology School of Medicine SUNY at Buffalo	1972 - 1973

Teaching Assistant
Department of Biological Sciences
Duquesne University
Pittsburgh, PA
1969-70 to 1970-71

Laboratory Teaching Assistant
Chemistry Department
St. Vincent College
Latrobe, PA
1967-68 to 1968-69

FELLOWSHIP

NIH Pre-Doctoral Fellowship
School of Medicine SUNY at Buffalo
1971, 1974 to 1976-77

EDUCATION

Ph.D. Microbiology
Department of Microbiology
School of Medicine
SUNY at Buffalo
Buffalo, NY
1980

Dissertation: "Studies on the Pathogenesis of Infection and the Accompanying Immune Response in Inbred Guinea Pigs Inoculated with *Mycoplasma pneumoniae*"

M.S. Biology
Department of Biological Sciences
Duquesne University
Pittsburgh, PA
1971

Thesis: "Comparative Double Diffusion Studies of Saline Extracted Complement Fixing Antigens of *Fasciola hepatica* and *Fascioloides magna*"

B.A. Biology
St. Vincent College
Latrobe, PA
1969

PRESENTATIONS/PUBLICATIONS (2002-2007 in Bold)

“Strategic Preparation for Bargaining.” Presenter/Panel Discussion Leader. Michigan Association for Higher Education 2007 Conference, Lansing, Michigan, 19 October 2007.

“2005 Current Issues and National Trends in Higher Education” Michigan Education Association. Presenter/Panel Discussion Leader. Bargaining Conference, Dearborn, MI. 5 February 2005.

“Higher Education Forum: Impact of GATS on the Future of Higher Education” National Education Association, Midwest Leadership Conference. Presenter/ Panel Moderator. St Louis, MO. 22 January 2005.

“Status and Concerns: Higher Education Re-Authorization Legislation 2004” Michigan Education Association, Higher Education Forum. Presenter. Professional Development Conference, Dearborn MI 4 December 2004

“Managing Campus Crisis: A Workshop”. Presenter. Southern Illinois University, Carbondale, IL 14-17 Feb 2004.

“2004 Current Issues and National Trends in Higher Education” Michigan Education Association. Presenter/Panel Discussion Leader. Bargaining Conference, Dearborn, MI 7 February 2004.

“Higher Education Forum: Higher Education Re-Authorization Legislation” National Education Association, Midwest Leadership Conference. Presenter / Panel Moderator. Sioux Falls, SD. 24 January 2004.

“2003 Current Issues and National Trends in Higher Education” Michigan Education Association. Presenter/Panel Discussion Leader. Bargaining Conference, Dearborn, MI 11 February 2003.

“Higher Education Re-Authorization and Federal Legislation Update 2003” Michigan Education Association, Higher Education Forum. Presenter. IPD Conference, Dearborn MI. 2 December 2003

“2002 Current Issues and National Trends in Higher Education” Michigan Education Association. Presenter/Panel Discussion Leader. Bargaining Conference, Dearborn, MI 9 February 2002.

“Higher Education Re-Authorization and Federal Legislation 2002 Update” Michigan Education Association, Higher Education Forum. Presenter. IPD Conference, Dearborn MI. 4 December 2002

“Common Sense Answers to the Current Anthrax Threat”. TV Interview, TV 9/10’s “The Evening News”. Cadillac , MI 16 October 2001.

Hartley, F.A., Hoeksema, W.D. and Ryan, M.D. Fundamental Microbiology for the Health Care Sciences. Fourth Edition. 2001. Kendall-Hunt Publishing Co., Dubuque, IA. 206 pages

“Is This Any Way to Run a Railroad?” A book review. Management Fads in Higher Education: Where They Come From, What They Do and Why They Fail. Robert Birnbaum, Jossey-Bass Press, 2001. In “Thought and Action”, Volume XVII, Number 1, Summer 2001

“The Role of Faculty in the Evolution of Technologically Based Higher Education.” Presenter and panel discussion member. Washington State Higher Education Association, State Meeting. Seattle/Tacoma, WA. 23-25 February 2001.

"The Role of Technology in Higher Education" Lecturer and panel discussion member. Ferris State University's Futures Conference. 2 September 1999.

"Recent advances in Vaccine Research and Development. A continuing education seminar for the FSU Health Center's Staff Physicians and Nurses. 24 August 1999

"Recent Advances in Vaccines and You". TV Interview. TV 9/10's "Michigan This Morning Show". Cadillac, MI 17 June 1999.

Hartley, F.A., Hoeksema, W.D. and Ryan, M.D. Fundamental Microbiology for the Health Care Sciences. Third Edition. 1995. Kendall-Hunt Publishing Co., Dubuque, IA. 227pages

"Immunological Basis of Ocular Inflammation and Pathology". Basic Concepts of Ocular Therapeutics Conference. Three hour continuing optometry education lecture. Ferris State University, College of Optometry. East Lansing, MI, June 24, 1995.

"Immunological Basis of Ocular Inflammation and Pathology". Basic Concepts of Ocular Therapeutics Conference. Three hour continuing optometry education lecture. Ferris State University, College of Optometry. Iron Mountain, MI, May 20, 1995.

"Immunological Basis of Ocular Inflammation and Pathology". Basic Concepts of Ocular Therapeutics Conference. Three hour continuing optometry education lecture. Ferris State University, College of Optometry. Big Rapids, MI, May 16, 1995.

"Immunology and the Western Blot Technique". Ferris State University/ The Upjohn Company Biotechnology Workshop for Community College Teachers and their Students. Big Rapids, MI. April 8, 1995.

Hartley, F.A., Hoeksema, W.D. and Ryan, M.D. Fundamental Microbiology for the Health Care Sciences. Second Edition. 1993. Kendall-Hunt Publishing Co., Dubuque, IA. 210 pages.

"World of Microbes". Hillcrest Elementary School. April 1992

"Attainment of a doctoral Degree in Microbiology while Maintaining Full-Time Employment" with Drs. Debra Stai and Walter Hoeksema. Presented by Dr. Stai at the 89th Annual International Meetings of the American Society for Microbiology, New Orleans, LA, May 14-18, 1989. Published in the Abstracts of the 89th Annual Meeting, ASM, page 492.

"Immunological Basis of Ocular Inflammation and Pathology." Basic Concepts of Ocular Therapeutics Conference. Three hour continuing optometry education lecture. Ferris State University, College of Optometry, Big Rapids MI, January 22, 1989.

"Immunological Basis of Ocular Inflammation and Pathology." Basic Concepts of Ocular Therapeutics Conference. Three hour continuing optometry education lecture, Ferris State University, College of Optometry, Big Rapids MI, January 15, 1989.

"Monoclonal Antibodies: Concept and Applications." Drug Manufacturing Quality Control Training Course for Federal Drug Agency Investigations, October 17, 1988.

Hartley, F.A., Hoeksema, W.D. and Ryan, M.D. Fundamental Microbiology for the Health Care Sciences. 1986. Kendall-Hunt Publishing Co., Dubuque, IA. 175 pages.

"Pre-medical Career Advising." Cmte on Grad./Prof. Studies. Michigan Association of Collegiate Registrars and Admissions Officers (MACRAO) Annual Meeting, Shanty Creek, Oct. 1986

Ryan, M.D., P. Noker and L.L. Matz. 1975. Immunological properties of glycolipids from membranes of *Acholeplasma laidlawii*. Infection and Immunity 12(4): 799-807.

NOMINATIONS/AWARDS

FSU Martin Luther King Social Justice Award (2005)

Michigan Association of Governing Boards (MAGB)
1985-86 Distinguished Faculty Member Award Winner

Nominee, Outstanding Advisor Award (1985)
ACT/NACADA National Recognition Program for Academic Advising

Nominee, Outstanding Institutional Advising Program Award, 1985
ACT/NACADA National Recognition Program for Academic Advising

Ferris Greek Educator of the Year (1981-82)

CONTINUING EDUCATION

(2002-2009 in Bold)

"The Twelfth Annual Conference on Vaccine Research. Sponsored by the national Foundation for Infectious Diseases. Baltimore, Maryland. 27-29 April 2009.

"The One Health Initiative: The Interrelationship between Humans, Animals and Pathogens."
ASM-MI Branch Spring Meeting, Delta College, University Center, MI. 27-28 March 2009.

"Beneficial Microbes: How Bacteria Impact Human Health!" ASM-MI Branch Fall Meeting
Eastern Michigan University, Ypsilanti, MI October 10-11, 2008,

"Small solution to a big problem: Microbes and Alternative Energy" ASM-MI Branch Spring Meeting
Central Michigan University, Mount Pleasant, MI April 11-12, 2008.

"Critical Issues in Higher Education" Fall 2007 MEA Conference Kellogg Center, MSU, East Lansing, MI. 19-20 October 2007.

"Emerging Infectious Diseases". ASM-MI Branch Fall Meeting, Traverse City, Michigan. 12-13 October 2007.

"New Risks and New Defenses: The Technology of Bioterrorism". ASM-MI Branch Spring Meeting, Wayne State University, Detroit, MI 13-14 April 2007.

"Critical Issues in Higher Education" Fall 2006 MEA Conference, Kellogg Center, MSU, East Lansing, MI. 13-14 October 2006.

"Biofilms" ASM-MI Branch Fall Meeting Fall 2006, Lansing Community College, Lansing MI, 7 October 2006.

"Microbial Physiology in the Genomics Era", ASM-MI Branch Spring Meeting, Ferris State University, Big Rapids, MI, 1 April 2006.

"New Perspectives and Paradigms in Environmental Microbiology". ASM-MI Branch Fall Meeting, Dearborn, MI. 8 October 2005

"Responses to Infectious Diseases after Natural Disasters". ASM-MI Branch Spring Meeting, Delta College, University Center, MI. 2 April 2005.

"Dimensions of Diversity: The Changing World of Higher Education". National Council for Higher Education (NCHE). San Antonio, TX. 4-6 March 2005.

"Microbial Products; From Arsenic and Steroids to Wine and Cheese". ASM-MI Branch Fall Meeting, Bellaire, MI. 9 October 2004.

"The Seventh Annual International Conference on Vaccine Research" Jointly sponsored by the Centers for Disease Control and Prevention (CDC), National Foundation for Allergy and Infectious Diseases and International Society for Vaccines, among others. Crystal City, MD. May 24-26, 2004.

"Infectious Causes of Neuropsychiatric Disorders Disorders". ASM-MI Branch Spring Meeting Eastern Michigan University, Ypsilanti, MI 20 March 2004.

"Higher Education on Dangerous Ground: Defending a Public Good". National Council for Higher Education (NCHE). Seattle, WA. 5-7 March 2004.

"Life in Extreme Environments". ASM-MI Branch Spring meeting. Western Michigan University, Kalamazoo, MI. 4 October 2003

"The Sixth Annual International Conference on Vaccine Research" Jointly sponsored by the Centers for Disease Control and Prevention (CDC), National Foundation for Infectious Diseases, International Society for Vaccines, (among others). Crystal City, MD. May 6-8, 2003.

ASM-MI Branch Spring Meeting. "Emerging and Re-emerging Pathogens II ". Ann Arbor, MI. 5 April 2003

"Critical Issues in Higher Education 2003: Process and outcome of Higher Education Accreditation." National Council for Higher Education (NCHE). Washington DC, 1-4 March 2003.

"The Fifth Annual International Conference on Vaccine Research" Jointly sponsored by the Centers for Disease Control and Prevention (CDC) and the National Foundation for Infectious Diseases. Baltimore, MD. May 6-8, 2002.

"Critical Issues in Higher Education 2002: The Promise and the Reality of Distance Education." National Council for Higher Education (NCHE). San Antonio, TX. 1-4 March 2002.

"The Distributed Learning Workshop: Developmental Update" Sponsored by the Midwest Higher Education Commission. Minneapolis, MN 13-15 September 2001.

"The Fourth Annual International Conference on Vaccine Research" Jointly sponsored by the Centers for Disease Control and Prevention (CDC) and the National Foundation for Infectious Diseases. Arlington, MD. May 30-June 2, 2001.

“Critical Issues in Higher Education 2001: The Higher Education Enterprise: Partners, Profits and Politics.” National Council for Higher Education (NCHE). San Diego, CA 1-4 March 2001.

“Learning, the Learner and Teaching Methodology: a course for teachers”. FSU Center for Teaching, Learning and Faculty Development (CTL&FD). Winter Semester 2001.

“Critical Issues In Higher Education: The Twin Challenges of For-profit and Dis-intermediation” National Council for Higher Education (NCHE). Washington, D.C. 26-28 January 2001

“Restructuring Higher Education To Meet the Challenges of A Global Economy”. NEA Higher Education President’s Meeting. Minneapolis, MN 1-5 August 2000

“The Third Annual International Conference on Vaccine Research” Jointly sponsored by the Centers for Disease Control and Prevention (CDC) and the National Foundation for Infectious Diseases. Washington, D.C. May 30-June 2, 2000.

“Critical Issues in Higher Education 2000: Technology in Education.” National Council for Higher Education (NCHE). Atlanta, GA April 6-9 2000.

“The Distributed Learning Workshop: Initial Developmental Update.” Sponsored by the Midwest Higher Education Commission Emeryville, CA 18-21 January 2000.

“The Second Annual International Conference on Vaccine Research” Jointly sponsored by the Centers for Disease Control and Prevention (CDC) and the National Foundation for Infectious Diseases. Bethesda, MD. D.C. May 31-June 1, 1999.

“Critical Issues in Higher Education 1999: Distance Education”. National Council for Higher Education (NCHE). San Antonio, TX. March 6-9 1999.

“The First Annual International Conference on Vaccine Research”. Jointly sponsored by the Centers for Disease Control and Prevention (CDC) and the National Foundation for Infectious Diseases. Washington D.C. May 31-June 1, 1998.

“The Immune System: Minding the Body, Embodying the Mind”. Mind Matters Seminar Series (Mountain View, California) delivered at Grand Rapids, Michigan. March 25, 1998.

“On the Cutting Edge of Quality”. National Council for Higher Education. Savannah, Georgia. March 4-6, 1998.

“Critical Issues Seminar: Quality Teaching and Learning Across the Disciplines”. National Education Association. Washington, DC. May 29-31, 1997.

“Molecular Approaches to the Control of Infectious Diseases”. A Cold Springs Harbor Laboratory Conference. Cold Springs Harbor, New York. September 9-13 1996.

“A Guide to the Internet and the World Wide Web”, NSF Chautauqua Course taught by Dr. Wayne Summers (Arizona State University) taught at Dayton, Ohio. May 8-10, 1996

“50th Anniversary of Universidad Autonoma de Guadalajara, Pre-medicine Advisors’ Conference”. Guadalajara, Mexico. October 25-29, 1995.

“IBM Seminar: Think Pad Applications in Higher Education”. Detroit, MI, October 1995.

“Pre-medical Advisors Conference”. Michigan Medical Schools Council of Deans. University of Michigan, School of Medicine, Ann Arbor, Mi. April 1994.

“Human Immunodeficiency Virus Biology and Clinical Latency”. Michigan Branch of the American Society for Microbiology, Ann Arbor, MI. April 1994.

“Basic Biology of Cancer”. NSF Chautauqua Course taught by Dr. Kenneth J. Soprano (Temple University, School of Medicine) taught at Dayton, Ohio. March 1994.

“Pre-medical Advisors Conference”. Michigan Medical Schools Council of Deans. Wayne State University, School of Medicine, Detroit, MI. April 1993.

“Fundamentals of Virology for the Nineties and Beyond”, NSF Chautauqua Course taught by Dr. Linda Pifer (University of Tennessee, School of Medicine) taught at Memphis, TN, March, 1993.

“Critical thinking Workshop”, Foundation for Critical Thinking (Sonoma State University) taught at Chicago, IL. March 13-14, 1993

“Equity in the Classroom”, Michigan Department of Education, Lansing, MI, April 1993.

“Pathogenic Mechanisms and the Immune Response”. Michigan Branch of the American Society for Microbiology, Ann Arbor Michigan, April 1993.

“Critical Thinking in Biology and Physical Science Courses”, workshop sponsored by FSU Biological and Physical Sciences Departments, taught by Dr. Craig Nelson of Indiana University, Big Rapids, MI, September, 1992

“Pre-medical Advisors Conference”. Michigan Medical Schools Council of Deans. Michigan State University, Schools of Human Medicine and Osteopathic Medicine. East Lansing, MI. April 1992.

“Changing Science Courses to promote Critical Thinking”, NSF Chautauqua Course taught by Dr. Craig E. Nelson (Indiana University) taught at Dayton, Ohio, March 1992.

“Mechanisms of Pathogenicity and Immunology”, Michigan branch of the American Society for Microbiology. Ann Arbor, MI, September 1993.

“Changing Role of the Pre-health Advisor”, national meeting of the National Association of Advisors of Health Professionals, Milwaukee, WI, June 17-21, 1992 .

“Changing Sciences Courses to Promote Critical Thinking”, NSF Chautauqua Course, Dayton OH, May 27-29, 1992.

“Equity in the Classroom”, Sponsored by the Michigan Department of Education and Michigan’s Colleges and Universities, Lansing, MI March 27-28, 1992.

CONTINUING EDUCATION (Professor: December 1987 to December 1991)

“Biotechnological Techniques in a Clinical Setting” American Society for Microbiology, Michigan Branch University of Michigan, Flint Campus, Flint, MI April 1991

"Transplantation Immunology" American Society for Microbiology, Michigan Branch University of Michigan, Flint Campus, Flint, MI April 25, 1990

"Methods of Immunological Research and Diagnosis". World Health Organization at-the-bench laboratory program, The Ernest Witebsky Center for Immunology Department of Microbiology, SUNY/AB, Buffalo, NY June 14-23, 1989

"Lyme Disease" American Society for Microbiology, Michigan Branch Eastern University October 1989

"Advances in Immunology: Experimental Approaches and Clinical Application." Chautauqua Short Course, University of Georgia, Atlanta, GA, March, 1989

"Immunology and Immunopathology of the Alimentary Canal." Eleventh International Convocation on Immunology, The Ernest Witebsky Center for Immunology, Department of Microbiology, School of Medicine, SUNY/AB, Buffalo, NY, CME credit, June 12-16, 1988

"Immunology, Virology, and Their Interaction." Chautauqua Short Course, University of Georgia, Atlanta, GA, March, 1988

"Basic Immunology." Chautauqua Short Course, University of Georgia, Atlanta, GA, April, 1987

CONTINUING EDUCATION (Associate Professor: 1981-82 to 1986-87)

"Vaccines: New Concepts and Developments" 10th International Convocation on Immunology The Ernest Witebsky Center for Immunology. School of Medicine. SUNY/AB. Buffalo, NY CME July 14-17, 1986

"Clinical Microbiology for Teachers and Practitioners" Department of Microbiology and Molecular Genetics. Harvard Medical School. Boston, MA CME Credit April 15-19, 1985

"Herpes, Hepatitis and AIDS: Current Concerns of the Health Practitioner" School of Dentistry. The University of Michigan. Ann Arbor, MI CME Credit . November 16, 1983

"Current Topics in Clinical Chemistry and Immunology" Department of Postgraduate Medicine and Health Professions Education. School of Medicine. The University of Michigan. Ann Arbor, MI CME Credit March 10-12, 1982

"Clinical Immunology and Allergy Conference".Department of Postgraduate Medicine and Health Professions Education School of Medicine.The University of Michigan.Traverse City, MI CME Credit June 6-8, 1981

"Current Concepts in Clinical Microbiology: Antibiotic Susceptibility".Department of Postgraduate Medicine and Health Professions Education. School of Medicine.The University of Michigan Ann Arbor, MI. CME Credit. March 27-28, 1981

"Mechanisms of Microbial Pathogenesis: Human Anaerobic Infections" 0.6 CEU Credit

"Detection of Clostridium botulium and its Toxins: Latest Methods" 0.6 CEU Credit

"Mechanisms of Pathogenicity of the Aerobic Cocci" 0.6 CEU Credit February 27- March 1, 1981 American Society for Microbiology. Dallas, TX

CONTINUING EDUCATION (Assistant Professor: 1977/78 to 1980/81)

"Symposium: Frontiers in Biomembrane Research". The Biomembrane Research Center. Wayne State University. Detroit, MI. March 15-16, 1980

"Ocular Bacteriology and Mycology". American Society for Microbiology. Las Vegas, NV. 0.4 CEU Credit. May 14, 1978

TEACHING ASSIGNMENTS: FERRIS (assignments during 2002-09 in bold)

BIOL 108 Medical Microbiology (Nursing, Allied Health students)

BIOL 308 Adv. Medical Microbiology/Immunology (Nursing students) * Discontinued in 2000

BIOL 286 General Microbiology (Med. Tech.)

