RICHLAND COLLEGE DEPARTMENT OF BIOLOGY
School of Mathematics, Science, and Health Professions
Course Syllabus For BIOL 2416: Genetics
4 credit hours (3lec/3lab)

INSTRUCTOR’S INFORMATION
(Instructor reserves the right to amend this information as necessary.)

Semester and Year: Spring 2019
Meeting Dates: January 22, 2019-May 16, 2019
Section: 83481
Class time and days: Lecture MTWRFSU; Lab S 9:00am-12:15pm
Room: Lab SH131
Instructor: Jill Buettner
Contact Info: 972-238-6350; jbuettner@dccc.edu
Last date to withdraw: Last day to drop with a “W”: Wednesday April 17, 2019
Final Exam Day and time: May 13-16, 2019 during open hours at the Test Center (M105)

Evaluation Procedures:
Grading:
Your grade will be based on 2 lecture exams, a final examination, 2 homework assignments, and a laboratory grade consisting of the total of 12 grades. The exams will consist of some or all of the following: multiple choice, matching, fill-in-the-blank, problem-solving, and short answer/essay. All exams are comprehensive in the sense that you are expected to have mastered all previous material. Exams will be based both on the lecture material and assigned reading, as well as assigned text problems and homework. Your lab grade is 30% of your final grade. There are no “borderline” situations with regard to the final course grade. All final grades are rounded to the nearest point as follows: e.g. a final average of 89.5 will be rounded to 90, thus earning an A for the course. A final average of 89.4 will be rounded to 89, thus earning a B for the course.

<table>
<thead>
<tr>
<th>Exam 1</th>
<th>200 points</th>
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<tbody>
<tr>
<td>Exam 2</td>
<td>200 points</td>
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<tr>
<td>Final Exam</td>
<td>200 points</td>
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<tr>
<td>Lab Grade (12 lab grades @ 25 points each)</td>
<td>300 points</td>
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<tr>
<td>Homework Grade Total</td>
<td>100 points</td>
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<tr>
<td>Total of</td>
<td><strong>1000 points possible</strong></td>
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Divide the total points earned by 10 and convert numerical grade to final letter grade as follows:

- 90 or above = A
- 80 or above = B
- 70 or above = C
- 60 or above = D
- Below 60 = F

Exams: Lecture exams will occur during lab time in the lab room. The final exam may be taken anytime May 13-16, 2019, during operating hours in the Richland Test Center, M105. A photo ID is required to take a test at the Test Center. You will need to bring a pencil, calculator, and #882 scantron to each exam.

Lecture Attendance Policy:
“Attendance” in lecture can happen at any time. Lectures are delivered on eCampus in the form of recorded lecture segments for each chapter, posted on eCampus in the Learning Modules section. You are expected to follow the course schedule as much as possible to keep up with the recorded lectures. There is nothing to be turned in or graded from these lectures specifically, but there are some key questions, hints, and important explanations that are contained within the recorded lectures and animations to prepare you for the exams. Best practice is to print out the PPT file from the chapter (provided on eCampus), watch the lecture segments, take detailed notes, and work problems at the end-of-the chapter for practice. Additional tutorials and handouts will be provided on eCampus that address particularly “tricky” concepts.

You are expected to check the announcements section on eCampus every 48 hours, or set up eCampus so that any announcements are also sent to you by e-mail. That way, you won’t miss any late-breaking information.
Lab Attendance:
Attendance is mandatory and will be recorded weekly. Absences will result in a zero on the weekly quiz and will dramatically affect your grade. The week following your absence, you will be required to take the current week’s quiz (not the missed quiz). The missed quiz grade will be a zero. In the case that you missed a lab session on a day when an assignment is due (in lieu of a quiz), the following week you will be permitted to take the quiz or turn in the assignment. The other grade will be a zero. Some quizzes or assignments may require material or data from two lab sessions. In the case that you miss one of the two sessions, you will only be permitted credit for the labs you attended. Some lab sessions may result in more than one graded quiz or assignment. The bottom line is that missing a laboratory class will result in forfeiture of the number of grade points associated with that session.

Required Materials:
Genetics Essentials: Concepts & Connections, 4th edition, by Benjamin Pierce, 2018

- Lab manual is provided on eCampus and must be printed out by the student.
- Lab coat and safety glasses
- Disposable gloves (latex or similar)
- Sharpie (black)

Instructor Policies and Suggestions for Student Success:

Lecture Supplements:
Copies of the lecture powerpoints are available on eCampus.

Classroom Behavior Policies:
- Students are encouraged to participate in class, but persistent talking among classmates will not be tolerated. I will not hesitate to call you down in class and/or ask you to leave the classroom.
- Food and drinks will be permitted in the lecture room. However, the instructor reserves the right to discontinue this privilege if students leave the classroom in an unacceptable state of cleanliness.
- Please silence cell phones and beepers upon entering the lecture room. Do not leave the lecture room to take a call, except in an emergency situation.
- Minimize interruptions to the lecture if you enter the classroom after class has begun. Take the nearest available seat to avoid disruption. Please get a drink or use the restroom before or after class, as much as possible.

