

Biology 306: Genetics: CRN: 23655
Tuesdays & Thursdays, 12:00 pm – 1:15 pm, MEDSCI 202
3 semester hours
Syllabus Spring 2014

Instructor: John Piletz, Ph.D.
Medical Science Building H111-B
601-925-7818; jpiletz@mc.edu
Office Hours: TBA

Prerequisites: BIO 111, and CHE 141 and sophomore standing or higher or instructor's consent.

Instructional Materials:

Genetics: A Conceptual Approach, 4th Edition, Benjamin A. Pierce, ©2012 WH Freeman and Company (ISBN-13:978-1-4292-3250-0)

Catalog Course Description:

“Students will study three main themes in genetics: classical genetics, population genetics, and molecular genetics.”

Rationale: The study of genetics provides greater understanding of why we are who we are. It allows us to understand the mechanisms behind a large number of traits, both in health and disease. Indeed, to fundamentally understand evolution and the pathophysiology of many diseases requires a thorough knowledge of genetics. The study of genetics also fulfills the mission of the college through the concentrated study of a specialized field, in this case Genetics.

Objectives: To provide the student with knowledge of:

1. the processes of mitosis and meiosis.
2. structure of genes.
3. activation and repression of gene function.
4. environmental factors affecting gene function and expression.
5. the processes involved in sex determination and defects there in.
6. genetically linked syndromes and diseases.
7. the relationship between genetics and cancer.
8. the role and benefit of the Human Genome Project to society.
9. reproductive technology, gene therapy and genetic counseling.
10. the relationship between genetics and immune functioning.
11. population genetics and evolution of the human species.
12. how genetics can play a role in behavior.
13. how mutations play a role in variation and evolution.
14. biotechnology and how genetics plays a role.
15. the interrelation of population, quantitative, and evolutionary genetics.
16. molecular techniques applicable to the fields of genetics.

Grading: Grading will be based on a weighted point system

80% Lecture Exams (20% each)

20% Quizzes/Assignments

100% Total

A 100-90% B 89.9-80% C 79.9-70% D 69.9-60% F Below 59.9

Course Format: This course will be taught in lecture format supplemented with PowerPoint presentations, primary source articles, case-based exercises, and group interactions. The instructor reserves the right to change the format at any time to allow for the enhancement of the learning environment

Quizzes: Every Tuesday at the start of class, a comprehensive lecture quiz will be given. The ten highest quiz scores will count. If you accumulate more than eight perfect quizzes, each additional perfect score will add one point to an exam score. Missing a quiz **for any reason** will count as a zero for that quiz. There will be NO make-up quizzes.

Assignments: Students who want to gain a solid understanding of genetics will find no substitute for independent and systematic problem solving exercises. To encourage problem solving, problems will be assigned regularly. It is expected that all assignments will be completed on time. The instructor reserves the right to refuse late assignments or assess a 10-point per day penalty. There will be NO drop grades for these.

Exams: There will be four exams. All exams will be **cummulative**. Each exam will contain about 25% information from the previous exams. The fourth exam will be comprehensive but still focus (<75%) on the most recent untested material – and thereby serve as the “final” exam. Exams and quizzes may include true-false, multiple choice, fill-in-the-blank, matching, diagrams for labeling, short answer, discussion, and problem solving questions. Missing an exam due to an unexcused absence will result in a zero for that exam. Any exam missed for an excused absence must be made up **within a week**. An excused absence is like an absence due to personal illness, death of a relative, or a school related function. You must have an **official letter** before an excused absence will be granted. Students missing an exam due to a school related function must coordinate taking their exam with me **prior** to the absence.

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.** The student (not the instructor) is responsible for any instructions, assignments, or work missed during an absence within one week of the absence. Tests missed during an excused absence must also be made up within one week. Tests 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.**

Behavior: We will maintain a professional, respectful class environment. Please notify the instructor first if there is a perceived problem. **You may not use your cell phone in class!** That includes texting, checking the weather; shopping, using the calculator... you get the point. Bring a calculator to class — just in case you need one.

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 quickly 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.

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. All instances of academic dishonesty will also be reported to the department chair, the division and as appropriately 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.**

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.

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.

Important college dates:

January 20, MondayMartin Luther King Holiday, No Day or Night Classes
January 23, Thursday Last Day To Drop a Full Semester Class with 100% Tuition Refund
March 10-16.....Spring Break
March 17, Monday Classes Resume
March 21, Friday LAST DAY TO DROP A FULL SEMESTER CLASS

April 21, Monday (No day classes; night classes will meet) Easter Holiday - Offices Closed
 April 28-30, Monday – WednesdayDead Days
 April 30, Wednesday Last day of classes; night exams begin
 May 1, Thursday Study Day
 May 2- May 7, Friday, Saturday, Monday, Tuesday, WednesdayFinal Exams
 May 9-10, Friday and Saturday Graduate and Undergraduate May Graduations

*****Instructors have the right to change the syllabus as needed. This may include, but is not limited to exam dates, material covered, etc.*****

Course Outline & Schedule:

Week/Date(s) Topic(s)/Reading(s)

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|-----|-----------|--|
| 1: | 1/14 | Intro to Genetics, Ch.1 |
| | 1/16 | Chromosomes and Cellular Reproduction, Ch.2 |
| 2: | 1/20 | <i>Martin Luther King Jr. Day = No classes meet!!</i> |
| | 1/21 | Basic Principles of Heredity, Ch.3 |
| | 1/23 | |
| 3: | 1/28 | Sex Determination and Sex-Linked Characteristics, Ch.4 |
| | 1/30 | |
| 4: | 2/4 | EXAM #1 |
| | 2/6 | Extensions and Modifications of Basic Principles, Ch.5 |
| 5: | 2/11 | Pedigree Analysis, Applications, and Genetic Testing, Ch.6 |
| | 2/13 | Linkage, Recombination, and Eukaryotic Gene Mapping, Ch.7 |
| 6: | 2/18 | Bacterial and Viral Genetic Systems, Ch.8 |
| | 2/20 | |
| 7: | 2/25 | Cont'd. Bacterial and Viral Genetic Systems, Ch.8 |
| | 2/27 | EXAM #2 |
| 8: | 3/4 | Chromosome Variation, Ch.9 |
| | 3/6 | DNA & Chromosome Structure and Transposable Elements, Ch.10-11 |
| 9: | 3/10 – 14 | <i>Spring Break = No classes meet!!</i> |
| 10: | 3/18 | DNA Replication and Recombination, Ch.12 |
| | 3/20 | Cont'd. DNA Replication and Recombination, Ch.12 |
| 11: | 3/25 | Transcription, Ch.13 |
| | 3/27 | Cont'd. Transcription, Ch.13 |
| 12: | 4/01 | EXAM #3 |
| | 4/03 | RNA Molecules and RNA Processing, Ch.14 |

- 13: 4/8 Genetic Code and Translation, Ch.15
4/10 Cont'd. Genetic Code and Translation, Ch.15
- 14: 4/15 Control of Gene Expression in Prokaryotes, Ch.16
4/17 Cont'd. Control of Gene Expression in Prokaryotes, Ch.16
- 15: 4/21 *Easter Holiday = No classes meet!!*
4/22 Gene Mutations and Repair & Molecular Genetic Analysis, Ch.18-19
4/24 Population Genetics, Ch.25
- 16: 4/29 Cont'd. Population Genetics, Ch.25
5/01 Finish up & Review

Final Exam/Exam 4: Saturday May 3rd at 12:00 pm – 3:00 pm