Mississippi College Cell Biology and Genetics Laboratory (2 credit hours) Syllabus

Courses:

Cell Biology and Genetics Lab - 22177 - BIO 307 - A
Cell Biology and Genetics Lab - 22179 - BIO 307 - B
Cell Biology and Genetics Lab - 22181 - BIO 307 - C
Cell Biology and Genetics Lab - 23656 - BIO 307 - D

Instructors: Each professor's office hours can be found on MC Moodle.

Bob Sample, Ph.D. office: Medical Sciences Building, Rm. 217 email: sample@mc.edu

*Section A meets Monday 2:30p-3:30p AND Tuesday 1:30p-5:30p

John Piletz, Ph.D. office: Hederman Science Building, Rm.111B email: jpiletz@mc.edu

*Section B meets Monday 2:30p-3:30p **AND** Wednesday 1:30p-5:30p *Section D meets Monday 2:30p-3:30p **AND** Friday 1:30p-5:30p

Jerry Reagan, Ph.D. office: Hederman Science Building, Rm. 203 email: <u>reagan@mc.edu</u>

*Section C meets Monday 2:30p-3:30p AND Thursday 1:30p-5:30p

Prerequisites: BIO 111 and CHE 141 **Co-requisites:** BIO 305 or BIO 306

Catalog Course Description: "A laboratory course designed to illustrate the techniques of cell biology and genetics using yeast as a model system."

Rationale: The mission of the College is to prepare for its students to ultimately perform successfully in professional and career enterprises. Cell Biology and Genetics Lab is a core course in the Biological Sciences and it is a subject that professional schools (e.g., medical, dental and graduate schools) both expect and require. This laboratory course provides practical experiences that will benefit students pursuing healthcare professions, those wishing to enroll in a biology graduate program and those who will seek employment in Biology-related fields. It is hoped that students who complete this course and a major in the biological sciences will ultimately utilize their skills, talents and abilities in service to God and man as teachers, professors, physicians, dentists, physical therapists and in other biological related professions.

Course Objective: The behavior of cells in a given environment is reflective of changes in the expression of the RNAs and/or proteins within the cell. These changes ultimately stem from changes in gene expression. The goals of this lab are for you to begin to: (1) "think like a scientist", (2) use the cell biology and genetics concepts that you have talked about in the Cell Biology and Genetics courses and (3) build practical skills for a future career in science, as you explore the baker's yeast *Saccharomyces cerevisiae* as a model for eukaryotic organisms.

Course Format: This course will be "hands on". First, you will be introduced to classic cellular biology concepts and protocols. It is imperative that you <u>read the lab manual before class</u> (including the references that have been listed therein). Also, after we perform the experiments, you will be responsible for graphing and analyzing the data. The final component of this lab will require that you work with your group to design and complete your own experiment to answer a scientific question that your instructors will assign. Throughout the course, students will be required to keep an

electronic *Lab Archives* lab notebook to collect all data obtained from their work. As is the case with working scientists, you will present/discuss the experiment that you designed with your peers and instructors in a 15 minute oral presentation.

LabArchives is an electronic lab notebook which we will use for this course. In addition to providing you a place to record your observations & results of experiments - each with automatic date & time stamps for each 'entry' - you will find some support information for the course. Unlike a print lab manual, though, I can update this supplemental content during the semester so be sure to check your account periodically.

- To get started look for the welcome e-mail on January 13th from *LabArchives* with the link to access your own notebook for the course. It will contain a link which will ask you to choose a password.
- The service grants students a **2 week grace period** to access the account before requiring payment of the \$10. For read/write privileges for the rest of the semester simply pay from within your account using a credit card or Paypal. If you have any questions write to support@labarchives.com **Failure to purchase the service will severely effect your grade for the course.**
- *LabArchives 101*: While the interface is quite intuitive, to help save students time there is a very short YouTube video. I strongly recommend that you take the 4 minutes to see it now: http://www.youtube.com/watch?v=DmMd0AA8GG4. If you want more details in writing, download the *Quick Start Guide*.
- To access via your browser you might want to add https://mynotebook.labarchives.com/login to your favorites & if you will also use a tablet or smart phone, download the most recent version of the iOS or Android app.
- Have a technical question? Search the <u>Help page</u> for an answer, review the series of videos on the *LabArchives* YouTube Channel or write/call customer support.
- I hope that you enjoy using this modern, green alternative & look forward to getting your feedback!

