

Cellular Reactive Oxygen Species Fall 2013

Course Name(s)/Number (s):

BIO446-B (CRN 11308); BIO6546-Y (CRN 13307)

Course Location & Times:

Medical Sciences Building 221; varies with some mandatory lab meetings.

Instructor:

Angela A. Reiken, Ph.D., Assistant Professor, Department of Biology
Medical Sciences Building 216, (601) 925-7783, reiken@mc.edu

Prerequisite(s):

Instructor's consent.

Course Description from the University Catalog:

BIO 446 - Special Topics- Credits, 3 sem. hrs. Prerequisite(s): instructor's consent. A study of selected current topics in biology.

BIO 6546 - Special Topics- Credits, 3 sem. hrs. A. study of selected current topics in biology.

Rationale:

The purpose of the Cellular Reactive Oxygen Species course is to prepare science students to design and carry out experiments to answer research questions while mastering necessary skills to perform experiments. This course involves proper usage of data analysis, interpretation of data, and presentation of results. Students should learn how science works, gain an appreciation of research as a means to find explanations for aspects pertaining to the world from a scientific perspective, understand the contexts of science, and utilize this understanding as a basis for ethics and future decisions consistent with the values of Mississippi College.

Methods of Instruction, Required Practices, and Instructional Materials:

- Methods of instruction include lab meetings with discussion format focused on content specific to syllabus, notebooks, information research, safety, skills, designing experiments, collecting and analyzing data, writing scientific reports, and preparing presentations. There will be practical hands-on training demonstration by the instructor as required.
- Required practices include students applying and practicing skills in the lab during experimentation, participation in team experiments, managing collection and analysis of data in a laboratory notebook, following safety and related procedures, reading, writing a scientific report, and preparing and presenting oral, written, and graphic presentations.
- Instructional materials include instructional videos, scientific papers, laboratory equipment, computer, marker board, and handouts.

Student Objectives and Outcomes:

Upon the completion of this course you will be able to:

- Understand peer-reviewed scientific papers
- Learn various scientific techniques related to a project
- Perform and trouble shoot experiments
- Collect and critically evaluate data
- Present findings in written report and oral formats

Methods of Evaluation:

- Lab notebook – it is imperative that you keep a complete and accurate lab notebook that is updated on a daily basis. This notebook should include methods, results, and any other information that is pertinent to the experiment. A rubric for notebooks will be provided prior to beginning experiments.
- Students will work individually and in small groups to complete experiments. You and your team members will work cooperatively while each is expected to contribute equally to the overall project. Each team member will be graded on an individual basis. The student team will present the instructor with an experimental plan schedule agreed upon and signed by each team member. A team member not completing his/her portion of the plan will not negatively affect the grade of other team members. Please note that if this occurs, the experiment may have to be repeated in full for that team member to obtain data for his/her portion of the work. This will not be the responsibility of the other team members!
- Lab meetings – Since one of the best ways to learn science is by discussing it with our peers, we will meet often. We will discuss designing experiments, techniques, data analysis, writing reports, and related scientific papers. You must attend at least 3 meetings. Students will present the instructor with a schedule of their availability by the end of week 1 so that lab meetings may be scheduled to accommodate variable student schedules. Some training meetings with the instructor will be mandatory. Inform the instructor in advance if a mandatory meeting cannot be accommodated by your class schedule so that arrangements can be made. Be prepared to participate.
- Participation- see Attendance section below
- Scientific report and oral presentation– these are due at the end of the summer and will serve as your final means of evaluation
- There are no formal exams for this course. Assignments utilized for evaluation must be completed on time. See the class schedule at the end of this syllabus. If you miss completing an assignment on time, you must notify the instructor immediately and provide a medical, family emergencies, school/job interview, or other valid excuse and make up the work within 1 week. Failure to do so will negatively affect your grade.

Attendance:

Each semester hour of credit corresponds to 53+ clock hours. Therefore, for a 3 credit course, you are expected to complete at least 160 clock hours during the term. This is a minimum. You're always welcome complete more clock hours! However, accruing less than 160 clock hours will negatively affect your grade. For a full semester, the average is 10 hours per week. You may be in the lab more or less than 10 hours per week as long as you complete 160 hours for the full term. Please note that the scientific report and oral presentation due at the end of the summer are required, even if you have already completed 160 clock hours.