BIOL 280 Applied Fermentation: Wine and Cheese of Italy

(Open to all students, Scientific Understanding Credit)

BIOL 386 General Microbiology and Immunology (Pre-Med/Dent., Biotechnology)

BIOL 387 Clinical Microbiology and Immunology (Pharmacy)

BIOL 438 Microbiology for Optometry

BIOL 460 Current Topics (mentor to 1-3 Applied Biology majors/semsester 1998-2004)

BIOL 480 Microbiology for Optometry (Optometry students) * Discontinued in 2004

BIOL 430/530 Contemporary Microbiology: Basic Concepts and Applications

(High school teachers, special summer course/workshop)

FSUS 100/101 First-Year Transition Seminar

FSUSH 290 Orientation to Medical, Dental and Veterinary Schools

VISITING TEACHING ASSIGNMENTS:

Central Michigan University

Fall Semester 1993: BIO 537 Immunology (Med. Tech., biology majors: grad/undergrad.)

Union Graduate School (Cincinnati, Ohio):

Adjunct Professor/ doctoral thesis advisor, Debra Stai, Ph.D.

NON-TEACHING ASSIGNMENTS/ ACTIVITIES: (2002-2009 in bold)

Member, Board of Directors MESSA (MI Education Special Services Association) (2008- present)

Member of the Editorial Board, Journal of Collective Bargaining in the Academy (2008- present)

(National Center for the Study of Collective Bargaining in Higher Education and the Professions)

Member, Board of Directors, American Society for Microbiology, Michigan Branch (2005- Present)

President –elect, American Society for Microbiology, Michigan Branch (2007-08)

President, American Society for Microbiology, Michigan Branch (2008-09)

Member, Board of Directors, National Education Association, Higher Education at-Large (2002 to 2005)

Member, (non-voting), Board of Directors, Michigan Education Association (2002 to 2005)

Member, NEA, Midwest Leadership Conference Planning Cmte/Conference Facilitator (2002-2005)

Member, NEA, Higher Education Advisory Group (2002-2005)

Member, NEA, Higher Education House of Rep./Senate Lobbying Group

Member, NEA, Continuing Education Distance Learning “Platform Selection” Group

Member, MEA Executive Cmte. (2002-2005)

Member, MEA Board of Directors (2002-2005)

Member, MEA, Local Affiliates Commission (2002-Present)

Member, MEA Area 13, Executive Committee (2002-2005)

Member, MEA Area 13 and 13A Region Leadership Group (2002-2005)

Intel Fellow as Science Judge in the Intel International Science and Engineering Fair (May 2000)

New FSU Faculty Orientation. Annual Presentation on Tenure / Promotion Procedures. (1999-2003) (2004- 2008)

Question author, NY Board of Regents Exam microbiology section (1999, 2000)
Michigan Optometry Board Exam: Immunology Questions (1989 -1994)
Member, Board of Directors/VP for Four-year Colleges/ Univ. Michigan Assn. for Higher Education (1998- 2006)
Member, Board of Directors, Michigan Assn for Higher Education (1994 to Present)
Member, Board of Directors, Friends of Ferris. A registered political action committee for FSU (1996- present)
FSU Presenter, Michigan House Higher Education Appropriations Subcmte (1996-1999)
Member of the National Association of Advisors for the Health Professions (1984 to present)
Applied Biology (Pre-medicine tract) Advisor: graduation clearance (1996 to present)
Outside Reviewer for International Journal of Pharmacognacy (1998-99)
Participant in Ferris Dental Hygiene Program National Accreditation Site Visit (Nov. 1998)
Member, American Society for Microbiology (1970-1988) (2006- Present)
Member, Buffalo Collegium of Immunology (An Invitation only international association) (1977 to present)
Member, Connecting With the Learner Committee, State of Michigan, Department of Education (1997-98)

FSU SERVICE ACTIVITIES (2002-2009 in bold)

Departmental:

Microbiology Candidate Selection Cmte	(2005-06)
Individual Tenure Review Subcmte, (Herron), member	(2002-03 to present)
Individual Tenure Review Subcmte. (Franklund). Chair	(2005-06 to present)
Curriculum Cmte.	(1998-99 to 2002-03)
	(1984-85 to 1992-93)
	(1979-80 to 1981-82)
Department Rep. Athletic Recruiting	(1995-96 to 2002-03)
Chair, Kenneth E. Spoerk Memorial Award Cmte	(1982-83 to present)
Planning Cmte. Chair	(1991-92 to 1994-95)
Biotechnology Advisory Cmte.	(1985-86 to 1994-95)
Ad Hoc Biotechnology Group	(1985-86 to 1994-95)

COLLEGE OF ARTS AND SCIENCES:

College Planning Cmte	(1999-00 to 2007-08)
	(1991-92 to 1995-96)
First-Year Transition Program, faculty	(1996-97 to 1997-98)
Academic Advisor: CAS Registration Program	(1987-88 to 2004-05)
Pre-medical Advisory Cmte., Chair	(1978-79 to present)
Pre-dental Advisory Cmte.	(1982-83 to present)
First-Year Challenge Retention Program, Guide	(1993-94 to 1995-96)
Re-vision Cmte (Semester Conversion)	(1990-91 to 1991-92)
Promotion/Merit Cmte., Chair	(1982-83 and 1983-84)
Member	(2004-05)

UNIVERSITY-WIDE: (2002-2009 in bold)

Student Organizations:

Lead, Pre-medical Club Faculty Advisor	(1978-79 to present)
Phi Delta Chi, Faculty Advisor	(1979-80 to 1999)

Ferris Faculty Association:

Member, FSU Board-President-FFA Leadership	(2008- present)
“Culture Discussion Group”	
Past- president	(2008- present)
President	(2005-2007)
	(1996 to 2003)

Contact Negotiation Team member:	(1983-84) (1986-87) (1994-1997) (2001-02) (2006-2007) (2009-10)
Employee Assistance Program Dev. Cmte,	(1997-98)
President's Leadership Council	(1996-03 (2005-2006-07)
Semi-monthly Discussions with VPAA/Provost	(1996-97 - 2006-07)
Executive Board Member (CAS Rep./Past Pres.)	(1989-90) (2006- present)
Faculty Workload Review Cmtes.	(1987-92)
Vice-president	(1987-89)
Summer Quarter Employment Cmte	(1984 to 1989)
FSU MLK Program Cmte	(1999-2000)
Recruitment Retention Policy Cmte	(2000-02)
Web-Based Instruction Policy Cmte	(2000-2001)
Ferris Communicable Disease Task Force	(1985-86 - present)
Strategic Planning and Resources Council (SPARC)	(2006-07 – present)
Assessment Tracking System Task Force	(2006-07)
Faculty Senate:	
University Planning Cmte.	(1995-96 to 2002-03)
Senator, College of Arts and Sciences	(1995-96 to 2002-03)
NCA Executive Cmte., Steering Cmte.,	(1992-93 to 1993-94)
	(1985-86 to 1987-88)
Budget Systems Cmte.	(1994-95 to 1995-96)
University Semester Transition Team	(1990-91 to 1991-92)
APR:College of Arts and Sciences (Biotechnology)	(1991-92)
APR:College of Business: Personnel Management	(1990-91)
Chair, Undergraduate Curriculum Council	(1987-88 to 1990-91)
Member, University Curriculum Committee	(1987-88 to 1990-91)
Educational Planning Cmte. (EPC):	
Academic Program Review Cmte	(1986-87)
Chair, EPC	(1985-86)
Senate Formation Election Cmte.	(1986)
New Faculty Orientation Cmte	(1985-86)
Vice-chair, EPC	(1984-85)
Chair, Long-Range Planning Subcommittee	(1983-84)
National Board Examination Review Session (Dental Hygiene)	(1995-96)
Recruiting Advisory Committee, Office of Admissions	(1994-95)
Ferris Chlamydia Research Project, Co-leader	(1985-86 to 1988-89)
All -College Promotion Cmte member/Chair	(1982-83)/ (1983-84)
Ad Hoc FSC Cmte. on Hepatitis B Vaccination	(1983)
Student Health Advisory Cmte.	(1977-78 to 1983-84)

COMMUNITY SERVICE: (2002-2007 in bold)

Member, Board of Directors, Friends of Ferris (PAC)	(1998- present)
Big Rapids Friends of the Library, volunteer	(1996 – present)
Mecosta Intermediate School Dist., Science Center Adv. Board	(1990-91 to 1993-94)

Curriculum Vitae

James P Scott DVM

Address: Department of Biological Sciences
Ferris State University
820 Campus Drive, ASC 2018
Big Rapids, Michigan 49307

Phone: 231-591-2620

Email: James_Scott@Ferris.edu

Education

1973 –1976 Central Michigan University Mt Pleasant, MI

- o major in Biology
- o minor in Chemistry

1976 – 1981 Michigan State University East Lansing, MI

- o BS degree Veterinary Science. Major in Fisheries and Wildlife
- o Doctorate degree in Veterinary Medicine

Professional Experience:

2004 – Present Ferris State University Big Rapids, MI

Assistant Professor Of Biology Tenure Tract

- **Teaching responsibilities** include Lecture and Laboratory sections in:
 - o Human Physiology and Anatomy for Biology Majors BIOL 321-322, 2004 →
 - o Human Anatomy and Physiology for Optometry OPTM 537-538, 2006 →
 - o Human General Pathology for Optometry OPTM 630, 2004 →
 - o Human Forensic Pathology BIOL 307, 2005 →
 - o Pathophysiology BIOL 300, 2005 →
- **University service:**
 - o Academic Advising of Pre-Veterinary Medicine and Forensic Science Students
 - o Procurement and Care of Ferris State University Human Cadaver collection for use in Anatomy and Physiology Laboratories
 - o Supervisor of the Biology Department Animal Use and Care protocols
 - o Advisor and instructor of Advanced Biology to high school junior students in the Math Science and Technology Center at Ferris State University
- **University Committee work:**
 - o Biology Department Curriculum Committee, 2005 - present
 - o Biology Department Faculty Development Committee, 2005 - present
 - o Biology Department Head Search Committee, 2005-2006
 - o Chair, Biology Department Physiology Faculty Search Committee, 2005 -2006
 - o Biology Department Physiology Faculty Search Committee, 2006 - present
 - o Ferris State University Institutional Animal Care and Use Committee, 2002 - present
 - o Ferris State University AAALAC Accreditation Committee, 2004 – present
 - o Forensic Accreditation Review Committee 2006 - present

1987 – Present Ferris State University Big Rapids, MI

Ferris State University Animal Care Facility Attending Veterinarian

- Responsibilities are oversight of the Animal Care Facilities at Ferris State University including treatment and care of all animals used in research projects and teaching laboratories. Since 2004 I have been the only one to carry this responsibility due to the retirement of Dr Norwood Neumann DVM.

1981- present Riversbend Animal Hospital Big Rapids, MI

Doctor of Veterinary Medicine

- Specializing in canine, feline, reptile and avian internal medicine and surgery
- Other clinic duties include; management of employees, ordering and maintenance of supplies and equipment, public relations and client education

1987-2004 Ferris State University Big Rapids, MI

Part Time and Temporary Full Time Adjunct Faculty

- Courses Taught:
 - Human Anatomy and Physiology, BIOL 109 Laboratory 1987 – 1992
 - Human Anatomy and Physiology, BIOL 205 Lecture and Laboratory 1992 – 2004
 - Human Physiology and Anatomy, BIOL 232 Laboratory 1994 – 2000
 - Human Anatomy and Physiology for Optometry, BIOL 431 2000 – 2004
 - General Minors Biology, BIOL 103 Lecture and Laboratory 2000 – 2003
 - General Majors Biology, BIOL 121 -122 Lecture and Laboratory 1994 – 2000
 - Introduction to Human Genetics Lecture and Laboratory 1994-1995
 - Botany, BIOL 113 1993 – 1994
 - Plant Identification II, HORT 112 1996 – 1998
 - Plant Propagation, HORT 152 2000 – 2004
 - Fundamentals of Soil Science, HORT 143 1999 - 2004
- During this time I had also been taught lecture and laboratory sections in Biology/Anatomy and Physiology for High School Juniors in the Math/Science Technology Center from the Mecosta/Osceola School District. This responsibility began in 1998 and continues to this date.

1985-present 7522 East Pierce Drive Big Rapids, MI

Greenhouse Operator

- Own and operate a 1200 square foot greenhouse and small scale plant retail center
- Specialized in annual/ perennial flowers and vegetables from 1985-1995
- Hardwood and softwood cutting experience
- From 1985 until 1993 I had been working extensively with lily breeding and culture until disease and several late frosts forced me into other areas of horticulture
- Since 1995 I have been growing Orchids and now have a collection of over 600 species and hybrids

1976-1981 Giltner Hall Michigan State University East Lansing, MI

Laboratory Animal Care Service

Responsible for care and maintenance of several large colonies of rats and mice used for research at Michigan State University

Continuing Education

1981- present

- Although Michigan State Law does not require continuing education after graduation from medical school for veterinarians, I have earned hundreds of hours of continuing education credits through seminars and short courses since graduation (documentation available upon request)
- **Most recent meetings attended:**
 - American Association for Laboratory Animal Science, Salt Lake City, UT, November 2006
 - American Veterinary Medical Association Eastern States Conference, Orlando FL Jan 2006
 - Michigan Veterinary Medical Association Conference, Lansing, MI, Jan. 2006
 - American Academy of Forensic Sciences Seattle, WA, Feb. 2006

Affiliations

- American Association of Laboratory Animal Care – Member since 2004
- American Veterinary Medical Association 1981-present
- Michigan Veterinary Medical Association 1981-present
- Grand Rapids Small Animal Academy 1981-present
- Big Rapids area Wildlife Rescue advisory Board 1981-1995
- Chief Veterinarian of The Wildlife Rescue Organization 1981-1995
- Pine View School Board Treasurer from 1982-1988
- Trustee of Norwich Township Zoning and Planning Board 1995-2000
- North American Lily Society 1987-present
- American Orchid Society 1994 - present
- Grand Valley Orchid Society – President in 2000-01 and 2003-04
- Master Gardener Certification through Michigan State University

References:

- **Dr. Ray Cross, President**

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Morrisville, New York 13408
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crossrw@morrisville.edu

- **Dr Nancy Peterson-Kline**

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- **Paul Bigford**
Math Science and Technology Center Coordinator
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- **Dr James Hoerter**
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- **Dr Karen Strasser**
Ferris State University Biology Department Interim Head
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Anne M. Spain, PhD

Associate Professor
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Big Rapids, MI 49307

Primary e-mail: annespain@ferris.edu
Secondary e-mail: anne.m.spain@gmail.com
Office phone: 231.591.3190
Cell phone: 405.250.3294

EDUCATION:

2002-2009. Ph.D. in Microbiology. Department of Botany and Microbiology, University of Oklahoma, College of Arts and Sciences and Institute for Earth and Energy, Norman, OK.

2002. B.S. in Biology, minor in Chemistry (*Summa Cum Laude*). Central Michigan University, College of Arts and Sciences, Mt. Pleasant, MI.

APPOINTMENTS:

2014-Present	Ferris State University	Associate Professor of Biol. Sciences
2011-2014	Ferris State University	Assistant Professor of Biol. Sciences
2009-2011	University of Oklahoma	Postdoctoral Research Associate

TEACHING EXPERIENCE:

2011-Present: Faculty member in the Department of Biological Sciences, Ferris State University (Big Rapids, MI). Courses taught include General Biology 2 (Biol 122; lecture + lab), Medical Microbiology (Biol 108; lecture + lab), Microbial Ecology (Biol 218; lecture + lab) and Current Topics in Biology (Biol 460; lecture).

2008: Graduate Teaching Assistant for Microbial Physiology and Molecular Biology Laboratory (MBIO 4873). Department of Botany and Microbiology, University of Oklahoma, Norman, OK.

2007-2008: Graduate Teaching Assistant for Ecology/Pathology Laboratory (MBIO 4813). Department of Botany and Microbiology, University of Oklahoma, Norman, OK.

2006: Graduate Teaching Assistant for Fundamentals of Microbiology Introductory Laboratory (MBIO 3812). Department of Botany and Microbiology, University of Oklahoma, Norman, OK.

1999-2000: Chemistry Laboratory Aide for Introduction to Chemistry Laboratory. Department of Chemistry, Central Michigan University, Mt. Pleasant, MI.

1998: Anatomy and Physiology Lecture Course Tutor. Central Michigan University, Mt. Pleasant, MI.

RESEARCH EXPERIENCE:

2011- Present: Principal investigator and research advisor for undergraduate students. Department of Biological Sciences, Ferris State University, Big Rapids, MI.

2009-2011: Postdoctoral Research Associate. Department of Botany and Microbiology, University of Oklahoma, Norman, OK. Contact: Lee Krumholz, (405) 325-0427.

2002-2009: Graduate Research Assistant. Department of Botany and Microbiology, University of Oklahoma, Norman, OK. Dissertation title: Characterization of Subsurface Microbial

Communities Involved in Bioremediation of Uranium and Nitrate. Research advisor: Lee Krumholz, (405) 325-0427.

2000-2002: General Student Research Assistant. Biology Department, Central Michigan University. Contact: Elizabeth Wheeler Alm, (989) 774-2503.

2000: Research Technician for Hospital Disinfectant Research and Development. Caltech Industries, Inc., Midland, MI. Contact: Catherine Anders, (800) 234-7700.

PUBLICATIONS:

Spain, A. M., M. S. Elshahed, F. Z. Najar, and L. R. Krumholz. Metatranscriptomic analysis of a high-sulfide aquatic spring reveals insights into sulfur cycling and unexpected aerobic metabolism. *Peer J In review*.

Spain, A. M. and L. R. Krumholz. 2012. Cooperation of three denitrifying bacteria in nitrate removal of acidic nitrate- and uranium-contaminated groundwater. *Geomicrobiol J* **29**: 830-842

Spain, A. M. and L. R. Krumholz. 2011. Nitrate reducing bacteria at the nitrate and uranium contaminated Oak Ridge Integrated Field Research Challenge Site: A Review. *Geomicrobiol J* **28**: 418-429.

Spain, A. M., A. D. Peacock, and L. R. Krumholz. 2011. Effects of microbial community structure, terminal electron accepting conditions, and molybdate on the extent of U(VI) reduction in landfill aquifer sediments. *Geomicrobiol J* **28**:430-443.

Spain, A. M., C. W. Forsberg, and L. R. Krumholz. 2011. Phylum XVII. *Fibrobacteres*, p. 737-746. *In* N. R. Krieg, J. T. Staley, D. R. Brown, B. Hedlund, B. J. Paster, N. Ward, W. Ludwig, and W. B. Whitman (ed.), *Bergey's Manual of Systematic Bacteriology*, 2nd ed, vol. 4. Springer Verlag, New York.

Istok, J. D., M. Park, M. Michalsen, **A. M. Spain**, L. R. Krumholz, C. Liu, J. McKinley, P. Long, E. Roden, A. D. Peacock, and B. Baldwin. 2009. A thermodynamically-based model for predicting microbial growth and community composition coupled to system geochemistry: Application to uranium bioreduction. *J Contam Hydrol* **112**:1-14

Spain, A. M., L. R. Krumholz, and M. S. Elshahed. 2009. Abundance, composition, diversity and novelty of soil *Proteobacteria*. *ISME J* **3**:992-1000.