Note: At the end of the semester you can download a copy of your notebook to your computer (or print it) for permanent access. This notebook will remain accessible via your account if you take other lab courses using this service.

If you are working on a research project/thesis you create a 2nd notebook (with 1GB of memory) at no additional cost.

Please note: The instructors reserve the right to modify the format of the course at any time to allow for the enhancement of the learning environment.

Course Progression (Tentative):

WEEK OF	TENETATIVE SCHEDULE		
	Biology-specific information resources and how to read a scientific		
13-Jan	paper		
20-Jan	Paper discussion, basic lab skills		
27-Jan	Using plate counting to estimate cell death		
3-Feb	Analyzing the data from your plate count		
10-Feb	Using flow cytometry to investigate cell cycle arrest part 1		
	Using flow cytometry to investigate cell cycle arrest		
17-Feb	part 2		
24-Feb	Analyzing your flow cytometry data		
3-Mar	MIDTERM EXAM (MONDAY) Writing a research plan/proposal		
10-Mar	SPRING BREAK (No lab this week)		
17-Mar	Work on your research plan/proposals		
24-Mar	Independent investigation		
31-Mar	Independent investigation		
7-Apr	Independent investigation		
14-Apr	Working on presentation		
21-Apr	EASTER (No lab on MONDAY) LAB PRESENTATIONS		

Important Dates from the Academic Calendar:

Monday, January 20, 2014--MLK DAY (Please be of service to someone else) Monday-Sunday, March 10-16, 2014--SPRING BREAK Friday March 21, 2014—LAST DAY TO DROP A CLASS (no refund) Monday April 21, 2014—EASTER BREAK (No day classes)

Specific Course Objectives (By the end of the course the student should be able to perform the following...):

Calculate the rate of cell growth

Determine cell viability

Accurately record and keep lab records

Write an experimental plan

Construct a hypothesis

Design an experiment

Present science orally using PowerPoint

Use statistics and statistic software to analyze data

Use Biology resources with respect to information literacy

Read and understand primary scientific literature

MATERIALS REQUIRED: You will also need a calculator and an ink pen and a lab pen (Sharpie) for writing on your test/microcentrifuge tubes. We will be using a digital lab notebook (LabArchives.com) for this course. On the first day of class (January 13, 2014), you will be sent an email with a link to set up your lab notebook. You will have 2 weeks from that date to pay the \$10

fee to lab archives (directly to them). Failure to pay the fee for use of the lab archives software will result in loss of access to your lab notebook; thus you will lose the 10% of your grade assigned to grading the lab notebook as well as the points associated with assignments that require the "sharing" of lab notebooks, obtaining protocols from the notebooks, etc... You may find assistance by following this link: Getting started in Lab Archives.

GRADING: A student's grade will be based on the points attained, weighted in the percentages that follow that have been acquired during the progress of the course:

ITEM	PERCENTAGE OF GRADE
Assignments/Quizzes	20%
Participation	10%
Midterm Exam	25%
Experimental design	15%
Presentation	10%
Lab Report	10%
Notebook checks (2)	10%
TOTAL	100%

90% - 100%	A
80% - 89.99%	В
70% - 79.99%	C
60% - 69.99%	D
0% - 59.99%	Failure of the Course

Please note that the instructor reserves the right to alter the grading rubric to enhance the learning experience. Other class assignments and their worth may be announced throughout the semester.

ATTENDANCE: Mississippi College requires students to attend 75% of all class meetings for courses they are enrolled in. If a student misses more than 25% the class meetings for a course they are to receive a failing grade based on attendance. Strict adherence to Mississippi College's class attendance policy is as follows: "Any student whose absences, whether excused or unexcused, exceed 25% of the class meetings will receive a grade of "F" in the course." Attendance in class is expected. For excused absences, the student (not the instructor) is responsible alerting the instructor in advance so that arrangements can be made to make-up the bench work, for requesting any instructions, assignments, or work missed during an absence and completing them within a week of the due date. Tests missed during an excused absence must be made up within one week. Tests and or assignments missed during an unexcused absence will not be made up. Refer to the Mississippi College Undergraduate Catalog for clarification of any point in relation to attendance.