Writing Center:

The Mississippi College Writing Center, supervised by Dr. Steve Price, offers writing consultations free-of-charge to MC students. The Center is staffed by highly-qualified undergraduate tutors who conduct interactive, one-on-one sessions with students of all disciplines. The goal is to help writers at any stage of their writing process, from choosing topics to organizing their thoughts, from deep revision to grammar. To schedule an appointment, drop by the LRC area on the first floor of the Leland Speed Library; call 601.925.7289; or email WritingCenter@mc.edu. Walk in visits are also available.

Grading:

ALL STUDENTS: YOUR FINAL GRADE WILL BE LOWERED BY 10 POINTS FOR EVERY 16 HOURS BELOW THE REQUIRED 160 CLOCK HOURS (lowered by 5 points for every 8 hours below, etc.). SEE ATTENDANCE SECTION ABOVE!

Midterm Evaluation

Each area is scored on a scale of 1-10. For the given scale, 10 is the highest score and 0 is the lowest score. The scores will be added and the total will determine the midterm evaluation grade.

- satisfactorily completed the work they were assigned to do
- had reliable attendance
- prepared by doing adequate preliminary research
- understood the purpose/hypothesis of the research
- used sources made available
- asked for assistance when needed
- used a reliable system to record data
- followed protocols and safety procedures
- developed skills to perform required experiments
- worked successfully as an individual or as part of a team

Final Evaluation

Each area is scored on a scale of 1-5. For the given scale, 5 is the highest score and 0 is the lowest score. The scores will be added and the total will determine the final evaluation grade.

- satisfactorily completed the work they were assigned to do
- had reliable attendance for lab work
- had reliable attendance for lab meetings
- prepared by doing adequate preliminary research
- understood the purpose/hypothesis of the research
- used sources made available
- asked for assistance when needed
- used a reliable system to record data
- followed experimental protocols
- developed skills to perform required experiments
- worked successfully as an individual
- worked successfully as part of a team
- presented research in *oral, poster, or written form
- properly collected data
- critically evaluated data
- understood and utilized peer-reviewed scientific papers
- properly recoded work in lab notebook
- followed procedures for safety, organization, and cleanliness
- participated in paper discussions
- completed an acceptable scientific data and analysis report

*Graduate students: Each graduate student will be required to give an oral presentation about their research topic(s) that will be include scientific data and analysis.

Final grade for the course

The midterm evaluation will be 25% and the final evaluation will be 75% of the final grade reported in Banner for the course.

Undergraduate Grading Scale: 90-100% = A, 80-89% = B, 70-79% = C, 60-69% = D, and <60% = F.

Graduate Grading Scale: 90-100% = A, 85-89% = B+, 80-84% = B, 75-79% = C+, 70-74% = C, 60-69% = D, and <60% = F.

Academic Honesty:

You are members of an institution that is dedicated to scholarship and spiritual growth. This institution is part of the larger academic community, the foundation of which is based on personal honesty. The success of this community depends on the commitment of both students and faculty to this principle and therefore cheating and plagiarism cannot and will not be tolerated. More importantly, Mississippi College is dedicated to empowering its students to develop the skills necessary for “making responsible, moral choices,” and therefore, the University will accept nothing less than scrupulous honesty from its students. We will follow the University policy on Academic Honesty (Policy 2.19), which can be found in the student handbook, The Tomahawk, pp. 35-36. <http://www.mc.edu/publications/handbook/academic.pdf>

Special Accommodations at Student Counseling Services:

In order for a student to receive disability accommodations under Section 504 of the Americans with Disabilities Act, he or she must schedule an individual meeting with the Director of Student Counseling Services immediately upon recognition of their disability (if their disability is known they must come in before the semester begins or make an appointment immediately upon receipt of their syllabi for the new semester). The student must bring with them written documentation from a medical physician and/or licensed clinician that verifies their disability. If the student has received prior accommodations, they must bring written documentation of those accommodations (example Individualized Education Plan from the school system). Documentation must be current (within 3 years). The student must meet with SCS face-to face and also attend two (2) additional follow up meetings (one mid semester before or after midterm examinations and the last one at the end of the semester). Please note that the student may also schedule additional meetings as needed for support through SCS as they work with their professor throughout the semester. Note: Students must come in each semester to complete their Individualized Accommodation Plan (example: MC student completes fall semester IAP plan and even if student is a continuing student for the spring semester they must come in again to complete their spring semester IAP plan). Student Counseling Services is located in Alumni Hall Room #4 or they may be contacted via email at: mbryant@mc.edu or rward@mc.edu or by phone at [601-925-7791](tel:601-925-7791).