Michalsen, M. M., A. D. Peacock, A. N. Smithgal, D. C. White, **A. M. Spain**, Y. Sanchez-Rosario, L. R. Krumholz, S. D. Kelly, K. M. Kemner, J. McKinley, S. M. Heald, M. A. Bogle, D. B. Watson, and J. D. Istok. 2009. Treatment of nitric acid-, U(VI)-, and Tc(VII)-contaminated groundwater in intermediate-scale physical models of an in situ biobarrier. *Environ Sci Technol* **43**:1952-61.

Elshahed, M. S., N. H. Youssef, **A. M. Spain**, C. Sheik, F. Z. Najar, L. O. Sukharnikov, B. A. Roe, J. P. Davis, P. D. Schloss, V. L. Bailey, and L. R. Krumholz. 2008. Novelty and uniqueness patterns of rare members of the soil biosphere. *Appl Environ Microbiol* **74**:5422-8.

Spain, A. M., A. D. Peacock, J. D. Istok, M. S. Elshahed, F. Z. Najar, B. A. Roe, D. C. White, and L. R. Krumholz. 2007. Identification and isolation of a *Castellaniella* species important during biostimulation of an acidic nitrate- and uranium-contaminated aquifer. *Appl Environ Microbiol* **73**:4892-904.

Michalsen, M. M., A. D. Peacock, **A. M. Spain**, A. N. Smithgal, D. C. White, Y. Sanchez-Rosario, L. R. Krumholz, and J. D. Istok. 2007. Changes in microbial community composition and geochemistry during uranium and technetium bioimmobilization. *Appl Environ Microbiol* **73**:5885-96.

Alm, E., J. Burke, and **A. Spain**. 2003. Fecal indicator bacteria are abundant in wet sand at freshwater beaches. *Water Research* **37**:3978-3892.

ABSTRACTS AND PRESENTATIONS (Names of undergraduate student mentees are underlined):

Muriset, R. and **A.M. Spain**. Characterization of two bacterial soil isolates that display unique surface growth patterns. Presented at the American Society for Microbiology General Meeting. Poster presentation. New Orleans, LA. 2015.

Muriset, R. and **A.M. Spain**. Characterization of growth and surface motility in soil isolates, *Paenibacillus* sp., strains A1 and A3. Presented at the American Society for Microbiology Michigan Branch Fall Meeting. Poster presentation. Traverse City, MI. 2014.

Carr, A. L. and **A. M. Spain**. Prevalence and characterization of tetrathionate-reducing bacteria isolated from environmental samples. Presented at the American Society for Microbiology General Meeting. Poster presentation. Denver, CO. 2013.

Carr, A. L. and **A. M. Spain**. Prevalence and characterization of tetrathionate-reducing bacteria isolated from environmental samples. Presented at the American Society for Microbiology Michigan Branch Spring Meeting. Poster presentation. Big Rapids, MI. 2013.

Spain, A. M., Elshahed, M. S., Najar, F. Z., and L. R. Krumholz. Comparative metatranscriptomic analysis of an anaerobic high-sulfide spring reveals insight into sulfur cycling pathways and unexpected aerobic metabolism. Presented at the American Society For Microbiology General Meeting. Poster presentation. New Orleans, LA. 2011.

Spain, A. M., Krumholz, L. R., and M. S. Elshahed. Composition, diversity, and novelty within soil *Proteobacteria*. Presented at the American Society For Microbiology General Meeting. Poster presentation. Boston, MA. 2008.

Spain, A. M., Senko, J.M., and L. R. Krumholz. Characterization of denitrifying bacteria from a nitrate- and uranium-contaminated aquifer. Presented at the American Society For Microbiology General Meeting. Poster presentation. Toronto, ON, Canada. 2007.

Spain, A. M., Peacock, A. D., Elshahed, Istok, J. D., White, D. C., and L. R. Krumholz. Bioremediation of acidic nitrate- and uranium contaminated groundwater by ethanol results in stimulation of β -Proteobacteria and decrease in bacterial diversity. Presented at the 11th International Symposium for Microbial Ecology. Poster Presentation. Vienna, Austria. 2006.

Spain, A. M., Elshahed, M. S., Najar, F. Z., Roe, B. A., Istok, J, and L. R. Krumholz. Culture-dependent and -independent identification of denitrifying bacteria in an aquifer undergoing bioremediation for nitrate and uranium. Presented at the American Society For Microbiology General Meeting. Poster presentation. Atlanta, GA. 2005.

Spain, A. M., Elshahed, M. S., Najar, F. Z., Roe, B. A., Istok, J, and L. R. Krumholz. Culture-dependent and -independent identification of denitrifying bacteria in Areas 1 and 2 at the FRC. Presented at the Annual Natural and Accelerated Bioremediation Research Program Principal Investigators' Meeting. Poster Presentation. Airlie, VA. 2005.

Spain, A. M., Peacock, A., White, D. C., Istok, J., and L. R. Krumholz. Microbial communities involved in uranium reduction under sulfate-reducing, iron-reducing, and methanogenic conditions. Presented at the American Society For Microbiology General Meeting. Poster presentation. New Orleans, LA. 2004.

Spain, A. M., Peacock, A., White, D. C., Istok, J., and L. R. Krumholz. Microbial communities involved in uranium reduction under sulfate-reducing, iron-reducing, and methanogenic conditions. Presented at the Annual Natural and Accelerated Bioremediation Research Program Principal Investigators' Meeting. Poster Presentation. Airlie, VA. 2004.

Spain, A. M., Senko, J., and L. R. Krumholz. The effect of pH on denitrifying bacteria. Presented at the Joint American Society For Microbiology Missouri Valley Branch Annual Meeting & Midwest Microbiology Educators Conference. Oral presentation. Kansas City, MO. 2004.

INVITED PRESENTATIONS:

Advice to a Young Scientist: Finding Balance in a Scientific Career. Friday, March 23, 2012. College of Science and Technology's Alumni Career Day, Central Michigan University.

Seeing the Unseen: Using Metatranscriptomics to Address Questions in Microbial Ecology. January 12, 2012, Department of Biology, Central Michigan University.

Seeing the Unseen: Using Metatranscriptomics to Address Questions in Microbial Ecology. September 23, 2011. Department of Biological Sciences, Ferris State University.

UNDERGRADUATE STUDENT RESEARCH PROJECTS:

Brett Walker (Fall, 2015). Project title: Molecular identification of *Paenibacillus* strains A1 and A3. This student will complete up to 300 hours of a biotechnology internship (Biol 491) by working in my lab on this project. Ferris State Univ.

Crisha Barrett (Fall, 2015). Project title: Phenotypic characterization of *Paenibacillus* strains A1 and A3. This student is working on her project as a paid research assistant. Ferris State Univ.

Sarah Mathie (2015-Present). Project title: Effects of nutritional parameters on the growth and surface growth pattern of soil isolates *Paenibacillus* species strains A1 and A3. This student was awarded a Summer Research Fellowship (2015) from Ferris State University for her work on this project.

Rebecca Muriset (2014-2015). Project title: The study environmental parameters that affect surface growth and motility patterns of soil isolates *Paenibacillus* species strains A1 and A3. This student completed 400 hours of a biotechnology internship (Biol 491) by working in my lab on this project and was awarded a Student Research Grant from the College of Arts and Sciences to present her research at a national conference. Ferris State Univ.

Megan Knight (Fall, 2014). Project title: Leifson staining procedure on *Paenibacillus taiwanensis* isolates A1 and A3 from soil adjacent to the Muskegon River. This student enrolled in and completed an independent research project (1 credit, Biol 497). Ferris State Univ.

Spencer Crittendon (2013-2014). Project title: Identification and characterization of two soil bacterial isolates that display unique motility features. This student was granted a Student Research Assistant award (2013-2014) from Ferris State University for his work on this project.

Amber Carr (2012-2013). Project title: Prevalence and characterization of tetrathionate-reducing bacteria isolated from environmental samples. This student was awarded a Summer Research Fellowship (2012) from Ferris State University for her work on this project.

Stephanie Demsich (Summer, 2013). Project title: Effects of artificial sweeteners on gastrointestinal tract bacteria. This student enrolled in and completed an independent research project (3 credits, Biol 497). Ferris State Univ.

Chepchumba Kottutt (Spring, 2013). Paper title: Discovering Thiosulfate and Tetrathionate Reduction. This student enrolled in and completed an independent research project (1 credit, Biol 497). Ferris State Univ.

Blaire Kerwin (2011). Project title: Enrichment and enumeration of sulfate-reducing and thiosulfate-disproportionating bacteria from Zodletone source sediment. Univ. Oklahoma.

Foster Dobry (2011). Project title: Microaerophilic sulfur oxidizers from Zodletone Spring. Univ. Oklahoma.

John Frink (2006-2008). Project title: pH-dependent heavy metal (copper, aluminum, and nickel) tolerance in bacteria isolated from nitrate- and uranium-contaminated groundwater. Univ. Oklahoma.

Additional research students (trained/participated on a volunteer basis):

Julie Cohen (Fall, 2012-Spring, 2012)

Maria Ilyukhina (Fall, 2013)

Chepcumba Kotutt (Fall, 2012)

Megan Knight (Spring, 2014)

Zachary Brady (Summer, 2013)

Alyx-Andrea Johnson (Spr-Summer, 2014)

Brett Jenkins (Summer, 2013)

Crisha Barrett (Spring-Summer, 2015)

Alexander Totten (Fall/Spring, 2013-2014)

Elizabeth Utke (Spring, 2015)

DEPARTMENT, COLLEGE, AND UNIVERSITY SERVICE:

2012-Present. Academic Advisor for Biology majors with Pre-Physician Assistant intentions, Ferris State Univ.

2015-Present. Member of the curriculum sub-committee on establishing scientific literacy among Biology majors. Department of Biol. Sciences, Ferris State Univ.

2015-Present. Member of the Standards and Policies Committee, College of Arts and Sciences, Ferris State Univ.

2014-Present. Member of the Promotion/Merit Committee, College of Arts and Sciences, Ferris State Univ.

2012-2015. Member of the Curriculum Committee, Dept. of Biol. Sciences, Ferris State Univ.

2012-2015. Member of the Special Grants Committee, College of Arts and Sciences, Ferris State Univ.

2012-2015. Member of the Health Promotions Committee, Academic Senate, Ferris State Univ.

Fall, 2014. Temporary Coordinator of the "Friday Afternoon Research Talks" seminar series, held by the Dept. Biol. Sciences, Ferris State University.

2013-2014. Member of the Biology Faculty Search Committee (Genetics), Department of Biol. Sciences, Ferris State Univ.

2013. Finalist judge for the Honor's Program Public Address Contest, Ferris State Univ.

2013. Temporary member of the Standards and Policies Committee, College of Arts and Sciences, Ferris State Univ.

2006. Chair of the Graduate Student Committee for the Annual Donald C. Cox Lecture in Microbiology Department of Botany and Microbiology, Univ. Oklahoma

PROFESSIONAL SERVICE:

2012-Present. Board member for the Michigan branch of the American Society for Microbiology (MI-ASM). Served as President-Elect during the 2014-2015 academic year, and have been serving as President of MI-ASM since July 1, 2015.

2015. Oral presentation judge for the spring regional meeting of MI-ASM held at Eastern Michigan University.

2015. Invited reviewer for the journal *PLoS ONE*.

2012 and 2015. Invited reviewer for the journal *Environmental Science and Technology*.

2014. Invited reviewer for the *Journal of Applied Microbiology*.

2012 and 2014. Poster judge for regional meetings of the MI-ASM (held at Central Michigan University in the Spring, 2012 and at Davenport University in the Spring, 2014)

2013. Panelist reviewer for the National Science Foundation's Molecular and Cellular Biosciences Program.

2011 and 2013. *Ad hoc* reviewer for the National Science Foundation's Dimensions of Biodiversity Grant Program.

2013. Planning committee member and co-host for the MI-ASM Spring Meeting at Ferris State University.

2012. Invited reviewer for Central Michigan University's Early Career Grant Program.

2005. Organized and taught a 2-day workshop for the Microbiology department and a visiting research scientist on how to build phylogenetic trees from bacterial 16S rRNA sequences, Univ. Oklahoma.

2005-2006. Volunteered for the Oklahoma Regional Science Bowl.

GRANTS, FELLOWSHIPS, AND SCHOLARSHIPS:

Faculty Research Grant, Ferris State University (2014-2015). Project Title: Effects of Physical and Chemical Parameters on Surface Growth Patterns and Cell Motility of Soil Isolates, *Paenibacillus* species (sp.), Strains A1 and A3. Award total: \$7,446.

Faculty Research Grant, Ferris State University (2013-2014). Project Title: Prevalence and Characterization of Tetrathionate-Reducing Bacteria Isolated from Anaerobic Sediments. Award total: \$7,270

George L. and Cleo Cross Graduate Scholarship, Department of Botany and Microbiology, University of Oklahoma (2008)

Lois Pfiester Scholarship for Women in Science, Department of Botany and Microbiology, University of Oklahoma (2006).

University of Oklahoma Graduate College Graduate Foundation Fellowship (2002-2006).

International Society for Microbial Ecology Travel Grant Award to attend the 11th International Symposium for Microbial Ecology (ISME-11) in Vienna, Austria, 2006.

American Society for Microbiology Corporate Activities Program Student Travel Grant Award, 2005.

Department of Energy's Natural and Accelerated Bioremediation Research Program Principal Investigators Meeting Student Travel Award, 2004 and 2005.

American Society for Microbiology Undergraduate Research Fellowship (2001). Title: Microbial Community Structure of Arsenic-Contaminated Groundwater.

Arthur Loren Kontio Outstanding Young Biologist Award (2000-2001).

Centralis Gold Scholarship from Central Michigan University (1998-2002).

PROFESSIONAL AFFILIATIONS:

American Society for Microbiology, Member (2012-Present)

American Society for Microbiology, Michigan Branch, Member (2012-Present)

American Society for Microbiology, Postdoctoral Member (2010-2011)

American Society for Microbiology, Student Member (2000, 2002, 2004-2009)

International Society for Microbial Ecology, Student Member (2006)

American Society for Microbiology, Missouri Valley Branch, Student Member (2003-2004, 2011)

American Society for Microbiology, Michigan Branch, Student Member (2002)

Christopher M. Westerkamp

Associate Professor
Biological Sciences Department
ASC 2018
Ferris State University
Big Rapids, MI 49307
(231) 591-5037 (office)
(231) 591-2540 (fax)
westerc@ferris.edu

Professional Experience

- 2010- Associate Professor, Department of Biological Sciences, Ferris State University, Big Rapids, MI
- 2007-2010 Assistant Professor, Department of Biological Sciences, Ferris State University, Big Rapids, MI

Education

- Ph.D. East Carolina University Greenville, NC 2003- 2007
Dissertation Title: The Role of 5' AMP-activated Protein Kinase in Skeletal Muscle Hypertrophy with Age and Overload
Major: Bioenergetics
Advisor: Scott E. Gordon, Ph.D.
- M.A. East Carolina University Greenville, NC 2001-2003
Thesis Title: The Effects of Angiotensin-Converting Enzyme (ACE) Inhibition on Nuclear Proliferation and Hypertrophy in Overloaded Skeletal Muscle
Major: Exercise and Sport Science, Concentration: Exercise Physiology
Advisor: Scott E. Gordon, Ph.D.
- B.S. Ball State University Muncie, IN 1997-2001
Major: Exercise Science and Wellness Minor: Anthropology

Teaching Experience (* Denotes new prep)

Ferris State University

- Fall 2011 Human Anatomy & Physiology (BIO 109) 4 lecture/ 3 lab sections and Exercise Physiology (BIO 301) 1 lecture section
- Sum 2011 Human Anatomy & Physiology (BIO 205) 2 lecture/lab sections and Pathophysiology (BIO 300) 1 lecture section
- Spr 2011 Human Anatomy & Physiology (BIO 205) 4 lecture/ 3 lab sections and Pathophysiology (BIO 300) 1 lecture section
- Fall 2010 Human Anatomy & Physiology (BIO 109) 4 lecture/ 3 lab sections and *Exercise Physiology (BIO 301) 1 lecture section
- Sum 2010 Human Anatomy & Physiology (BIO 205) 1 lecture/lab sections and Pathophysiology (BIO 300) 1 lecture section
- Spr 2010 Human Anatomy & Physiology (BIO 205) 2 lecture/lab sections and Pathophysiology (BIO 300) 1 lecture section
- Fall 2009 *Human Anatomy & Physiology (BIO 109) 5 lecture/3 lab sections and Pathophysiology (BIO 300) 1 lecture section
- Sum 2009 Human Anatomy & Physiology (BIO 205) 1 lecture section, and Pathophysiology (BIO 300) 1 lecture section.
- Spr 2009 Human Anatomy & Physiology (BIO 205) 3 lecture/lab sections, and Pathophysiology (BIO 300) 1 lecture section
- Fall 2008 Clinical Anatomy and Physiology 1 (BIO 331) 7 lab sections
- Sum 2008 Human Anatomy & Physiology (BIO 205) 2 lecture/lab sections

- Spr 2008 *Human Anatomy & Physiology (BIO 205) 3 lecture/2 lab sections, and
*Pathophysiology (BIO 300) 1 lecture section
Fall 2007 *Clinical Anatomy and Physiology 1 (BIO 331) 6 lecture sections

East Carolina University

- 2004 *Physiology of Exercise
Instructor of record for junior/senior level course, and designed all lectures, tests, and quizzes.
2001-2003 *Physiology of Exercise Lab
Organized and taught laboratory lectures.
2002-2007 Undergraduate Independent Study
Instructed undergraduate students with laboratory procedures.

Research Experience

- 2003-2007 Research Assistant, East Carolina University, Human Performance Laboratory
Conducted research on the impairment of overload-induced hypertrophy in aged skeletal muscle.
2001-2003 Research and Teaching Assistant, East Carolina University, Human Performance Laboratory
Directed graded exercise testing, body composition assessments, and exercise prescriptions. Conducted research examining the proliferative response of myonuclei, endothelial cells, and fibroblasts to skeletal muscle overload.
2001 Undergraduate Intern, Ball State University, Human Performance Laboratory
Duties included exercise testing and prescription. Assisted with master's thesis experiments involving the effects of water loss on body composition measurements and the effects of menstruation on lactate threshold in women.

Professional Organizations and Certifications

- 2001-present American College of Sports Medicine
2002-present ACSM Certified Exercise Specialist®
2003-present American Physiological Society
2008-present Human Anatomy and Physiology Society
1999-present CPR/AED Certification

Publications

S.E. Gordon, J.A. Lake, **C.M. Westerkamp**, and D.M Thomson. Does AMP-activated protein kinase negatively mediate aged fast-twitch skeletal muscle mass? *Exerc. Sport Sci. Rev.*, Vol. 36, No. 4, pp. 179-186, 2008.

S.E. Gordon, **C.M. Westerkamp**, K.J. Savage, R.C. Hickner, S.C. George, C.A. Fick, and K.M. McCormick, Basal, but not overload-induced, myonuclear addition is attenuated by

N^{G} -nitro-L-arginine methyl ester (L-NAME) administration, Canadian Journal of Physiology and Pharmacology 2007 85: 646-651.

C.M. Westerkamp and S.E. Gordon, Angiotensin-converting enzyme inhibition attenuates myonuclear addition in overloaded slow-twitch skeletal muscle, Am J Physiol Regul Integr Comp Physiol. 2005 Oct; 289(4): R1223-31.

Abstracts

R. M. Kraus, **C.M. Westerkamp**, T.K. Brtis. The 30-minute Time Trial as a Predictor of Ventilatory Threshold Running Velocity and Heart Rate. ACSM National Conference, Denver, CO. May 2011.

J.D. Redford, E. Coccimiglio, D. Benham, **C.M. Westerkamp**. Skeletal Muscle Hyperplasia in Response to Synergist Removal. Ferris State University College of Arts and Sciences Recognition Event, Big Rapids, MI. April 2011.

T.K. Brtis, **C. M. Westerkamp**, & R. M. Kraus. The 30-minute time trial as a predictor of ventilatory threshold running pace and heart rate: a preliminary report. Midwest ACSM Conference, Indianapolis, IN. October 2010.

S.E. Gordon and **C.M. Westerkamp**. 5'-AMP-activated protein kinase (AMPK) inhibition restores overload-induced growth of fast-twitch skeletal muscle in aged rats. Nathan Shock Center Conference on Aging, San Antonio, TX. October 2007.