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LATE ASSIGNMENTS: Turn in your assignments on time. Tardy assignments will be given a 10% penalty per day. Please note that if you are absent and an assignment was due, it is still your responsibility to turn in your assignment by the due date or suffer the 10% per day late penalty. The instructor will not accept assignments that are more than a week late.

ACADEMIC INTEGRITY: All students are expected to complete their assignments based on their own skills and knowledge, unless otherwise directed by the instructor. Studying as groups is highly recommended and suggested. However, exams are not group projects; therefore, any academic dishonesty will be dealt with immediately and at the discretion of the instructor. All instances of academic dishonesty will also be reported to the department chair, the division and as appropriate to the college administration (to include the Dean of Academic/Student Affairs or other administrative officials) as necessary. The instructor also reserves the right to remove a student or students from the class as deemed necessary due to acts of academic indiscretion. Mississippi College students should display academic integrity in all situations. Honesty is expected from all students at all times. Dishonesty, such as cheating, plagiarism, and falsifying information, is a serious offense and is subject to severe penalty. Adherence to the Mississippi College "Honesty Policy" (Mississippi College Undergraduate Bulletin) will be followed. Refer to the Mississippi College Undergraduate Catalog for clarification of any point in relation to Academic Integrity.

LAB ETIQUETTE: If you get something out to use, clean it and put it back up when you are finished with it. If you use any dishes, glassware, or reusable machines or containers, then clean them properly and put away. No eating, drinking, applying make-up or anything else other than performing your assigned task with the **utmost diligence and attention** while in the lab. **Cell phones must be silenced in class**. Since we are using the digital notebook, you may use electronic devices in class(except during exams or quizzes). However, **never use your electronic devices with you gloves on.** It will be helpful to assign a group member as a "scribe" for the group—but you must rotate this duty every class period. Backpacks, purses, etc. should not be placed on the desk or used during class unless specified by the instructor.

EARLY ALERT SYSTEM: Mississippi College has adopted the practice of finding students early in the semester who may be exhibiting behaviors that could ultimately have a negative impact on their academic progress. These behaviors are often called "red flag" behaviors and include, but are not limited to, excessive absences, poor test grades, and lack of class participation or evidence of non-engagement. Identifying these behaviors early gives the instructor the opportunity to raise the "red flag" on behalf of a particular student so that the student can take the appropriate action to redirect his/her progress. The system alerts the student, the student's advisor, and the Office of Student Success.

These messages are intended to help a student recognize an area of concern and to encourage him/her to make some choices to improve the situation. When a student receives an Early Alert message, the student should <u>quickly</u> make an appointment to talk with his/her professor about the situation. Also, students can make full use of the Office of Student Success to set academic goals and connect to campus resources.

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.

A copy of this statement is attached on the following page and will be turned into the instructor:

I		have read and h	ad explained al	l of the inf	formation	and
policies outlined in the	nis syllabus. I	understand that	as a student	, that by	signing	this
acknowledgement, I am	required to adher	e to the policies or	utlined in this sy	yllabus duri	ing the pe	riod
of my enrollment in this	course. If at any	time I feel that I h	nave not been tr	eated in acc	cordance	with
these policies, I have the	ne right as a stud	ent to meet with	the instructor, the	he departm	ent chair,	the
division and as approp	oriate with the co	ollege administrat	ion (to include	the Vice	Presiden	t of
Academic/Student Affai	rs or other adminis	strative officials) to	rectify this pro	blem.		
Course Name:						
Course Number:						
Date:						

Bio 307 Fall 2013 Semester

have read and had explained all of the information and
olicies outlined in this syllabus for Biology 307 (Cell Biology and Genetics Laboratory). I
nderstand that as a student, that by signing this acknowledgement, I am required to adhere to the
olicies outlined in this syllabus during the period of my enrollment in this course. If at anytime I
eel that I have not been treated in accordance with these policies, I have the right as a student to meet
with the instructor, the department chair, the division and as appropriate with the college dministration (to include the Vice President of Academic/Student Affairs or other administrative efficials) to rectify this problem.
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