Lab Attire:

Since our research labs are BSL-2, **we are responsible** for requiring the use of the appropriate personal protective equipment. These items include the use of closed-toe shoes and lab coats. Lab coats must be mid-thigh length (not short coats). They may be purchased in Jackson at TCs or UMC or ordered online (if you order it online, please note that you may not begin work until you have a lab coat—you may borrow one from a friend, if necessary).

UMC Bookstore

(on UMC's Campus)

<http://umcbookstore.com/>

TC's Uniforms, Inc.

2715 North State Street

Jackson, MS 39216

[\(601\)981-9274](tel:6019819274) or [\(800\)981-9274](tel:8009819274)

[\(601\)982-9024](tel:6019829024) fax

sales@tcsyms.com

Hours: Monday - Friday 8:00am - 5:30pm

Saturday 9:00am - 5:00pm

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

ONLINE RESOURCES

Amazon has some for as low as \$10

<http://www.amazon.com>

Just labcoats

<http://www.justlabcoats.com>

Course Topics and Tentative Schedule:

Week									
1	Aug. 28-31	Submit your schedule to Dr. Reiken this week!							
		Review syllabus, experimental procedures, and data.							
		Project assignments							
		Complete any remaining submissions for ASCB.							
2	Sept. 1-7	Sept. 2, Monday is Labor Day Holiday.							
		ASCB deadlines for travel awards and posters are due by Wednesday, Sept. 4.							
		Experiments with collection of data and data analysis							
3	Sept. 8-14	Experiments with collection of data and data analysis							
4	Sept. 15-21	Experiments with collection of data and data analysis							
5	Sept. 22-28	Experiments with collection of data and data analysis							
6	Sept. 29- Oct. 5	Experiments with collection of data and data analysis							
7	Oct. 6-12	Oct. 7-8, Monday and Tuesday, is Fall Break!							
		Experiments with collection of data and data analysis							
8	Oct. 13-19	Data analysis, preparation of graphs, histograms, etc.							
		Midterm Evaluations							
9	Oct. 20-26	Oct. 25, Friday, is the last day to drop (no refund.)							
		Experiments with collection of data and data analysis							
10	Oct. 27-Nov. 2	Experiments with collection of data and data analysis							
11	Nov. 3-9	Data analysis, preparation of graphs, histograms, etc.							
12	Nov. 10-16	Preparation of posters, reports, and presentations							
13	Nov. 17-23	Preparation of posters, reports, and presentations							
14	Nov. 24-30	Thanksgiving holiday begins 5pm Nov. 26, Tuesday, through rest of the week.							
15	Dec. 1-7	Lab meeting presentations							
		Final Evaluations							
16	Dec. 8-14	Last day of classes is Wednesday, Dec. 11.							
		ASCB begins Thursday, Dec. 14.							
17	Dec. 15-21	ASCB continues through Wednesday, Dec. 18.							

Specific meeting times and additional presentation opportunities will be added as needed!

Important College Dates:

Monday September 2, 2013: Labor Day. No class.

Thursday September 5, 2013: Last day to drop the class with 100% tuition refund.

Monday-Tuesday October 7-8, 2013: Fall Break. No class.

Last day to drop a class is October 25, 2013 (zero tuition refund)

Wednesday – Sunday November 27- December 1: Thanksgiving holidays (all classes meet Monday November 25, all day classes meet but night classes do NOT meet Tuesday November 26)

Other Training and Certification Opportunities

There are many inexpensive or free training opportunities available for researchers. Some of these even provide certificates of completion or certifications. There are also many inexpensive or free memberships for scientific organizations. Additional opportunities will be added as they are discovered. A list of these known to the instructor will be provided to students, and students are encouraged to share by adding to the list. Students should take advantage of these opportunities!

I have read and understand all expectations outlined in the fall 2013 Cellular ROS Researcher's Syllabus.

Name (print): _____ Name (signature): _____ Date: _____