S.E. Gordon and **C.M. Westerkamp**, 5'-AMP-activated Protein Kinase (AMPK) Inhibition Restores Overload-induced Growth of Fast-twitch Skeletal Muscle in Aged Rats. American Federation for Aging Research, New York, NY. October 2007.

C.M. Doty, **C.M. Westerkamp**, J.K. LeMoine, R.C. Hickner, D.M. Thomson, L.C. Katwa, and S. E. Gordon. Acute resistance exercise does not increased skeletal muscle fibroblast content in young, untrained men. Med. Sci. Sports Exerc. Vol. 37(5): S242, 2005, ACSM National Conference, Indianapolis, IN. June 2005.

S.C. George, R.C. Hickner, T.P. Gavin, **C.M. Westerkamp**, L.M. Westerkamp, and S.E. Gordon, Effect of L-NAME administration on angiogenesis in overloaded hypertrophying rat skeletal muscle. Med Sci Sports Exerc. 37: 2005, ACSM National Conference, Indianapolis, IN. June 2005.

C.M. Westerkamp, C.A. Fick, E.M. Hedberg, R.C. Hickner, and S.E. Gordon, Effect of L-NAME administration on myonuclear addition in overloaded skeletal muscle, FASEB, Washington, D.C. April 2004.

C.M. Westerkamp, C.A. Fick, E.M. Hedberg, R.C. Hickner, and S.E. Gordon, Effect of L-NAME administration on myonuclear addition in overloaded skeletal muscle, East Carolina University Graduate Student Research Day, Greenville, NC. March 2004.

C.M. Westerkamp & S.E. Gordon, The effects angiotensin-converting enzyme (ACE) inhibition on nuclear proliferation and hypertrophy in overloaded skeletal muscle. FASEB Satellite Cell Summer Research Conference, Tucson, AZ. July 2003.

C.M. Westerkamp, F.W. Booth, R.C. Yeager, T.P. Gavin, and S.E. Gordon, Angiotensin converting enzyme (ACE) inhibition attenuates angiogenesis and overload-induced hypertrophy in skeletal muscle. East Carolina University Graduate Student Research Day, Greenville, NC. April 2003.

C.M. Westerkamp, F.W. Booth, R.C. Yeager, T.P. Gavin, and S.E. Gordon, Angiotensin converting enzyme (ACE) inhibition attenuates angiogenesis and overload-induced hypertrophy in skeletal muscle. Southeast American College of Sports Medicine Conference, Atlanta, GA, February 2003.

Grants

Ferris Foundation Grant, Title: Fiber-type-specific Skeletal Muscle Hyperplasia with Overload, Not Awarded, 2009.

Christopher Westerkamp

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Gatorade Sports Science Institute Student Grant, Title: Prevention of atrophy and apoptosis in unloaded skeletal muscle, Awarded: \$3,200, 2005-2006.

NASA Pre-doctoral Student Research Grant, Title: Apoptosis and AMP kinase in skeletal muscle unloading, Not Awarded, 2005.

Service and Awards

Senate Health Promotion and Substance Abuse Prevention Committee member, 2010-.

Senate Liaison, Institutional Animal Care and Use Committee, 2009-.

Chair, College of Arts and Sciences Planning Committee, 2009-2011, Member 2008-2011.

Lead Advisor for Pre-Optometry students 2009-.

Chair, Biology Department Planning Committee 2009-2011.

Member, University Planning Committee (SPARC), 2009-.

Dawg Days Volunteer

Pack 3116 Cub Scout Den Leader 2008-.

Northland United Soccer Coach 2008-.

Graduate Scholar Award, Graduate School, East Carolina University 2003-2007.

Dean's Advisory Committee, College of Health and Human Performance, East Carolina University, 2005-06.

Examiner, ACSM Health Fitness Instructor Certification Exam, 2003.

Patient Simulator, ACSM Health Fitness Instructor Certification Exam, 2002.

Graduate Student Organization, College of Health and Human Performance, East Carolina University, 2001-2006.

Youth Soccer Coach, Greenville FutureStars, 2005-2006.

Deans' List, Ball State University, Spring 2001.

Team Captain and Most Valuable Runner, Ball State University Men's Cross-Country, Fall 2000.

President's Scholar-Athlete Award, Ball State University, 1997-2001.

Professional Development

McGraw-Hill Digital Media Symposium February 2008, San Diego, California

Meeting discussing and presenting various uses of digital media in teaching Anatomy & Physiology.

Faculty Center for Teaching and Learning Classroom Project, Spring 2008.

Analysis of student assessment to determine trends in classroom performance based on students' major, first exam grade, and self-reported studying habits.

Grant Writing Seminar, Fall 2008, Ferris State University

Monthly course discussing how to find funding, prepare, write and submit grants for intra- and extramural funding.

Faculty Center for Teaching and Learning Adobe Flash Learning Group, Fall 2008.

Introductory course into use of Adobe Flash animations and their potential use in the classroom.

Faculty Center for Teaching and Learning Advanced Flash Training, Spring 2009.

Course for advanced users of Adobe Flash concentrating on designing Flash animations for use in the classroom.

Christopher Westerkamp

American Physiological Society Physiological Understanding (PhUn) Week participant, November 2009.

Educational outreach program involving planning and delivering interactive lessons in physiology for elementary students with Biology Education student with visit to St. Mary's school of Big Rapids.

Faculty Center for Teaching and Learning Presentation Zen training, Summer 2010.

Introduction to optimize presentations using Microsoft PowerPoint.

American Physiological Society Physiological Understanding (PhUn) Week participant, November 2010.

Educational outreach program involving planning and delivering interactive lessons in physiology for elementary students with Biology majors with visits to St. Mary's school and the Big Rapids Middle School.

Lilly North Conference attendee, September 2011.

Attended presentations, symposia, and workshops on scholarship of teaching and learning.

Changqi C. Zhu

Department of Biological Sciences
Ferris State University
820 Campus Drive, ASC 2004
Big Rapids, MI 49307

Tel: 231-591-3196 (Office)
E-mail: Zhuc@ferris.edu

Positions at Ferris State University

Associate Professor since August 2012, Department of Biological Sciences, Ferris State University

Assistant Professor (August 2009 – August 2012), Department of Biological Sciences, Ferris State University

- **Teaching:**
 - BIOL 121: General Biology I** lectures and three labs (Every fall of 2009 – 2013, enrollment: about 90 students per semester)
 - BIOL 370: Developmental Biology** lectures and two labs (Every spring of 2010, 2011, 2012, and 2013, enrollment: about 48 students per semester)
 - BIOL 460: Current Topics in Biology** (15 students per class, both fall and spring of 2009 to 2013)
 - BIOL 474: Advanced Cell and Molecular Biology** (Every other spring since 2013, about 25 students)
- **Research:**
 - Activin signaling regulated aging process in adult fruit flies
 - Activin signaling regulated female fertility in *Drosophila melanogaster*
 - Drosophila* follicle cell size and shape regulation
- **Service:**
 - University Graduate and Professional Council (2014 - 2016)
 - University Core Research Facility Committee (2013 - 2014)
 - College of Arts and Sciences Promotion Committee (2012 – 2014)
 - Member of biology curriculum committee (2010 – 2013)
 - Member of biology faculty development committee (2011 – 2014)
 - Member of biology award committee (2010 – 2011)
 - Pre-medicine student adviser (2010 – present)
 - Biotechnology student adviser (2013 – present)
 - Member of Ferris Global Reflection Committee (2012)

- **Training attended:** Presentation Zen, Ferris State University, fall 2010
 New Faculty Transition Program, Ferris State University, spring 2010
 Critical Thinking, Ferris State University, spring 2010
 New Faculty Transition Program, Ferris State University, fall 2009
 Grant Writing Training, Ferris State University, Ferris State University,
 fall 2009

Education

- Ph.D. in Molecular and Developmental Biology, University of Karlsruhe, Germany, 1998
- M.S. in Genetics, Northwestern Agricultural University, China, 1988 – 1991
- B.S. in Biology, Shaanxi Normal University, China, 1984 – 1988

Research and Postdoctoral Training

- University of Minnesota, Minneapolis, MN, October 2002 – August 2009 (Advisor: Prof. Michael B. O'Connor)
- St. Jude Children's Research Hospital, Memphis, Tennessee, December 1999 – August 2002 (Advisor: St. Jude Investigator Dr. Guillermo Oliver)

Honors and Awards

- DAAD (German Academic Exchange Service) fellowship, 1994 – 1995
- Outstanding Graduate Student Award, Northwestern Agricultural University, China, 1991

Media Attention

- CBS Detroit News, Tech Tour Day Eight: Ferris State Biotech Booming At The Edge Of The North Woods, October 23, 2013 8:17 PM
 (<http://detroit.cbslocal.com/2013/10/23/tech-tour-day-eight-ferris-state-biotech-booming-at-the-edge-of-the-north-woods/>)

Previous Teaching Experience

- *Adjunct Teaching:* **Lectures and labs of General Biology** course for undergraduate students (two classes, 24 students per class) at **Concordia University**, Saint Paul, MN, September 2008 – May 2009

- *Visit Teaching: Molecular and Cellular Biology course* for undergraduates (30 students, 10 lectures, 2 hours/lecture), **Developmental Biology lectures and labs** for graduates (15 students, 6 lectures and 6 labs), **Shaanxi Normal University, 2005**
- *Teaching Assistant: Genetics course* for undergraduates (one semester, 35 students), **Northwestern Agricultural University, 1990 – 1991**

Doctoral and Postdoctoral Research Experience

- *Research Associate: TGF- β signaling in *Drosophila* nervous system development*, Department of Genetics, Cell Biology & Development, University of Minnesota, Minneapolis, MN, October 2002 – August 2009 (Advisor: Prof. Dr. Michael B. O'Connor, Investigator of Howard Hughes Medical Institute)
- *Postdoctoral Research: Homeobox gene *six3* in mouse visual system development*, Department of Genetics, St. Jude Children's Research Hospital, Memphis, Tennessee, December 1999 – August 2002 (Advisor: Dr. Guillermo Oliver, Investigator)
- *Doctoral Research: Homeobox gene *gooseoid* in mouse embryogenesis*, Institute of Genetics, University of Karlsruhe, Germany, 1994 – 1998 (Advisor: Dr. Martin Blum)

Grants

- A written research proposal titled “TGF-beta signaling regulated aging process in fruit fly (*Drosophila melanogaster*)” to be submitted to the National Institute of Health (NIH) in October 2013.
- Ferris State University Student Research Assistant Award \$600.00 for lab supply, Fall of 2013 to Spring of 2014.
- Ferris State University Student Summer Fellowship Research Grant: \$1,000 for lab supply; Research project: TGF- β signaling regulated aging process in adult fruit flies.
- Ferris Foundation Exceptional Merit Faculty/Staff Award: \$3,955 for the study of “Molecular and cellular Mechanisms of Activin Signaling Regulated Aging Process in *Drosophila melanogaster*” from April 2012 to April 2013.
- Ferris State University Faculty Research Grant: \$6,960 for the study of “Molecular Mechanisms of Cell Size and Shape Determination Regulated by Activin Signaling in *Drosophila melanogaster*” from March 2012 to April 2013.

- Ferris Foundation Exceptional Merit Faculty/Staff Award: \$3,750 for the study of “Activin Signaling Regulated Aging Process in Adult Male and Female Fruit Flies” from April 2011 – April 2012.
- Ferris State University Faculty Research Grant Award: \$7,500 for the study of “Molecular Mechanisms of Activin Signaling-regulated Female Fertility in *Drosophila melanogaster*” from March 2010 – April 2011.
- Faculty Start-up fund: \$5,000, Fall 2009.

Students Mentored at Ferris State University

Hannah Lamberg (Ferris Pre-Medicine Program Undergraduate), fall 2014 to now, research project: TGF- β signaling regulated aging process in fruit fly (*Drosophila melanogaster*)

Shaughna Langerak (Ferris Biotechnology Program Undergraduate), fall of 2011 to present: Manage daily work in the lab, maintain the fruit fly stocks, and conduct her own research project: TGF- β signaling regulated aging process in fruit fly (*Drosophila melanogaster*)

Alicia Durst (Pre-Medicine Undergraduate), started in the fall of 2012, research project: TGF- β signaling regulated aging process in fruit fly (*Drosophila melanogaster*)

Caitlin Wright (Ferris Pre-Dental Program Undergraduate), fall of 2012 to present. Research project: *Drosophila* follicle cell size and shape regulation

Emily Arnold (Ferris Pre-Dental Program Undergraduate), fall of 2012 to present. Research project: *Drosophila* follicle cell size and shape regulation

Aaron Nicoles (Pre-Physical Therapy Undergraduate), started in the fall of 2013

Richelle Payea (Pre-Medicine Program Undergraduate), started in the fall of 2013

Adam Bringedahl (Ferris Biotechnology Program Undergraduate), fall of 2012 to spring of 2013: The role of dpp signaling in the regulation of the aging process of fruit flies

Jeffrey Ackroyd (Ferris Biotechnology Program Undergraduate), September 2010 to May 2012: Activin signaling regulated aging process in adult fruit flies

Nicole Totten (Ferris Pre-dental program undergraduate student), Spring 2012: The role of Activin signaling in adipose tissue in the regulation of the aging process in adult fruit flies

Justin Cooper (Ferris Biology Pre-medicine Program Undergraduate), Summer 211: The role of muscle cell Activin signaling in the regulation of aging in adult fruit flies

Grace Farrell (Ferris Pre-Optometry Undergraduate), Spring 2010: Fly food preparation and fly culture maintenance

Corey Potter (Ferris Biology Program Undergraduate), Spring 2010: Fly food preparation and fly culture maintenance

Ferris Students' Poster and Oral Presentations

- **Shaughna Langerak**. The dosage effect of TGF- β signaling on aging regulation in fruit flies. On Ferris campus, August 21, 2013
- **Bringedahl A, Langerak S, and Zhu CC**. The dosage effect of TGF- β signaling on longevity of fruit flies. Ferris State University College of Arts & Sciences Student Recognition Event, Rankin Center, May 03, 2013
- **Ackroyd J, Totten N, Langerak S, Cooper J, and Zhu CC**. Activin signaling mediated aging process in *Drosophila melanogaster*. Midwest Developmental Biology Meeting at Cincinnati Children's Research Hospital, Cincinnati, Ohio, May 11 – 12, 2012
- **Ackroyd J, Cooper J, and Zhu CC**. Knocking-down Activin signaling in *Drosophila melanogaster* results in prolonged longevity. West Michigan Regional Undergraduate Science Research Conference at Van Andel Research Institute, Grand Rapids, Michigan, November 12, 2011

Professional Affiliation

Member of the Society for Developmental Biology (SDB)

Publications

1. **Langerak S**, and **Zhu CC**. The gene dosage effect of *Drosophila* Activin signaling in aging regulation. *In preparation*, 2014
2. **Zhu CC**, Boone JQ, Jensen PA, Hanna S, Podemski L, Locke J, Doe CQ, and O'Connor MB (2008). *Drosophila* Activin-b and the Activin-like product Dawdle function redundantly to regulate proliferation in the larval brain. *Development* **135**, 513-521
3. **Zhu CC***, Bornemann DJ*, Zhitomirsky D, Miller EL, O'Connor MB, and Simon JA. *Drosophila* histone deacetylase-3 controls imaginal disc size through suppression of apoptosis. *PLoS Genetics*. **4**(2), 1-11, 2008

4. Lagutin OV, **Zhu CC**, Kobayashi D, Topczewski J., Shimamura K, Puelles L, Russell HRC, McKinnon PJ., Solnica-Krezel L, and Oliver G. 2003. Six3 repression of Wnt signaling in the anterior neuroectoderm is essential for vertebrate forebrain development. *Genes & Development* 17, 368-379
5. **Zhu CC**, Dyer MA, Lagutin O, Uchikawa M, Kondoh H and Oliver G. 2002. Six3-mediated auto-repression and eye development requires its interaction with the Groucho family of corepressors. *Development* 129, 2835-2849
6. Lagutin O, **Zhu CC**, Furuta Y, Rowitch DH, McMahon A.P. and Oliver G. 2001. Six3 promotes the formation of ectopic optic vesicle-like structures in mouse embryos. *Developmental Dynamics* 221, 342-349
7. **Zhu CC**, Yamada G and Blum M. 1999. Retinoic acid teratogenicity: the role of goosecoid and BMP-4. *Cellular and Molecular Biology* 45, 617-629
8. **Zhu CC**, Yamada G, Nakamura S, Terashi T, Schweickert A, and Blum M. 1998. Malformation of trachea, and pelvic region in goosecoid mutant mice. *Developmental Dynamics* 211, 374-381
9. Alex C, **Zhu CC**, Cato A, and Blum M., 1998. Expression of androgen receptor mRNA in mouse embryogenesis. *Mechanism of Development* 72, 175-178
10. **Zhu CC**, Yamada G, and Blum M. 1997. Correlation between loss of middle ear bones and altered goosecoid gene expression in the branchial region following retinoic acid treatment of mouse embryos in vivo. *Biochemical and Biophysical Research Communications* 235, 748-753

Dissertations

- **Ph.D. Thesis (1998):** The homeobox gene *goosecoid*: embryonic expression, loss-of-function phenotype, and regulation by retinoic acid. Institute of Genetics, Department of Biological and Geological Sciences, University of Karlsruhe, Germany
- **Master Degree Thesis (1991):** Induction and screening of *Fusarium graminearum* (*Gibberella zeae*) toxin-resistant wheat callus tissues cultured from young wheat spikes. Northwestern Agricultural University, China

- **Undergraduate Work (1988):** Karyotype analysis of two plant species *Lysimachia barystachys* Bunge and *Lysimachia stenosepala* Hemsl. Shaanxi Normal University, China

Meetings and Presentations

- Poster presentation titled “*Drosophila* Activin signaling is required for normal egg production and female fecundity” at the 13th International Congress of Invertebrate Reproduction and Development at Wayne State University, Detroit, MI, July 14 – 19, 2013.
- Inaugural HAN-MO KOO Memorial Lecture by 1993 Nobel Prize laureate Dr. Phillip A. Sharp from Massachusetts Institute of Technology at Van Andel Institute, Grand Rapids, Michigan, May 23 – 24, 2012.
- Poster presentation titled “Activin Signaling Mediated Aging Process in *Drosophila melanogaster*” at the 50th Annual Midwest Developmental Biology Meeting at Cincinnati Children’s Hospital Medical Center, Ohio, May 11 – 12, 2012.
- 70th Annual Meeting of Society for Developmental Biology, Chicago, IL, July 21 – 25, 2011.
- Origins of Cancer Conference at Van Andel Institute, Grand Rapids, MI, May 19 – 20, 2011. Keynote speaker: Nobel Laureate Dr. James D. Watson.
- Funding Opportunities for Predominantly Undergraduate Institutions organized by the Council on Undergraduate Research (CUR), Washington D.C., February 24 – 26, 2011.
- Poster presentation titled “Activin signaling is required for *Drosophila* follicle cell development and normal female fertility” at West Michigan Regional Undergraduate Science Research Conference, Van Andel Institute, Grand Rapids, MI, October 3, 2010.
- Poster presentation titled “Activin signaling is required for *Drosophila* follicle cell development and normal female fertility” at the Society for Developmental Biology 69th Annual Meeting in Albuquerque, New Mexico, August 5 – 9, 2010.

- Poster presentation titled “The role of Activin signaling in adult *Drosophila* mushroom body neurons” at the 50th annual *Drosophila* conference, Chicago, IL, March 4 – 8, 2009.
- Attended the Conference of Neurobiology of *Drosophila*, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York, October 3 – October 7, 2007.
- Platform talk titled “Non-Canonical signaling of BMP ligands through an Activin-type pathway regulates brain lobe development and photoreceptor axon targeting in *Drosophila*” at the 47th annual *Drosophila* conference, Houston, TX, 28 March – 2 April 2006.
- Poster presentation titled “Activin type I receptor Babo regulates *Drosophila* photoreceptor axon targeting and optic lobe development” at the Conference of Neurobiology of *Drosophila*, Cold Spring Harbor Laboratory, Cold Spring Harbor, New York, October 5 – October 9, 2005.
- Attended the 46th Annual *Drosophila* Research Conference, San Diego, CA, March 30 – April 3, 2005.
- Attended the 44th Annual *Drosophila* Research Conference, Chicago, IL, March 5 – 9, 2003.
- Poster presentation titled “Mouse Six3 interacts with the Groucho-like Grg protein and functions as a transcriptional repressor” at the 60th Annual Meeting of the Society for Developmental Biology, Seattle, WA, July 18-22, 2001.

MARY ELIZABETH ZIMMER (née Schroeder)

University:	Department of Biological Sciences Ferris State University 820 Campus Drive, 2120 ASC Big Rapids, MI 49307 Tel. (231) 591-5022 Email: MaryZimmer@ferris.edu	Home:	19200 Seneca Ave Big Rapids, MI 49307 Tel. (231) 480-4731
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EDUCATION

1997-2002 Ph.D. - The Modulation and Regulation of Episodic Breathing in Mammals
Department of Zoology – Comparative Physiology Section
University of British Columbia, Vancouver, BC

1994-1996 M.S. - Pulmonary Annexin 1 Expression and Synthesis: Effects of Hyperoxia
Department of Animal Health and Biomedical Sciences
University of Wisconsin-Madison, Madison, WI

1985-1989 B.S. - Zoology
Department of Zoology
University of Wisconsin-Madison, Madison, WI

PROFESSIONAL EXPERIENCE

2015-present Professor, Department of Biological Sciences, Ferris State University, Big Rapids, MI

2010-2015 Associate Professor, Department of Biological Sciences, Ferris State University, Big Rapids, MI

2007-2010 Assistant Professor, Department of Biological Sciences, Ferris State University, Big Rapids, MI

2003-2007 Post-doctoral Fellow, Department of Anatomy and Cell Biology, Wayne State University, School of Medicine, Detroit, MI

1996 Assistant Faculty Associate, UW-Madison, Teacher Enhancement Program in Biology, Madison, WI

1989-1994 Research Specialist, UW-Madison, School of Veterinary Medicine, Department of Comparative Biosciences

1989 Project Assistant, UW-Madison, Veterans Administration Hospital

1986-1989 Laboratory Assistant, UW-Madison, Wisconsin Regional Primate Center

TEACHING EXPERIENCE

Courses Taught

2012-present BIOL 423 Neurobiology, Ferris State University

2011-present BIOL 460 Current Topics in Biology, Ferris State University

2009-2011 OPTM 635 Neuroanatomy and Neurophysiology, Michigan College of Optometry, Lecture, Ferris State University

- 2007-present BIOL 321, Human Anatomy and Physiology-1 Lecture and Laboratory, Department of Biological Sciences, Ferris State University
- 2007-present BIOL 322 Human Anatomy and Physiology-2, Lecture and Laboratory, Department of Biological Sciences, Ferris State University
- 2004-2006 Lecture: Advanced Respiratory Physiology, Department of Physiology, School of Medicine, Wayne State University
- 1999-2002 Teaching Assistant: Nursing Anatomy and Physiology Laboratory, University of British Columbia
- 1999-2001 Teaching Assistant: Comparative Neuroscience, University of British Columbia
- 1997-1999 Teaching Assistant, Animal Physiology Laboratory, University of British Columbia
- 1995 Teaching Assistant, Veterinary Histology, School of Veterinary Medicine, UW-Madison
- 1995 Volunteer Tutor, Cherokee Middle School, Madison, WI

Invited Guest Lecturer

- FSU, SCWK 220, Theories- Methods of Practice 1 - basic neurophysiology - 2009
- UBC, Biol 354, Environmental Physiology, hibernation – 2002
- UBC, Biol 454, Comparative Animal Physiology, hibernation - 2001
- UBC, Biol 353, Animal Physiology, hibernation – 1998, 1999
- UBC, Biol 450, Molecular Adaptation of Animals to the Environment, hibernation, 1997, 1998, 1999

Student Research Projects

- 2015 Summer Undergraduate Research Fellowship (Ferris State): Rachel Kempisty
- 2014-2015 Student Research Projects (Ferris State): Jacqueline Tieu, Katherine Hart, Rachel Kempisty, Robert Pacella, Enefe Adaji, Zac Kramer
- 2014 Summer Undergraduate Research Fellowship (Ferris State): Jacqueline Tieu
- 2013-2014 Student Research Projects (Ferris State): Illyas Fana (Student Research Assistantship), Aaron Jackowski (Student Research Assistantship), Brendan Doyle, Catherine Plischke, Sarah Harp, Jacqueline Tieu
- 2013 Summer Undergraduate Research Fellowship (Ferris State): Catherine Plischke
- 2012-2013 Student Research Projects (Ferris State): Aaron Jackowski, Brendan Doyle, Illyas Fana, Catherine Plischke,
- 2011-2012 Independent Study (Ferris State): Danielle Clear, Liala Al-Shatel
- 2011 Summer Undergraduate Research Fellowship (Ferris State): Liala Al-Shatel
- 2010-2011 Biotechnology Internship (Ferris State): Rachel Scheib
- 2009-2010 Independent Study 497 (Ferris State): Marziah Hashimi, Joseph Dalton, Ruben Vaughn
- 2008-2009 Independent Study 497 (Ferris State): Tim Hotchkiss, Ruben Vaughn
- 2000 Senior Honors thesis (UBC): Jerome Lee, The Influence of the Pontine Respiratory Group and Vagal Feedback on Inspiratory Termination in the Golden-Mantled Ground Squirrel.
- 1999 Senior Honors thesis (UBC): Krista Shaw, The Effect of Body Temperature on Metabolic Rate, Respiratory Pattern and Ventilation in Hibernating Golden-

- 1999 Mantled Ground Squirrels (*Spermophilus lateralis*),
High school honors thesis (UBC): Karolina Dziejdzic and Linda Tay; The Effects of Humidity on Apneic Oxygen Uptake in Hibernating Squirrels,
- 1998 Senior Honors thesis (UBC): Danielle Brochu, Distribution of NMDA-type Glutamate Receptors in Respiratory Nuclei of Euthermic vs. Hibernating Golden-mantled Ground Squirrels, *Spermophilus lateralis*,.

Course development

Digestion Laboratory, Ferris State. I established a new lab to be used to introduce students to the physiology of digestion; fats, proteins and carbohydrates.

Biology Metabolism Laboratory, UBC. I assisted in establishing a first year biology laboratory to teach students about basic cellular metabolism using hibernating ground squirrels.

Teacher Enhancement Program in Biology, UW-Madison. I developed a University course to teach high school teachers basic physiology, as well as easy, practical lessons to be used in the high school classroom. I wrote and received a grant (Eisenhower grant 1996-1997) to purchase equipment for use in 1) the course and 2) for these teachers to use in their high school classrooms in the state of Wisconsin. This allowed them to provide their students with the opportunity to see physiology experiments firsthand using exercise and human based problems as the motivational tool.

PROFESSIONAL SERVICE

2015 – present	Member – Academic Senate
2015 – present	Member – Academic Program Review Council
2014 – 2015	Member – Biology Awards Committee, Ferris State University
2013 - present	Member – College Graduate Education Committee, Ferris State University
2011 - present	Biology Research Seminar Coordinator
2011 – 2014	Member – College Curriculum Committee, Ferris State University
2009 - 2012	Member/Secretary – Institutional Strategic Planning Committee, Ferris State University
2008 - 2010	Member – Biology Faculty Development Committee, Ferris State University
2008 - present	Member – Biology Curriculum Committee, Ferris State University
2008 - present	Advisor to pre-optometry students
2007- present	Advisor to the Registered Student Organization, the Circle K International Group

GRANTS AND AWARDS

Ferris Foundation Exceptional Merit Award, 2014-2015	\$3500
Ferris Faculty Research Award, 2013-2014	\$7500
Ferris Foundation Exceptional Merit Award, 2011-2012	\$5500
Ferris Faculty Research Award, 2009 - 2010	\$7250
Dean's Initiative Grant, 2009	\$1500
Ferris Foundation Exceptional Merit Award, 2008 - 2009	\$7500

Travel Award, International Symposium on Neural Regeneration, 2003
McLean Fraser Summer Research Fellowship, 2001
Wisconsin Alumni Scholarship, 1985

PROFESSIONAL SOCIETIES

American Physiological Society, 2002-present
Society for Neuroscience, 2002

AD HOC EDITORIAL REVIEWS

Respiration physiology and neurobiology - 2003

INVITED PRESENTATIONS

The effect of spinal cord injury on learning and memory. August 2014. Michigan AALAS meeting. Ferris State University
Getting inside your student's heads – literally! Feb, 13, 2014. New Faculty Transition Program, Faculty Center for Teaching and Learning, Ferris State University
The biological and psychological aspects of learning. Spring 2013. New Faculty Transition Program, Faculty Center for Teaching and Learning, Ferris State University
Control mechanisms of episodic breathing in mammals. August 2012. Michigan AALAS meeting. Ferris State University
Latent motor pathways after spinal cord injury: "latent" or just inhibited? January 30, 2006, Department of Biological Sciences, University of Idaho
Latent motor pathways after spinal cord injury: "latent" or just inhibited? January 27, 2005, Department of Physiology, Wayne State University
The effect of the pons and neonatal age on respiratory rhythm in the hypothermic rat brainstem-spinal cord preparation, July 2001, Department of Anatomy and Cell Biology Wayne State University

PUBLICATIONS

1. Zimmer MB, Fong AY, Milsom WK. (*In preparation*). The effect of age and the pons on respiratory rhythm during hypothermia in neonatal rats. *Respiration Physiology and Neurobiology*
2. Zimmer MB, Grant J, Ayar A, Goshgarian HG. 2014. Ipsilateral inspiratory intercostal muscle activity after C2 spinal cord hemisection. *Journal of Spinal Cord Medicine*, 26: Epub ahead of print PMID: 2499369.
3. Fong AY, Zimmer MB, Milsom WK. 2009. The conditional nature of the "Central Rhythm Generator" and the production of episodic breathing. *Respiration Physiology and Neurobiology*, 168: 179-187.
4. Fong AY, Corcoran AE, Zimmer MB, Andrade DV, Milsom WK. 2008. Respiratory rhythm of brainstem-spinal cord preparations: effects of maturation, age, mass, and oxygenation. *Respiration Physiology and Neurobiology*, 164: 429-440.
5. Zimmer MB, Nantwi KD, Goshgarian HG. 2008. Effect of spinal cord injury on the neural regulation of respiratory function. *Experimental Neurology*. 209: 399-406.
6. Zimmer MB, Goshgarian HG. 2007. Spinal cord injury in neonates alters respiratory

- motor output via supraspinal mechanisms. *Experimental Neurology*. 206(1): 137-145.
7. Zimmer MB, Nantwi KD, Goshgarian HG. 2007. Effect of spinal cord injury on the respiratory system: basic research and current clinical treatment options. *Journal of Spinal Cord Medicine*. 30(4): 319-30.
 8. Zimmer MB, Goshgarian HG. 2007. GABA, not glycine, mediates inhibition of latent respiratory motor pathways after spinal cord injury. *Experimental Neurology*. 203(2): 493-501.
 9. Zimmer MB, Goshgarian HG. 2006. Spinal activation of serotonin 1A receptors enhances latent respiratory activity after spinal cord injury. *Journal of Spinal Cord Medicine*. 29(2): 147-155.
 10. Zimmer MB, Goshgarian HG. 2005. Spontaneous crossed phrenic activity in the neonatal respiratory network. *Experimental Neurology*. 194: 530-540.
 11. Milsom WK, Chatburn J, Zimmer MB. 2004. Pontine influences on respiratory control in ectothermic and heterothermic vertebrates. *Respiration Physiology and Neurobiology*. 143: 263-280.
 12. Zimmer MB, Milsom WK. 2004. Effect of hypothermia on respiratory rhythm generation in hamster brainstem-spinal cord preparations. *Respiration Physiology and Neurobiology*. 142: 237-249.
 13. Zimmer MB, Milsom WK. 2002. Ventilatory pattern and chemosensitivity in unanesthetized, hypothermic ground squirrels (*Spermophilus lateralis*). *Respiration Physiology*. 133:49-63.
 14. Milsom WK, Zimmer MB, Harris MB. 2001. Vagal control of cardiorespiratory function in hibernation. *Experimental Physiology*. 86(6):791-79
 15. Zimmer MB, Milsom WK. 2001. Effects of changing ambient temperature on metabolic, heart and ventilation rates during steady state hibernation in golden-mantled ground squirrels (*Spermophilus lateralis*). *Physiological and Biochemical Zoology* 74(5):714-723.
 16. Barros RC, Zimmer ME, Branco LGS, Milsom WK. 2001. Hypoxic metabolic response of the golden-mantled ground squirrel. *Journal of Applied Physiology* 91:603-612.
 17. Milsom WK, Zimmer MB, Harris MB. 1999. Regulation of cardiac rhythm in hibernating mammals. *Comparative Biochemistry and Physiology*. 124A:383-391.
 18. Christou M, Keith IM, Shen X, Schroeder ME, Jefcoate R. 1993. Reversal of cytochrome P450-1A1 and P450-EF expression in MCA-C3H/10T cell derived tumors as compared to cultured cells. *Cancer Research*. 53(5):968-976.
 19. Uno H, Schroeder ME, Fors T, Mori O. 1990. Macaque and rodent models for the screening of drugs on stimulating hair growth. *Journal of Cutaneous Aging and Cosmetic Dermatology*. 1(3):193-204.

Books

Zimmer, MB. 2015. *Fundamentals of Human Physiology; A Comparative Examination*. Cognella, San Diego, CA.

Conference Proceedings

Zimmer MB, Harris MB, Milsom WK. 2000. Control of cardiac and ventilation frequencies during hibernation in ground squirrels. In: *Life in the Cold*, edited by G.Heldmaier, M

Klingenspor. Springer-Verlag, Berlin, Heidelberg, Germany. Pp 159-167.

Conference Abstracts

1. Tieu J, Zimmer MB, 2014. The effect of spinal cord injury on learning and memory in rats. *Experimental Biology*. Boston, MA.
2. Tieu J, Zimmer MB, 2014. The effect of spinal cord injury on learning and memory. West Michigan Regional Undergraduate Science Research Conference. Grand Rapids, MI.
3. Doyle B, Zimmer MB, 2014. The effect of exercising intensity on learning and memory in humans. *Experimental Biology*. San Diego, CA.
4. Jackowski A, Harp S, Zimmer MB 2014. Effect of upper body resistance training on memory. *Experimental Biology*. San Diego, CA
5. Plischke C, Fana I, Zimmer MB, 2014. The effect of C2 spinal cord injury on learning and memory. *15th International Symposium on Neural Regeneration*. Pacific Grove, CA
6. Fong AY, Zimmer MB, Milsom WK, 2012. Effects of postnatal development, temperature and the pons on respiratory rhythm and pattern generation in rat pups. *Experimental Biology*.
7. Zimmer MB, Grant J, Ayar A, Goshgarian, HG, 2011. Ipsilateral inspiratory intercostal muscle activity after C2 spinal cord hemisection. *14th International Symposium on Neural Regeneration*. Pacific Grove, CA.
8. Scheid R, Fong AY, Milsom WK, Zimmer MB, 2011. GABAergic mechanisms underlying breathing pattern in rat brainstem-spinal cord preparations. *Experimental Biology*.
9. Zimmer MB, Grant J, Ayar A, Goshgarian, HG, 2007. Ipsilateral inspiratory intercostal activity persists after C2 hemisection. *Experimental Biology*.
10. Zimmer MB, Goshgarian HG, 2006. Spinal cord injury in neonate rats alters respiratory neural output via supraspinal mechanisms. *Experimental Biology*.
11. Zimmer MB, Alilain W, Goshgarian HG, 2005. GABA-mediated inhibition of crossed phrenic pathways. *International Symposium on Neural Regeneration*.
12. Huang Y, Zimmer MB, Goshgarian HG, 2005. The neural pathway underlying the expression of crossed phrenic activity following spinal cord hemisection in the neonate rat. *International Symposium on Neural Regeneration*.
13. Zimmer ME, Goshgarian HG, 2005. Spinal activation of serotonin 1A receptors turns on latent respiratory pathways after spinal cord injury. *Faseb Journal* 19(5): A1282, Part 2, Suppl. S.
14. Zimmer MB, Goshgarian HG. 2004. Crossed phrenic pathways in the neonatal rat respiratory network: an *in vitro* assessment. *Faseb Journal* 18(4): A333 Suppl. S.
15. Zimmer MB, Goshgarian HG. 2003. Serotonin 1A receptor activation of a latent motor pathway after spinal hemisection. *Journal of Rehabilitation Research and Development* 40(6):56 Suppl 3.
16. Zimmer ME, Taylor BE, Milsom WK. 2002. Developmental and species differences in pontine influences on respiratory motor output in the mammalian brainstem spinal cord. Program No 171.4 Abstract Viewer/Itinerary Planner. Washington DC: *Society for Neuroscience, Online*.
17. Zimmer MB, Milsom WK. 2002. Species and developmental differences in respiratory

- cold tolerance: hibernator versus non-hibernator. The power of comparative physiology: evolution, integration, and application. the-aps.org/publications/ p9.
18. Zimmer MB, Milsom WK. 2002. Recovery from respiratory arrest in the hypothermic rat pup brainstem en bloc. *Faseb Journal* 16(4): A45, Part 1.
 19. Zimmer ME, Barros RCH, Milsom WK. 1999. Separate and combined influences of body temperature and metabolic rate on ventilatory pattern and chemosensitivity in golden-mantled ground squirrels. *Comparative Biochemistry and Physiology* 124A:S112.
 20. Zimmer ME, Milsom WK. 1999. Episodic breathing in ground squirrels (*Spermophilus lateralis*): a consequence of "state," temperature or metabolic rate? *Canadian Society of Zoologists Bulletin*. 29:121.
 21. Zimmer ME, Milsom WK. 1998. Ventilatory chemoresponses during hypothermia (5 and 10C) in golden-mantled ground squirrels (*Spermophilus lateralis*). *Faseb Journal* 12(4):A335.
 22. Zimmer ME, Milsom WK. 1998. Uncoupling of ventilation and metabolic rate in hibernating ground squirrels. *Canadian Society of Zoologists Bulletin*. 28(2):100.
 23. Zimmer M, Ling L, Olson E, Janssen P, Mitchell G, Keith I. 1994. Chronic neonatal hyperoxia causes persistent lung damage, pulmonary hypertension, and neuropeptide changes in rats. *Faseb Journal*. 8(4): A418.
 24. Ryan ML, Keith IM, Zimmer ME, Hedrick MS, Bisgard GE. 1994. Carotid body peptide and catecholamine content in intact and sympathetically denervated goats. *Faseb Journal*. 8(5):A912.
 25. Keith IM, Schroeder ME, Tsao FHC. 1992. Localization of phospholipid binding protein in rabbit lung. *Faseb Journal*. 6(4):A1162.

CINDY FITZWILLIAMS-HECK

22929 15 Mile Road
Big Rapids, Michigan 49307

Email: fitzwilc@ferris.edu

Home: (231) 592-4067

Cell: (231) 349-7495

EDUCATION

PhD (candidate), EDUCATION (Learning, Instruction, and Innovation in Environmental Education)

Walden University, Minneapolis, MN

Current Focus: *Using experiential learning techniques and a social-ecological approach in an environmental adult education curriculum to improve environmental literacy, and natural resource management*

(Golden Key International Honour Society)

MS, BIOLOGY (Emphasis: Aquatic Ecology; Endorsement: Conservation Biology)

Central Michigan University, Mt. Pleasant, MI

Thesis: *The effects of filamentous cyanobacteria on the growth, survivorship, and fecundity of Daphnia pulicaria*. Emphasis on intricacies of food web dynamics within a lake ecosystem.

(Honors Graduate)

BS, BIOLOGY EDUCATION (General Science Minor)

Ferris State University, Big Rapids, MI

Michigan Secondary Teaching Certificate

(Honors Graduate)

WORK HISTORY

Biology Instructor, Ferris State University (2001-present)

Classes Taught:

1. Nature Study 116 (lecture and lab – since 2005)
 2. Ecology 442 (lecture and lab – 2009, 2002)
 3. Biological Concepts 103 (lecture and lab – 2006, 2005)
 4. Environmental Biology 111 (lecture and lab – 2005, 2003, 2002)
 5. Laboratory Instructor [as needed] for General Biology 121, 122, Ecology 442, Environmental Biology 111, Biological Concepts 103
- Place-based education: 1) Sub-watershed studies before and after two rain gardens planted (partnerships with the Muskegon River Watershed Assembly - MRWA, Big Rapids High School, and Mecosta-Osceola Career Center); 2) 'My Nature Spot: Developing a connection with one place in nature'. A semester-long project using journaling to connect students with the outdoors and the concepts learned in class; emphasis on a watershed perspective.
 - Community service project [each semester]: Litter clean-up along local waterways to help students become more aware of human impact on the environment (a written reflection of the experience assigned); associated with Alliance for the Great Lakes, The Ocean Conservancy research, and the MRWA.
 - Active-learning: Implemented environmental education activities, macro-models, and inquiry-based learning in the classroom and laboratory settings.
 - Technology: Classroom performance system ("clickers") used in lectures to stimulate discussion, assess student learning, and as a formative assessment tool (2009-2013).

Instructor of Education, Ferris State University (Summer 2013)

Classes Taught: EDUC 494; EDUC 694 – Special Topics in Conservation and Experiential Education

- Courses revolved around the Michigan Department of Natural Resources' (DNR) week-long workshop, *Academy of Natural Resources* (ANR).
- Students consisted of certified teachers, pre-service teachers, non-formal educators.
- Focused on innovative application and assessment of workshop material.

Environmental Educator, Independent Contractor (2005-2013)

- Assisted in developing structure of teacher training workshops for the 'Aquatic Academy for Teachers', and presented programs (MRWA Education Committee – 2008, 2009, 2010, 2013)
- Planned and presented at the 'Natural Shorescaping Workshops' within the Muskegon River Watershed (with the MRWA Education Committee) (2011, 2012).
- Led training seminars for volunteers interested in collecting benthic macroinvertebrates for stream quality assessments within the Muskegon River Watershed (an ongoing project affiliated with the MRWA, MiCorps and Michigan Department of Environmental Quality) (2005-present).
- Facilitator for third and fourth grade water festivals (MRWA – 2009, 2010, 2011, 2013)

Faculty Advisor, Outdoor Club of Ferris State University (2004-2005, 2011-present)

- Offered guidance and mentored club members interested in outdoor recreation, environmental education, and volunteerism in the outdoors.

Field Trip Co-Leader, Ferris State University - Geology of Michigan (2004) and Geology of Martinique (2003)

- Assisted in planning trip destinations, educational material covered, and directing students.
- Provided information about the natural history of the areas visited.

Environmental Educator, Naturalist, Asst. Program Coordinator, Hiking Club President, and Assistant Summer Camp Director, Woldumar Nature Center - Lansing, MI (1999-2001)

- Developed, coordinated, and taught a broad range of environmental biology and ecological programs for schools (following their science curriculum for pre-K through 12th grades), families, adults, and senior citizens.
- Led numerous interpretive nature walks year-round that emphasized food web dynamics, succession, other ecological concepts, and taxonomy.
- Founded and coordinated the Hiking Club that promoted environmental education, stewardship, and maintaining overall health and well being by monthly newsletters and weekly local hikes.
- Created, organized, and executed educational backpacking trips for adults that focused on the natural history, and watershed ecology in the area that was visited in MI. Areas visited and studied were Isle Royale National Park, North and South Manitou Islands/Sleeping Bear Dunes National Lakeshore, Nordhouse Dunes Wilderness Area, and the Manistee River/North Country Trail Loop.
- Assisted in development and implementation of a new environmental education summer day camp structure.
- Mentored high school students in Project GREEN, a cooperative school program that focused on water quality testing and interpretation of the Grand River Watershed.
- Assisted in organization and leadership of the Teachers Programming Committee for Environmental Education in the Classroom.

Biology Laboratory Instructor, Central Michigan University (1998-1999)

- Taught introductory college biology laboratories for biology majors, non-majors, and teacher education students.
- Created new laboratory exercises.
- Assisted in the updating of the Introductory Biology Laboratory Manual.

Research Assistant, Central Michigan University (1997-1998) – *Predatory zooplankton as the potential cause for the decline of yellow perch larva in Lake Michigan.*

- Collected, identified, and enumerated zooplankton and larval fish in Lake Michigan and Crystal Lake.
- Responsible for the organization and maintenance of the aquatics laboratory.

Substitute Teacher, Mecosta/Osceola, MI ISD (1996-1997); Lansing Area Schools, MI (1999-2001)

- Long-term subbing position for tenth grade biology at Pine River H.S. (1997).

Student Teacher (High School Physical Science & Biology) (1996) – Pine River High School, Leroy, MI.

- Immediately took initiative in teaching four, ninth-grade physical science classes, and one tenth-grade biology class.
- Effectively incorporated organized cooperative learning groups in the classroom.

PROFESSIONAL COMMITMENTS

- MRWA Executive Board – Vice Chair (2013-2015)
- Michigan Alliance of Environmental and Outdoor Education (MAEOE) Board of Directors (2013)
- DNR-ANR Advisory Committee (2013-present)
- MRWA Education Committee (2002-present)
- MRWA Action Committee (2013-present)
- MRWA Voyage of Discovery Committee (2012-present)
- Mecosta County Northern Lights Environmental Award Committee (2013)
- Ferris Non-tenure Track Faculty Organization Leadership Committee – Contract Review Chair (2009-present)

PROFESSIONAL DEVELOPMENT ACTIVITIES

- Great Lakes Stewardship Initiative's *Place-Based Education Conference* (2012, 2013)
- MAEOE Annual Conference (2000, 2012, 2013)
- *Great Lakes Conference on Teaching and Learning* – CMU (2013)
- *Transforming Education Towards a More Sustainable Future* – Green Teacher (2013)
- Michigan Science Teacher's Association Annual Conference (2013)
- *Assessment in Action: The Use of Electronic Media for Classroom Assessment* (FSU Faculty Center for Teaching and Learning – FCTL, 2012)
- *Game-Based Learning* (FSU – FCTL, 2012)
- *Pearson's Innovations in Teaching Science* (Washtenaw Community College 2012)
- Preparing Students for a Changing Climate: Campus Sustainability Day 2012 – webcast and interactive panel
- Academy of Natural Resources (DNR): *Forests, Field, & Fins Field Camp* (Roscommon, MI 2012)
- National Wildlife Federation's webinar, *Sustainability in the Classroom* (2011)
- Environmental Protection Agency's webinar, *State of the Lakes Ecosystem Conference* (2011)
- Great Lakes Conference 2010 in E. Lansing, MI - *Learning from the Past, Looking Towards the Future* (2010)
- National Wildlife Federation Webinar – *Evaluating Campus Sustainability* (2010)
- Great Lakes Beach Conference 2010 – *Rapid Analytical Methods Wet Lab*
- The Watershed Academy's *Healthy Lakeshores Through Better Shoreline Stewardship* (2010)
- Interactive webinar on *Creating a Native Plant Specification* – JFNew Full-Service Ecological Solutions (2010)
- Science Fair Judge for Mecosta-Osceola Intermediate School District's, Math, Science, Technology Center (2010)
- Benthic Macroinvertebrate Symposium – MiCorps (Bay City, MI 2005)
- Lilly Conference Series on College and University Teaching and Learning (Traverse City, MI 2002, 2003)
- Pre-Cambrian Geology of the Marquette area (MTU – Ted Bornhorst, Field Geology, May 2002)
- Karst Geology of Michigan field trip (Association of Professional Geologists, Gaylord, MI 2002)
- National Association of Interpreters Annual Meetings (1999-2001)

CERTIFICATIONS

- Wilderness Awareness School - Kamana Naturalist Training Program (2011-2012)
- Environmental Protection Agency's Watershed Management Training Certificate (2010)
- Wildlife Management – Queens College, NY (2010)
- Wilderness First Responder (2001)
- Project Learning Tree (2001)
- Project WILD (2000)

PRESENTATIONS

- *Healthy Lake Ecosystems* (Michigan Chapter, North American Lake Management Society - MCNALMS 2012)
- *Understanding the Shoreline* (MCNALMS 2012)
- *Planning a Natural Shoreline Landscape* (MCNALMS 2012)
- *Basics of Natural Shoreline Ecosystems* (Natural Shoreline Workshop – MRWA 2011, 2012)
- *Native Plant Selection and Design* (Natural Shoreline Workshop – MRWA 2011, 2012)
- *Maintaining a Natural Shoreline* (Natural Shoreline Workshop – MRWA 2011, 2012)
- *Volunteer Stream Monitoring Program* (MRWA & MiCorps) Seminars consisted of educating the public on the physical and ecological dynamics of streams, the biology of benthic macroinvertebrates, and proper sampling and identification techniques (2005-present).
- *Lake & River Monitoring* (MRWA's Aquatic Academy for Teachers 2009, 2010)
- *What's in the Water and Why Should We Care? An Introduction to Simple and Fun Ways to Water Monitoring* (MRWA's Aquatic Academy for Teachers 2008)
- *Earth Day Enlightenment Hike: The History and Significance of Earth Day* (FSU Wellness Week 2007, 2008)
- *This is my True Home: Using Experiential & Place-based Education to Enhance Learning* (FSU Recreation Leadership seminar series 2008)
- Poster presentation at CMU of thesis research *The effects of filamentous cyanobacteria on the growth, survivorship, and fecundity of Daphnia pulex* (1999)
- Poster presentation at CMU of research on (co-author) *Daily vertical migrations of Chaoborus sp. in response to presence or absence of potential food sources* (1998)
- Poster presentation at CMU on *Sedimentation characteristics & zooplankton assemblages used to determine lake-level fluctuations in Lake Michigan* (1997)

FUNDING

- *Helping Hands to Reforest the Muskegon River Watershed*. Consumers Energy grant for purchasing trees (2012).
- Co-founder/coordinator for the grassroots venture, *Project Stormwater: A collaborative effort between Ferris State University faculty, staff, and students, and the Muskegon River Watershed Assembly, to reduce stormwater runoff into the Muskegon River*. Funding awarded through Ferris Foundation Grant, and Consumers Energy to construct a rain garden on campus (2011, 2010).
- FSU Academic Service Learning funds used to complete projects on campus to reduce stormwater runoff (2009, 2008), and clean up litter along local waterways (2007).
- Received funding from FSU's Political Engagement Project for students to conduct an ecological assessment of the property at Camp Newaygo, MI, *A comparison between the windward and leeward communities of a ridge - biotic and abiotic similarities and differences* (2009).

AWARDS

- Mecosta County Northern Lights Environmental Award (2013)

PROFESSIONAL MEMBERSHIPS

- National Science Teachers Association
- Michigan Science Teachers Association
- American Institute of Biological Sciences
- North American Association of Environmental Education
- Michigan Alliance of Environmental and Outdoor Educators
- Association of Watershed and Stormwater Professionals
- Ecological Society of America
- Big Rapids Rock, Mineral, and Gem Club
- National Wildlife Federation – Campus Ecology
- Muskegon River Watershed Assembly
- The Michigan Nature Association
- Woldumar Nature Center
- The Nature Conservancy
- The Sierra Club

STEWARDSHIP & CONSERVATION EXPERIENCE

- Lake Sturgeon release in the Black River of Michigan (2013)
- Stream quality monitor of Mitchell Creek & Ives Ave Creek (using macroinvertebrates as indicators) (2007-present)
- Great Backyard Bird Count (2010-present)
- Salmon egg harvesting and fertilization for Salmon-in-the-Classroom program (2012 MAEOE conference)
- Assisted in the design & planting of five native rain gardens for the MRWA (2007-2012)
- Organized & participated in 'Litter Cleanup Day' along the Muskegon River, Big Rapids, MI (2002-present) – Alliance for the Great Lakes, The Ocean Conservancy, and MRWA.
- Geology field assistant for the investigation & interpretation of the Muskegon River Valley glacial geology (FSU -2001-present)
- Evaluated Woldumar Nature Center's (WNC) conservation efforts then proposed & implemented plans for composting, removal of exotic species & promoting native/indigenous plant species (1999-2001).
- Researched and planted native prairie plants and wildflowers at WNC (1999-2001).
- Participated in the removal of the exotic plant, purple loosestrife, along the Grand River in Lansing, MI (2000).
- Trained in and participated with The Nature Conservancy's (TNC) for prescribed prairie burns at WNC (2000).
- Participated in bird banding during 1998-1999 Fall and Spring migration through Mt. Pleasant, MI.
- Assisted in fish shocking and inventory of trout populations in the west Pere Marquette River, MI (1998).
- Volunteered for TNC's removal of exotic plant species in the Sleeping Bear Dunes National Lakeshore (1998).
- Assisted with the riverbank preservation along Chippewa River (1997) near Mt. Pleasant, MI.

REFERENCES

- Dr. Joe Lipar - Department Head of Biological Sciences (2011-present), FSU (231) 591-2550
Ms. Terry Stilson – Program Coordinator, MRWA (231) 591-2324
Mr. Kevin Frailey – Education Services Manager, DNR (517) 373-7306
Dr. Karen Strasser – former Department Head of Biological Sciences, FSU (2006-2011), FSU (231) 591-3856
Dr. Gary Rodabaugh - Professor of Biology, FSU (231) 591-2308
Ms. Bridget Booth - WNC, Program/ Environmental Education Director (formerly) (517) 853-9863
Dr. Scott McNaught - Professor of Biology, Graduate Advisor, CMU (517) 774-1335
Mr. Dan Benjamin - Biology Instructor, Teaching Assistant Coordinator, CMU (517) 774-2491

JOHN W. JOHNSON

17042 Sierra Drive
Big Rapids, MI 49307
(231) 527-1268
johnjohnson@ferris.edu

EDUCATION

Central Michigan University

Master of Arts in Physical Education and Sport
Major: Exercise Science

Mt. Pleasant, Michigan

May 2000

Carthage College

Bachelor of Arts
Major: Biology

Kenosha, Wisconsin

August 1996

Alpena Community College

Associate of Science
Graduated Magna Cum Laude

Alpena, Michigan

May 1994

EXPERIENCE

Ferris State University

Lab Instructor for BIOL 205

Big Rapids, Michigan

08/07 to present

- Teach Anatomy/Physiology students pursuing degrees in Nuclear Medicine, Pre-pharmacy, Forensic science, and other allied health professions to apply what they have learned in lecture to experimentation
- Instruct students on proper use of lab equipment
- Assist students in developing skills necessary to approach and solve problems in a scientific manner

Advanced Cardiac Specialists

Director of Cardiac Rehabilitation (8/01 to 7/06)

Gilbert, Arizona

02/99 to 07/06

- Managed five rehab sites
- Served as source of information on exercise, anatomy, physiology, cardiac medications, procedures, and nutrition to patients and staff
- Lectured at community outreach programs
- Acted as liaison between patient and doctor to aid in patient care
- Provided medical surveillance of rehab patients, including BP, HR, SaO₂, and ECG analysis
- Performed VO₂ Max stress testing with MedGraphics metabolic cart
- Administered EECF treatments with Vasomedical equipment

Chandler/Gilbert Community College

ACSM Exercise Specialist Workshop Instructor

Chandler, Arizona

Summer '00 & '01

- Taught several subjects including ECG Interpretation, Medications, Training Special Populations, New Concepts in Cardiovascular Interventions, and Human Behavior
- Aided in explaining metabolic calculations

Q The Sports Club**Tempe, Arizona***Personal Trainer*

02/99 - 03/99

- Educated clients in proper technique and physiological adaptations to exercise
- Developed exercise programs for clients
- Instructed clients on health risks and nutrition

Central Michigan University**Mt. Pleasant, Michigan***ECG Assessment Lab Assistant*

07/98 – 05/98

- Assisted in ECG interpretation and answered physiological questions
- Instructed students on proper lead placement technique

Central Michigan University**Mt. Pleasant, Michigan***Human Performance Lab Assistant*

09/97 – 12/97

- Assisted students in use of laboratory technical equipment (underwater weighing, spirometry, Quinton stress testing, ECG machines)
- Instructed students on blood pressure techniques
- Body fat composition, strength testing, flexibility testing

Lincoln Haven Health Care Centre**Lincoln, Michigan***Nurse Assistant*

11/96 – 08/97

- Measured vital signs and provided daily care of residents with Multiple Sclerosis, stroke victims, and cognitively impaired

INTERNSHIP**Arizona Heart Institute-East / Cardiac Conditioning****Mesa, Arizona***Graduate Intern*

09/98 – 12/98

- Monitored telemetry unit and hemodynamic responses to exercise
- Calculated exercise prescriptions and assisted in progression of workloads
- Provided source of information for patients and assisted in instruction of undergraduate intern
- Assisted in the administration of stress tests and interpretation of results
- Experience in venipuncture and glucometer
- Performed nutritional summaries and provided patients with dietary information
- Observed CABG, angiogram, and echocardiograms

COMPUTER SKILLS

- Windows XP, some Access
- Nutribase Pro, Dine Healthy
- Internet

ACTIVITIES

- Second-degree black belt in Shorei-Ryu Karate (07/03)
- Volunteered in Physical Therapy department (170 hours) at Alpena General Hospital (1996)
- Studied language and culture at Kitakyushu University in Japan (Summer 1995)
- Co-captain of Carthage College Swim Team (1995-1996)
- US Army Mechanic/Recovery Specialist stationed in Germany (09/88 – 09/91)

HONORS

- CCIW All Academic (12/95)
- Dean's List (01/92 – 12/94)
- Carthage College Presidential Scholarship (09/94)
- Carthage College Robert Todd Scholarship (09/94)
- Army Commendation Medal (07/91)

REFERENCES

Dr. Tariq Khalil
6641 E Baywood Ave # A2
Mesa, AZ
(480) 396-2022 (clinic)
(480) 283-7943 (cell)

Dr. Ambika Bhaskaran
201 W. Guadalupe Rd.
Gilbert, AZ 85233
(480) 545-1847

Mary Haggberg, (RN, BSN)
2087 Leisure World
Mesa, AZ 85206
(H) 480-218-4066
marebrg@cox.net
(W) 480-472-6650

CURRICULUM VITAE

Gary Miller

Address: Ferris State University
820 Campus Drive, ASC 2004
Big Rapids, MI 49307
Phone: 231-591-5844 FAX: 231-591-2540
Email: millerg6@ferris.edu

EDUCATION: Grand Valley State University, B.S., Biology, 1991
Bowling Green State University, Ph.D., Biology, 1997

Dissertation Title: The Evolution of Senescence in *Drosophila melanogaster*
(advisor: Dr. Mark H. Gromko)

POSITIONS HELD

Institution	Title	Year
Ferris State University Biological Sciences	Visiting Assistant Professor	Present
University of Kansas Ecology/Evolutionary Biology	Post-Doctoral Researcher	2004-2006
Cuyahoga Community College	Lecturer	2003-2004
Syracuse University Department of Biology	Assistant Research Professor	2002-2003
Syracuse University Department of Biology	Research Associate	1997-1999; 2000-2002
Syracuse University Department of Biology	Teaching Associate	1999-2000
Bowling Green State University Biological Sciences	Teaching Assistant	1991-1994; 1996-1997
Bowling Green State University Biological Sciences	Non-Service Fellowship	1995-1996
Bowling Green State University Biological Sciences	Research Assistant	1994-1995

TEACHING EXPERIENCE

	<u>Semester</u>
<u>Ferris State University</u> -Assistant Professor	
BIOL 121 General Biology I	Fall 2006 Summer 2007
BIOL 122 General Biology II	Fall 2007 Spring 2007

Cuyahoga Community College- Instructor

BIO 1500	Principles of Biology I	Fall 2003
	Intro to molecular, cell, genetics, and evolution for majors	Spring 2004
BIO 1100	Intro to Biological Chemistry	Fall 2003
		Spring 2004

Syracuse University - Instructor

Semester

BIO 345	Population Biology	Spring 2000
	Population and evolutionary genetics	
BIO 799	Seminar in Evolutionary Biology	Fall 1997
	Darwin and <u>The Origin of Species</u>	

Bowling Green State University - Laboratory Instructor

BIO 204	Concepts in Biology I	Fall 1991
	Introduction to ecological and evolutionary biology for majors	Spring 1992
		Fall 1992
		Spring 1993
BIO 104	Introduction to Biology	Fall 1993
	The cell, metabolism, genetics, reproduction, development, evolution, ecology for non-majors	Spring 1994
BIO 205	Concepts in Biology II	Fall 1996
	Introduction to molecular and cellular biology for majors	Spring 1997

PUBLICATIONS:

Miller, G. T., Starmer, W. T. and S. Pitnick. 2003. Quantitative genetic analysis of among-population variation in sperm and female sperm-storage organ length in *Drosophila mojavensis*. *Genetical Research* 81: 213-220.

Miller, G. T. and S. Pitnick. 2003. Functional significance of seminal receptacle length in *Drosophila melanogaster*. *Journal of Evolutionary Biology* 16: 114-126.

Pitnick, S., Miller, G. T., Schneider, K., and T. A. Markow. 2003. Ejaculate-female coevolution in *Drosophila mojavensis*. *Proceedings of the Royal Society of London B* 270: 1507-1512.

- Miller, G. T. and S. Pitnick. 2002. Sperm-female coevolution in *Drosophila*. *Science* 298: 1230-1233.
- Miller, G. T., Starmer, W. T. and S. Pitnick. 2001. Quantitative genetics of seminal receptacle length in *Drosophila melanogaster*. *Heredity* 87: 25-32.
- Pitnick, S., Brown, W. D. and G. T. Miller. 2001. Evolution of female remating behaviour following experimental removal of sexual selection. *Proceedings of the Royal Society of London B* 268: 557-563.
- Pitnick, S., Miller, G. T., Reagan, J., and B. Holland. 2001. Males' evolutionary responses to experimental removal of sexual selection. *Proceedings of the Royal Society of London B* 268: 1071-1080.
- Pitnick, S. and G. T. Miller. 2000. Correlated response in reproductive and life history traits to selection on testis length in *Drosophila hydei*. *Heredity* 84: 416-426.

INVITED DEPARTMENTAL SEMINARS

- Bowling Green State University, Department of Biological Sciences, Fall 1993.
Syracuse University, Department of Biology, Fall 1997.
University of Kansas, Ecology and Evolutionary Biology, Fall 2004

CONFERENCE PRESENTATIONS

- Miller, G. T. and M. H. Gromko. 1994. Joint Meeting of the SSE, ASN, SMBE, and SSB, Atlanta, Georgia.
- Miller, G. T. and M. H. Gromko. 1995. Joint Meeting of the ASN, SSB, NT and SSE, Montreal, Canada.
- Pitnick, S., Miller, G. T., and T. L. Karr. 1998. 7th International Behavioral Ecology Congress, Pacific Grove, California.
- Pitnick, S., Miller, G. T., Reagan, J., and B. Holland. 2000. Joint Meeting of the SSE, ASN, ATB, and SSB, Bloomington, Indiana.
- Gleason, J. M., Cropp, K. A., Dewoody, R. S., Drury, D., and G. T. Miller. 2004. Kansas NSF Epscor Symposium, Genes in Ecology, Ecology in Genes, Overland Park, Kansas.
- Miller, G. T. and J. M. Gleason. 2005. Ecological Genomics Spring Workshop, Manhattan, Kansas.
- Miller, G. T., Dewoody, R. S., Cropp, K. A., and J. M. Gleason. 2005. Kansas NSF Epscor Symposium, Genes in Ecology, Ecology in Genes, Overland Park, Kansas.

Curriculum Vitae
Schuyler T. Pike

*1933 Desert Sun Dr.
El Paso, Texas 79938*

*Mobile Phone: 517-455-8202
Email: sky.pike@hotmail.com*

EDUCATION

Postdoctoral Fellow/Trainee:

Teaching: 2014 to Present, The University of Texas at El Paso, Department of Biosciences and Women's Studies Program, El Paso, Texas 79968

- *Development and Instruction of Interdisciplinary Courses*
- *Additional education in Medical Sociology*

Research: 2008 to 2013, Michigan State University, Center for Integrative Toxicology, East Lansing, Michigan 48824

- *Additional education in Toxicology, Pharmacology and Immunology*

Ph.D., Molecular Biology, December 2008

The University of Texas at Austin, Austin, Texas 78712

Dissertation: Characterization of Mitochondrial C₁-Tetrahydrofolate Synthase Transcript and Protein Expression in Adult and Embryonic Mammalian Tissues and the Role of the Mitochondrial One-Carbon Pathway in the Cytoplasmic Methyl Cycle

B.A., Biology, May 1992

Cornerstone University, Grand Rapids, Michigan 49525

Post-baccalaureate studies in Physics, Fall 1992 and Spring 1997

Aquinas College, Grand Rapids, Michigan 49506

TEACHING EXPERIENCE

Pre-Medical Course Development and Instruction, Fall 2014 to Present

*The University of Texas at El Paso, Department of Biological Sciences, El Paso, Texas 79938,
Supervisors: Kristen Gosselink, Ph.D. and Gina Nunez, Ph.D.*

- ✓ Sociopolitical Toxicology/Corporations, Power and Pollution
 - Interdisciplinary course between the biological and sociological sciences and Women's Studies examining the effects of different classes of toxicants on human and environmental health
 - Examines the power and control exercised by corporate producers of toxicants on economics, society, governments and science
 - Cross-listed in Biological Sciences (graduate and undergraduate level), Anthropology (undergraduate level), Sociology (undergraduate level) and Women's Studies (undergraduate level)
 - Undergraduate and Graduate Students
- ✓ Epigenetics and Environment/Societal Determinants of Health and Disease
 - Interdisciplinary course between the biological and sociological sciences and Women's

Schuyler T. Pike

Studies examining the new science of epigenetics

- Epigenetics is environmentally induced changes in gene expression that can be transgenerational
 - Promotes student understanding of the role that societal factors (i.e., access to good nutrition, exposure to toxicants and stress) play in the processes of disease and health
 - Cross-listed in Biological Sciences, Anthropology, Sociology and Women's Studies (each at the undergraduate level)
 - Current class (summer 2016) with only biology students is being reformatted and taught to develop a new Epigenetic course that is biological, rather than interdisciplinary, in nature.
- ✓ Medicinal Sciences Laboratory
- 2 week laboratory course (Offered Wintermesters and Maymesters)
 - Goal is to acquaint students with laboratory skills and techniques used in medical clinical assays and give them hands-on experience in cutting-edge biomedical science
- ✓ National Science Foundation (NSF) Educational Grant Submission (November 2015)
- Title: *E3: Engagement, Exploration, Experimentation to Enhance Stem Recruitment and Retention*
 - Collaboration between the Departments of Biology, Geology, and Mathematics, and the College of Education
 - Seeks to bring minority students into STEM fields through scientific understanding of a local environmental concern in the El Paso area (arsenic contamination) and the effects on health that exposures bring
 - The Environmental emphasis, as well as much of the structure of the study and the experimental plan, are based on my suggestions and experience
 - Currently being prepared for resubmission
- ✓ Instructor of General Biology class of over 100 students
- ✓ Distance Learning Training/Certification
- Blackboard
 - Moodle

Guest Lecturer, February 2012

The University of Texas at El Paso, Department of Biological Sciences, El Paso, Texas 79938
Delivered lectures in Anatomy and Physiology for Dr. Kristin Gosselink

Michigan State University, Department of Biochemistry and Molecular Biology, East Lansing, Michigan 48824

Delivered lectures to a 500 student biochemistry class for Dr. Thomas Sharkey

Reading Course Development, Fall 2011

Michigan State University, Department of Pharmacology and Toxicology, East Lansing, Michigan 48824

Organized class outline, structure, and syllabus for a "Topics in Toxicology" reading course with Dr. John LePres (The Role of the Mitochondria in Toxicology and Pharmacology) offered spring 2013

Schuyler T. Pike

Graduate Teaching Assistant

The University of Texas at Austin, Department of Chemistry and Biochemistry, Austin, Texas 78712

- Biochemistry for Non-Majors (Spring 2008), under Prof. Barrie Kitto, Ph.D.
- Biochemistry II (Fall 2006), under Anne Tibbetts, Ph.D and Gisela Kramer, Ph.D.
- Biochemistry I (Spring 2006), under Anne Tibbetts, Ph.D and Gisela Kramer, Ph.D.
- Biochemistry I (Fall 2005), under Prof. Jon Robertus, Ph.D.
- Biochemical and Molecular Biology Laboratory Techniques (Spring 2002), under Gisela Kramer, Ph.D.
- Advanced Inorganic Chemistry Laboratory (Fall 2001), under Prof. Joseph Lagowski, Ph.D.

Promoted student comprehension of class subject matter during regular office hours, review sessions, and class-time interactions

R.I.S.E. (Rehabilitation, Information, Support, and Empowerment) Seminar Lecturer, Facilitator, Marketer, and Coordinator, May 1999 to May 2001

The National Kidney Foundation of Michigan (NKFM), Ann Arbor, Michigan 48108

- Community-based education effort to educate and instruct dialysis and kidney transplant patients, dieticians, and social workers on the physiology, pathology and treatment of end-stage renal disease
- Enabled patients to retain or restore better health outcomes allowing reintegration into paid or volunteer employment
- Marketed seminars in dialysis and transplantation clinics
- *Before being modified from its original format, as developed by Wayne Nix and Ray Blackstock at NKFM, this program was highly successful in its outcomes with the great majority of participants able to return to some form of an enhanced quality of life including employment*

Scholastic Aptitude Test Scorer, June to July 1998 and June 2001

Measurement Incorporated, Durham, North Carolina 27701

Test scoring location: Grand Rapids, Michigan

Substitute Teacher, November 1998 to May 1999

Ionia Intermediate School District, Ionia, Michigan 48846

Undergraduate Teaching Assistant (Biology, Chemistry and Biochemistry), September 1991 to December 1992

Cornerstone University, Grand Rapids, Michigan 49525

RESEARCH EXPERIENCE

Postdoctoral Fellow/Research Associate, October 2008 to July 2013

Michigan State University, Center for Integrative Toxicology, East Lansing, Michigan 48824

Carcinogenesis Laboratory, March 2013 to July 2013

Supervisor: J. Justin McCormick, Ph.D.

Discovered three potential carcinogenic gene/protein candidates

Schuyler T. Pike

Postdoctoral Fellow/Research Associate.

Molecular and Cellular Immunotoxicology Laboratory, October 2008 to February 2013

Supervisor: Norbert Kaminski, Ph.D.

- Expertise in immunotoxicology, especially related to cannabinoid-induced cell signaling
- Successfully wrote and was funded by an individual Ruth L Kirchstein National Research Service Award (NRSA)
- Completed Computational Modeling of Dose Response course given by the Hamner Institute
- Attended graduate level pharmacology/toxicology and immunology courses and seminars
- Characterized how the endogenous cannabinoid, anandamide, modulates T cell function through interactions with elucidated cannabinoid receptors
- Presented results at international scientific meetings and peer-reviewed journals

Graduate Research Assistant, September 2001 to August 2008

The University of Texas at Austin, Department of Chemistry and Biochemistry; Austin, Texas 78712,

Supervisor: Dean Appling, Ph.D.

- Expertise in metabolic biochemistry, molecular biology and developmental genetics
- Characterized the novel mammalian enzyme, mitochondrial C1-tetrahydrofolate synthase, during embryonic development and in adult tissues
- Presented and participated in one-carbon metabolism, mitochondrial and developmental biology journal clubs
- Presented results at international scientific meetings and peer-reviewed journals

BUSINESS & ENTREPRENEURIAL EXPERIENCE

Independent Consultant, October 2013 to July 2014

Monterrey, Nuevo Leon, Mexico

- Provided scientific expertise to a health education and therapy-based business educating people on the effects of toxins and the importance of a clean environment on the earth (Pura Vida, Monterrey, Nuevo Leon, Mexico)
- Facilitated an effort towards international collaborations between a College of Education (Escuela Normal Miguel F. Martinez, Monterrey, Nuevo Leon, Mexico) and colleges of education in the United States
- Acquired basic proficiency in Spanish

Agriculture (Family Farm/Business), June 1992 to July 2000

Clark-Bell Farms, Belding, Michigan 48809

- Medium-sized (1000 acres) vegetable and grain crop production operation
- Performed normal crop production activities (planting, tilling and harvesting) as well as grading and packing of vegetable crops
- Co-managed business affairs (payroll, accounting and legal)

Office Staff, March 1996 to March 1998

Dan Croel Insurance Agency, Ionia, Michigan 48846

Schuyler T. Pike

PUBLICATIONS

- Pike ST**, Chen W, Kaplan BLF, Crawford R and Kaminski NE. "T Cell Activation Magnitude Dictates Endocannabinoid Receptor Usage". *Manuscript in Preparation*.
- Chen W*, Kaplan, BLF*, **Pike, ST**, Topper, LA, Lichorobiec NR, Simmons SO, Ramabhadran R, and Kaminski, NE. (2012) "Magnitude of Stimulation Dictates the Cannabinoid-Mediated Differential T Cell Response to HIV_{gp120}." *J. Leuk. Biol.* 92, 1093-1102, (**Authors contributed equally to work*)
- Pike ST**, Rajendra R, Artzt KA, Appling DR. (2010) "Mitochondrial C₁-THF Synthase (MTHFD1L) Supports Flow of Mitochondrial One-Carbon Units into the Methyl Cycle in Embryos". *J. Biol. Chem.* 285, 4612-4620.
- Prasannan P*, **Pike ST***, Peng P, Shane B, and Appling DR. (2003) "Human Mitochondrial C₁-Tetrahydrofolate Synthase: Gene Structure, Tissue Distribution of the mRNA, and Immunolocalization in Chinese Hamster Ovary Cells". *J. Biol. Chem.* 278, 43178-43187. (**Authors contributed equally to work*)

CONFERENCE PRESENTATIONS

- Pike, ST**, Crawford R, Kaplan. BLF, and Kaminski, NE. Cannabinoid Receptors and PPAR-gamma Interactions in Endocannabinoid-Modulated Differential CD8⁺ T Cell Responses, March 2013, Society of Toxicology Annual Meeting, San Antonio, Texas.
- Pike, ST**, Chen, W, Kaplan, BLF and Kaminski, NE. "An In Vitro Immune Response Model Mimicking Early-Stage HIV Infection for Elucidating Mechanisms of Cannabinoid-Induced Immune Modulation", July 2011, 21st Annual Symposium of the International Cannabinoid Research Society, St. Charles, Illinois.
- Fakhouri, W, Figueira, H, Kariagina, A, Manzan, A, Pattanaik, B, **Pike, ST**, Steiner, A, Zeng, W. "Michigan State University Postdoc Survey 2009: What We Learned and What We Need to Know", March 2010, *National Postdoctoral Association Annual Meeting*, Philadelphia, Pennsylvania.
- Pike, ST** and Appling, DR. "The Role of Mitochondrial C₁-Tetrahydrofolate Synthase in Embryonic Development", August 2006, *Folic Acid, B12 and One-Carbon Metabolism: FASEB Summer Research Conference*, Indian Wells, California.
- Pike, ST** and Appling, DR. "The Role of Mitochondrial C₁-Tetrahydrofolate Synthase in Vertebrate Development", July 2005, *Gene and Nutrient Interactions: FASEB Summer Research Conference*, Tucson, Arizona.
- Pike, ST** and Appling, DR. "The Role of Mitochondrial C₁-Tetrahydrofolate Synthase in Vertebrate Development", July/August 2004, *Folic Acid, B12 and One-Carbon Metabolism: FASEB Summer Research Conference*, Snows Mass Village, Colorado.
- Prasannan, P, **Pike, ST** and Appling, DR. "Characterization of Mitochondrial C₁-Tetrahydrofolate Synthase", July 2002, *Folic Acid, B12 and One-Carbon Metabolism: FASEB Summer Research Conference*, Snows Mass Village, Colorado.

PROFESSIONAL MEMBERSHIPS

- Society of Toxicology (Since January 2010)
- American Association for the Advancement of Science (January 2010 – January 2015)
- International Cannabinoid Research Society (July 2011-July 2012)

HONORS AND AWARDS

- February 2011 to January 2012, Ruth L. Kirschstein National Research Service Award (NRSA) Individual fellowship recipient from the National Institutes on Drug Abuse, grant number: F32 DA031067 (*Endocannabinoid Suppression of T Cell Mediated Host-Resistance to HIV*), Michigan State University
- October 2008 to October 2010, NRSA Institutional (MSU) Training Grant fellowship recipient from the National Institutes of Environmental Health and Safety, grant number: T32 ES007255, Michigan State University, East Lansing, MI
- 2004 FASEB Summer Research Conference Research Poster Award, Snowmass Village, CO
- 1992 *summa cum laude* graduate, Cornerstone University, Grand Rapids, MI
- 1992 Science and Social Science Departmental Award, Cornerstone University
- 1991 Au Sable Institute of Environmental Studies Summer Scholarship, Au Institute of Environmental Studies, Mancelona, MI
- 1991 and 1992, Who's Who In American Colleges and Universities
- 1991, All American Scholar

PROFESSIONAL SERVICE & LEADERSHIP

Postdoctoral Representative, Michigan Society of Toxicology, May 2011 to May 2013

- Interacted with academics and industry scientists in the field of toxicology from a variety of disciplines from environmental science, public health and pharmaceutical and chemical manufacturers
- Planned and prepared bi-annual meetings
- Judged poster sessions to award cash prizes at bi-annual meetings and Michigan State University undergraduate science expositions

Co-chair/Acting Chair/Member, Michigan State University (MSU) Postdoctoral Association (PDA) Steering Committee, December 2009 to May 2013

- Lead efforts to prepare and enact MSU PDA by-laws as the acting chair and then co-chair
- Designed, analyzed and presented two surveys examining changing demographics, working conditions and satisfaction among MSU postdoctoral scholars to MSU administrators and at National PDA conferences
- Oversaw organizational funds, events and committees

Postdoctoral representative, MSU Vice President for Research and Graduate Studies Search Committee, June to October 2012

- Interviewed candidates for the MSU Vice President of Research and Graduate Studies
- Member of a committee composed of upper level MSU administrators, professors and outside consultants

Postdoctoral Representative, MSU Research Integrity Council, June 2010 to June 2011

Collaborated with administrative, faculty and graduate student representatives preparing updated MSU authorship and plagiarism guideline recommendations

Postdoctoral Representative, MSU CAFFE (Center for Academic Future Faculty Excellence) Advisory Committee, June 2010 to June 2011

Provided guidance to MSU administrators implementing a National Science Foundation funded program to better prepare graduate student and postdoctoral academics for faculty careers

Co-Initiator/Charter Member, Paul D. Gottlieb (Nobel Laureate) Lecture Series Committee, The University of Texas at Austin, June 2004 to July 2006

Brought three Nobel Laureates in Physiology and Medicine (Sydney Brenner, Richard Roberts and Phillip Sharp) to present lectures on campus

Host for Prospective Students to the Cell and Molecular Biology Program and Department of Chemistry and Biochemistry, The University of Texas at Austin, 2002 to 2008

National Kidney Foundation of Michigan (NKFM) Legislative Canvasser, Summers 2000 and 2001

- Educated State of Michigan legislators and staff about the effectiveness of NKFM health education programs
- Resulted in State of Michigan continuing to fund NKFM programs and services

National Kidney Foundation, Patient and Family Council, Michigan Chapter, May 2000 to July 2001

Advised on directives and decisions being considered by The National Kidney Foundation

Anna M. Rizzo, B.S.

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Education

Bachelor of Science ,Applied Biology with emphasis in Pharmacy, Ferris State University, Big Rapids, MI, 1990.

Masters of Education, Vocational Education, Ferris State University, Big Rapids, MI, Currently Pending.

Professional Profile

- Strong team player who performs equally well independently.
- Knowledgeable in many areas of Biology, i.e. botany, anatomy, genetics, zoology, environmental
- Strong background in course design.
- Teaching approach covers all facets of learning: visual, auditory, kinesthetic

Academic / Teaching Experience

Instructor at Ferris State University, Big Rapids, MI August 1995 – Present

- Biology 101 Lab Basic Human Genetics
- Biology 111 Lab Environmental Biology
- Biology 121 and 122 General Biology (majors)
- Biology 205 Lab Human Anatomy (Allied Health majors)
- Biology 109 Human Anatomy and Physiology
- Biology 114 Turf Grass Management (8 years)

Structured Learning Assistant/CLS Facilitator at Ferris State University, Big Rapids, MI, 1995 – 1999

- Worked cooperatively with appointed staff in order to align curriculum for higher student achievement.
- Applied appropriated study skills for maximum achievement in course work in biology.
- Courses Facilitated: Biology 101, Biology 375 Genetics (majors), Biology 205 and Biology 122

Para-Professional, Academic Support Center, Ferris State University, Big Rapids, MI August 1996 - 1999

- Develop Seminars for Test-anxiety, study skills, test-taking, time management and reading comprehension.

- Tutoring: Biology and Chemistry

Substitute Teacher, Big Rapids Public School and Reed City Public School 1997 -1999

- Fourth Grade, Kindergarten, Music, and high school biology and chemistry

Committees and University Affiliations

Ferris Non-Tenure Faculty Organization, Ferris State University, Big Rapids 2012 – Present

- President July 2013 – Present
- Vice- President May 2012 – July 2013
- Originating member 2012
- Member of the bargaining team 2013

Presidents Leadership Committee, Ferris State University, Big Rapids 2012 – Present

- Discuss and vote on University wide proposals/policies.

Health Care Committee, Ferris State University, Big Rapids, MI 2012 – Present

- Evaluate medical insurance coverage
- Determine which policies benefit employees
- Provide feedback and university recommendations.

AAUW, Ferris State University Big Rapids, MI 2012 – Present

- Women in the workplace discussions
- Community service projects
- Raise Scholarship money for female students.

Community

Big Rapids Garden Club 2000 – 2003

Brookside Elementary, Big Rapids, MI 2008 – 2012

- PTO e-board member
- Secretary, Vice-President, and President

Big Rapids Co-Op Preschool, Big Rapids MI 1994 -1996

- Executive Board Member

References

Dr. David M. Griffith
Professor of Biology
Ferris State University
820 Campus Dr.
SCI 141
Big Rapids, MI 49307
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Dr. Mary Murnik
Professor of Genetics
Ferris State University
820 Campus Dr.
ASC 2117
Big Rapids, MI 49307
marymurnik@ferris.edu

Mr. John Johnson
Instructor
Biology
Ferris State University
SCI 141
Big Rapids, MI 49307
JohnJohnson@ferris.edu

R. Douglas Workman, Ph.D – Curriculum Vitae

Education:

- **Ph. D. in Fisheries, March 2002.** Department of Fisheries and Wildlife, Michigan State University, East Lansing, Michigan.
- **M. S., Biology, 1994.** Emphasis in Fisheries and Aquatic Sciences. Murray State University. Murray, Kentucky.
- **B. S. Department of Fisheries and Wildlife, June 1991.** Michigan State University. East Lansing, Michigan.

Professional Experience:

Advanced Ecological Management, Inc. Reed City, MI

Fisheries/Aquatic Biologist 05/06 to present. Conducting comprehensive fisheries community and aquatic habitat assessments for numerous private firms, including hydro-facilities, as part of environmental assessments. Perform weekly hydrologic monitoring, including stream flow and water level measurement. Conduct threatened and endangered species surveys. Conduct and implement aquatic habitat improvement as part of habitat restoration projects. Coordinate and conduct environmental assessments, and Phase I Environmental Site Assessments. Conduct wetland assessments using a combination of field investigations and GIS analyses.

Ferris State University, Big Rapids, MI

Adjunct Faculty, Biology Department 08/06 to present. Instructor for biology courses.

King & MacGregor Environmental, Inc., Grand Rapids, MI

Fisheries/Aquatic Biologist 01/01 to 05/06. Conducted aquatic habitat sampling and fisheries community assessments for hydro-facility licensing, roadway improvement projects, and other environmental assessment projects. Conducted threatened and endangered species fish surveys. Used GIS to assess land use features that influence invasive plant distributions within mitigation wetlands. Conducted large-scale wetland assessments using a combination of field investigations and GIS analyses. Developed and implementing quantitative study designs for analyses of sensitive headwater systems and other aquatic systems.

Michigan State University, East Lansing, MI

Research Assistant 01/96 to 01/01. Conducted a movement and spawning study of steelhead and longnose suckers in the Pere Marquette River, Michigan using radio telemetry. Investigated fish movement using GIS and developed a model to predict steelhead migratory behavior in response to changes in water temperature and stream flow. Evaluated the influence of an electric sea lamprey barrier on the movements of steelhead and longnose suckers, and described steelhead spawning habitat selection.

R. Douglas Workman, Ph.D. Curriculum Vitae

Snell Environmental Group Inc., Lansing, MI

Environmental Scientist 05/94 to 01/96. Conducted aquatic habitat sampling. Prepared Environmental Impact Statements, Environmental Assessments, and Phase I Environmental Assessments. Conducted public meetings, wetland delineations, monitored wetland mitigation sites, and conducted corridor land-use analyses using GIS. Project manager for several airport Environmental Assessments.

Murray State University-Hancock Biological Station, Murray, Kentucky

Laboratory Technician/Student Worker 06/93 to 02/94. Water sample collection and analysis for the Kentucky Lake Monitoring Program. Analysis of benthic community distribution in relation to groundwater flow in a Kentucky Lake embayment. Provided seminar presentations for visiting high-school students.

Murray State University. Murray, Kentucky

Research Assistant 08/91 to 06/93. Studied movement and spawning of largemouth bass in Reelfoot Lake, Tennessee to identify problems with recruitment. Evaluated movement patterns and identified home range size using GIS. Identified spawning habitat and movements in relation to water quality.

Michigan State University East Lansing, Michigan

Field Technician/Summer Internship 06/90 to 09/90. Stream ecosystem and habitat study of smallmouth bass and rockbass in relation to water flow on the Huron River, Michigan. Gained familiarity with IFIM by conducting stream flow measurements, habitat identification, and other data collection.

Activities and Achievements:

Chair of the Membership Committee, North Central Division of the American Fisheries Society, 2006-present

Past-President of the Michigan Chapter of the American Fisheries Society 2006

President of the Michigan Chapter of the American Fisheries Society, 2005-2006

President-elect of the Michigan Chapter of the American Fisheries Society, 2004

Chair of Continuing Education Committee, Michigan Chapter of the American Fisheries Society, 2003-8

Web-page Development Committee, Michigan Chapter of the American Fisheries Society, 2002-3

Recipient of best poster award at the Midwest Fisheries Conference in Bettendorf, IA, 2002.

Newsletter Editor of the Education Section of the American Fisheries Society, 1998 to 2001

Administrator and Developmental Assistant of the Non-Game Fish Identification Class of the Michigan Chapter of the American Fisheries Society's Committee for Continuing Education, 1997 to 1998

Activities and Achievements continued:

Moderator of the Fisheries Publications Bulletin Board, Department of Fisheries and Wildlife Graduate Student Organization, 1996 to 1997

Volunteer Conservation Officer for the Michigan Department of Natural Resources, 1989 to 1997

Member: American Fisheries Society
1989 to Present

Trout Unlimited
1996 to 2004

Recipient of the Sigma Xi, scientific fraternity award for public speaking and scientific paper presentation, 1993

Recipient of the Sisk Scholarship Award for academic excellence in aquatic sciences, 1992

Courses and Lectures Taught:

- BIO 103 Biology for non majors, Fall 2006, Spring 2008, Ferris State University
- Computer/network training workshop 1999-2000, conducted workshop to provide training to College of Business graduate students to connect personal computers to MSU network, Michigan State University
- Chaos and Fractals, one lecture during Spring 2000 Teaching Seminar Series, Michigan State University
- FW 471 Ichthyology Teaching Assistant Fall 1997, and frequent guest lecturer Fall 1998 and 1999
- Ecology, guest lecture, Summer 1998, Michigan State University
- Zebra Mussel Workshop-Hancock Biological Station, Murray State University

Certifications and Professional Training:

- Aquatic Plant Identification Workshop, American Fisheries Society, 2009
- Mine Safety and Health Administration 24-hour Part 46 New Miner Training, October 2008
- Smith-Root Electro-Fishing Techniques Workshop, American Fisheries Society, 2008
- Mussel Identification/Life History Workshop, American Fisheries Society, 2007
- Introductory Fluvial Geomorphology Workshop, American Fisheries Society, 2005
- Fisheries Population Estimation Workshop, American Fisheries Society, 2005
- Statistical Aspects of Sampling Freshwater Fish Populations and Habitats, American Fisheries Society, 2003

Certifications and Professional Training continued:

- Basic/Intermediate GIS for Fisheries Biologists/Managers, American Fisheries Society, 2003
- Wetland delineation training course, Wetland Training Institute of Frederick Maryland. 1995
- PADI Open-Water Diver Certification, 1991

Presentations:

- Workman, R.D. 2010. Invasive species: Asian carp and the Great Lakes Region. Benzie County Chamber of Commerce Public Forum. March 2010.
- Workman, R.D. 2010. Invasive species: Asian carp and the Great Lakes Region. Branch County Exposition. March 2010.
- Workman, R.D., M.P. Owens, C.L. Wolverton, G.J. Goodman. 2006. Creating wetlands for compensatory mitigation by reclamation of iron mine tailings basins at the Republic Mine in Marquette, Michigan. The 7th Annual Interational Conference of Acid Rock Drainage. St. Louis, MO. March 2006.
- Workman, R. D. 2005. An investigation of landscape features that influence the invasiveness of reed canarygrass in compensatory mitigation wetlands. Midwest Fish and Wildlife Conference. Grand Rapids, MI. December 2005.
- Workman, R. D. 2005. Career opportunities in Michigan's environmental consulting industry. Lake Superior State University Fisheries and Wildlife Club. Sault Ste. Marie, MI. April 2005.
- Workman, R. D., and M. Selzer. 2004. Reed canarygrass (*Phalaris arundinacea*) landscape evaluation and experimental control study. Multi-resource agency meeting in Lansing, MI. November 2004.
- Workman, R. D., D. Hayes, and T. G. Coon. 2002. Steelhead spawning habitat selection in the Pere Marquette River, Michigan. Poster presentation at the North Central Division of the American Fisheries Society Midwest Fisheries Conference, Bettendorf, IA. December 2002.
- Workman, R. D. 2002. Steelhead spawning habitat selection in the Pere Marquette River, Michigan. Michigan Chapter of the American Fisheries Society Spring Meeting, Muskegon, MI. March 2002.
- Workman, R. D., D. Hayes, and T. G. Coon. 2000. A temperature and flow-based model for predicting upstream movement of migratory steelhead in Lake Michigan. American Fisheries Society Annual Meeting, St. Louis, MO. August 2000.

Presentations continued:

- Workman, R. D., D. Hayes, and T. G. Coon. 2000. A temperature and flow-based model for predicting upstream movement of migratory steelhead in Lake Michigan. Michigan Chapter of the American Fisheries Society Spring Meeting, East Lansing, MI. March 2000.
- Workman, R. D., D. Hayes, and T. G. Coon. 1999. A temperature-based model for predicting upstream movement of migratory steelhead in Lake Michigan. 61st Annual Midwest Fish and Wildlife Conference, Chicago, IL. December 1999.
- Workman, R. D., and T. G. Coon 1999. Spawning and movement of steelhead and longnose suckers in the Pere Marquette River. Annual Report to the Michigan Department of Natural Resources, Ann Arbor, MI. April 1999.
- Workman, R. D., and T. G. Coon 1998. Spawning and movement of steelhead and longnose suckers in the Pere Marquette River. Lansing, MI Chapter of Trout Unlimited. Lansing, MI. October 1998.
- Workman, R. D., and J. M. Jones. 1994. Spawning and movement of largemouth bass (*Micropterus salmoides*) in Reelfoot Lake, Tennessee. Environmental Systems Research Institute, Inc. 1994 User Conference. Palm Springs, CA. May 1994.
- Workman, R. D., and Tom Timmons. 1994. Spawning and movement of largemouth bass (*Micropterus salmoides*) in Reelfoot Lake, Tennessee. Southeastern Conference of the American Fisheries Society Annual Meeting, Chattanooga, Tennessee. March 1994.
- Workman, R. D., and Tom Timmons. 1993. Movement behavior of largemouth bass (*Micropterus salmoides*) in Reelfoot Lake, Tennessee. Kentucky Chapter of the American Fisheries Society Annual Meeting, Frankfort, Kentucky. March 1993.

Publications:

- Workman, R.D., M.P. Owens, C.L. Wolverton, G.J. Goodman. 2006. Creating wetlands for compensatory mitigation by reclamation of iron mine tailings basins at the Republic Mine in Marquette, Michigan. Proceedings of the 7th Annual Interational Conference of Acid Rock Drainage.
- Workman, R. D., M. Selzer, and M. Pennington. 2006. Assessing the invasiveness of reed canarygrass using landscape features. Michigan Department of Transportation. Lansing, Michigan
- Workman, R. D., D. B. Hayes, and T. G. Coon. 2004. Rainbow trout spawning habitat selection in the Pere Marquette River, Michigan. Journal of Great Lakes Research 30(3):397-406.
- Workman, R. D., D. B. Hayes, and T. G. Coon. 2002. A temperature and flow-based model for predicting upstream movement of migratory steelhead in Lake Michigan. Transactions of the American Fisheries Society 131:463-475.

Publications continued:

- Workman, R. D., D. B. Hayes, and T. G. Coon. 2000. A description of the migratory behavior of steelhead (*Oncorhynchus mykiss*) and longnose suckers (*Catostomus catostomus*) in the Pere Marquette River, Michigan. Research Report to the Michigan Department of Natural Resources, Ann Arbor, Michigan.
- Workman, R. D., and J. M. Jones. 1994. Spawning and movement of largemouth bass (*Micropterus salmoides*) in Reelfoot Lake, Tennessee. Environmental Systems Research Institute, Inc. 1994 User Conference Proceedings.
- White, D. S., K. Johnston, G. Rice, and R. D. Workman. 1994. Ecology of the Hyporheic Interface of a Third Order Kentucky Stream. Abstract. Proceedings of the Second International Conference on Ground Water Ecology.

Appendix D: Survey of Program Students

Shown below are the results of a survey received from 22 students currently pursuing pre-pharmacy at Ferris. This group included 15 freshmen and 7 sophomores.

Students were asked to react to each statement on a scale from one to five, where:

1 = poor

2 = below average

3 = acceptable

4 = good

5 = excellent

Student Survey: Pre-Pharmacy Program

Question	Avg
Science courses in the pre-pharmacy program are readily available when I need them.	4.68
Science courses in the pre-pharmacy program are based on realistic prerequisites.	4.45
Teaching methods, procedures and course content met your needs, interests and objectives.	4.68
Required course in the sciences helped me learn basic facts and information.	4.68
Required courses in the sciences prepared me well for subsequent courses.	4.50
Required courses in the sciences improved my ability to think critically.	4.55
Related courses (such as English, communication, social science) are pertinent to your occupational goals.	4.09
Related courses (such as English, communication, social science) are current and meaningful to you.	4.18
Instructors of your science classes know the subject matter well.	4.82
Instructors of your science classes provide instruction that is interesting and understandable.	4.27
Instructional support services (such as tutoring, SLA workshops) are available to meet your needs and interests.	4.55
Instructional support services (such as tutoring, SLA workshops) are provided by knowledgeable and interested staff.	4.50
Lecture rooms provided a good learning environment.	4.18
Laboratory facilities provide enough work stations for the number of students involved.	4.64
Laboratory facilities are safe, functional, and well-maintained.	4.55
My lab experiences enhanced my understanding of science.	4.45
My lab experiences helped improve my laboratory skills.	4.73
Instructional equipment in the lab is safe and in good condition.	4.64
Instructional equipment in the lab is in sufficient quantity to avoid long delays in use.	4.36



TO: Gary Todd, Chair, Academic Program Review Council (APRC)

CC: Beth Zimmer, Chair, Biological Sciences

David Frank, Department Head, Physical Sciences

FROM: Kristi L. Haik, Dean, College of Arts & Sciences 

RE: A. S. Pre-Pharmacy Program

DATE: 09/12/2017

The A.S. Pre-Pharmacy Program is housed within the College of Arts and Sciences, where it serves to prepare students for entry into a professional school of pharmacy. It is specifically designed to satisfy the entry requirements of the College of Pharmacy at Ferris State University, but for many students it also serves as a pathway for entry into other colleges of pharmacy across the nation. For many years, the pre-pharmacy programs at Ferris State University have attracted large numbers of high-quality students, mainly due to the presence of a College of Pharmacy on our campus. As such, this is a very important program for the college and for the university.

Prior to the 2016-2017 academic year, the pre-pharmacy program was a non-degree-granting undergraduate program. However, at that time the program was modified slightly and became an associate's degree. This change was made for two reasons: a) students who receive TIP funding as a part of their financial aid package must be enrolled in an associate's program, and b) the creation of an associate's degree allowed for a much larger percentage of pre-pharmacy students to graduate from a degree program before moving on to a pharmacy school. This curricular changes were made based on the recommendations of a committee consisting of faculty from both the Department of Physical Sciences and the Department of Biological Sciences.

One of the major positive aspects of this program is the presence of two professional advisors who are focused on science students. During their first two years, all pre-pharmacy students are assigned to these professional advisors; at the end of that time they are transferred to faculty advisors for the remainder of their time as undergraduates. These professional advisors are integral in the academic and professional development of students in the program.

Another positive component to this program is that the College of Arts and Sciences and the College of Pharmacy work together to ensure smooth transitions for students from their undergraduate program to their professional program. These collaborations take the form of a) annual meetings

among the professional advisors, the faculty advisors, and representatives from the College of Pharmacy to share concerns, changes to admissions requirements, etc., and b) continual communication between the professional advisors in the College of Arts and Sciences and admissions officers in the College of Pharmacy regarding a variety of topics ranging from overarching admissions requirements to the needs of individual students.

Enrollment in the A.S. Pre-Pharmacy program has decreased over the past five years. This pattern is representative of a national trend toward fewer undergraduates enrolled in pre-pharmacy curricula. One of the major goals for this program for the next couple of years will be to find ways to increase enrollment. Some efforts have already begun. For example, the College of Arts and Sciences, in conjunction with the College of Pharmacy and the College of Optometry, has initiated for the Fall of 2017 a new living learning community, called POSIT, that is designed for undergraduates in either pre-pharmacy or pre-optometry programs. In addition, several meetings amongst representatives from the three colleges have occurred, during which discussions of how to increase enrollment have occurred.

With respect to program assessment, well-defined program outcomes were created in 2016. These outcomes focus on attainment of knowledge to be able to explain major concepts underpinning pharmacy, application of scientific theories and principles to analyze and solve problems, attainment of laboratory skills, application of the scientific method, the development of communication skills with regards to scientific information, and the development of collaboration skills. Assessment of these outcomes began in earnest during the Fall 2016 semester as part of a college-wide plan to carry out program assessment for all programs in the college. Thus far, program outcomes have been established, and those outcomes have been mapped to selected courses. Soon, a timeline for assessment of particular outcomes in particular courses will be established, and course-level assessment related to the program outcomes will commence.

The major suggestion from this report is that the A.S. Pre-Pharmacy Program should have an associated program coordinator to take care of graduation audits, oversee curriculum processes, and ensure that program assessment occurs, among other duties. In addition, it has been suggested that an oversight committee, consisting of the professional advisors and faculty from Biological Sciences and Physical Sciences, be created to provide additional oversight.

The Dean's office agrees that assessment of this program is a high priority, and it supports the establishment of increased faculty oversight. Conversations regarding the best way to accomplish increased oversight of the program will occur during the current academic year.