Lab Behavior Policies:
- No eating or drinking is permitted in the laboratory under any circumstances.
- Please be on-time to lab, as the lab quiz will begin promptly.

Lab Manual:
In order to save you money, I have compiled an online lab manual (just not published 😊) and posted it under “Lab Materials” on eCampus. It is a good idea to sit down and print it all out now, then put it in a folder or binder and always bring it to lab. I know you “think” you will remember to print out each document each week, but you will forget (trust me). I will not be able to provide lab documents to students on an ongoing basis.
**Policies regarding e-mail:**
1. Please be sure every e-mail you send me indicates your full name and course number plus section number in the “Subject” line. This will help me to organize and respond to your needs more quickly.
2. Any e-mail which is not clearly labeled with your name and course number may not receive as quick of a response.
3. Assignments can be e-mailed directly to me using attached MSWord files, pdf files, or clear photographs of the documents. Please make sure your name is on the actual assignment page if I were to print it out.
4. I will e-mail “got it” when I receive your file. If you do not receive this response within 48 hours, you should worry whether or not I received the file. Keep my “got it” response as a record of confirmation of receipt.
5. I will respond to all e-mails within 48 hours, even on weekends. This is my policy. However, many times I will respond faster. If I am going to be out of town or unable to access a computer for an extended period, I will send out an e-mail via the eCampus system and post an announcement on eCampus, to let you know.
6. Please make sure that eCampus (not just eConnect) has an updated, correct e-mail address. These two systems are not the same, and they do not always share information about e-mail address updates, so each system must be updated separately.

**Additional Resources:**
- **Science Corner** – Second floor Sabine building. Free tutoring for all science courses. Check posted schedules to find out times for each course.
- **Computer Labs** – Richland College Main Computer Lab, Del Rio, Room D257, 972-238-6317
  Students must provide their own storage devices, printers are available for printing in some labs. Copying of software is not allowed, personally owned software may not be used, food and drinks are not allowed in labs. Students must adhere to the DCCCD's Rules of Responsible Computing. Remember to save often and back-up your work - things happen, computers crash.
- **Center for Tutoring and Learning Connections (CTLC)** – room M216 – for tutoring in all classes and to make-up science lab safety training - (972)-238-6226
- **Students pursuing careers in the Health Professions** can find specific information on occupations, resources, financial aid, and programs at Texas institutions at this RLC Health Professions website: [www.rlc.dcccd.edu/medcareers](http://www.rlc.dcccd.edu/medcareers)
- Consult the Advising Syllabus [http://richlandcollege.edu/assets/uploads/2015/02/advising-syllabus.pdf](http://richlandcollege.edu/assets/uploads/2015/02/advising-syllabus.pdf) regularly to check if you are on track.

**Transferring Credits:**
Please be aware that there is a different course offered by universities called “Genetics.” It is a junior-level course (i.e. 3000 course number). This course (BIOL 2416) WILL NOT transfer to a university as a substitute for the junior-level course towards a bachelor’s degree. This course WILL generally satisfy pre-requisite requirements for application to physician assistant, pharmacy, dental, and other allied health programs.

It is the responsibility of the student to check with the institution to which they intend to transfer credit for this and any other courses. Do not assume that the credits will be transferable without receiving written confirmation from that institution indicating the credits will be accepted or transferred in the manner which is intended by the student.

**Letters of Recommendation:**
I do not write letters of recommendation for every student. I will only write such letters IF I believe my letter will help the student in being admitted to the school/program to which he is applying. This decision is made subjectively and depends on the student’s classroom and lab behavior, attitude, motivation, and grades. You must check with me first before listing my name as a reference or source of a recommendation. Please realize that a mediocre letter of recommendation may hurt your chances of getting admitted to the school/program of your choice. I generally only write rec letters for “A” students AND only if I feel I can write a strong, meaningful letter.

**Extra Credit:**
Extra credit points may be offered during the semester, at the discretion of the instructor. If these points are earned, they will be added to the total points earned, not the final course grade.

**Assigned lab projects and homework:**
These may be turned in to my office on the due date. You may slide them under the door if I am not there. You can also scan and/or email files to me. 10% may be deducted for each day late.

**Makeup Exams:**
Makeup exams may be offered at the discretion of the instructor.
Institutional Policies:
Institutional Policies relating to this course can be accessed from the following link:
www.richlandcollege.edu/syllabipolicies

CATALOG COURSE DESCRIPTION
Prerequisite: BIOL 1406. One of the following must be met: (1) DREA 0093 AND DWRI 0093; (2) English as a Second Language (ESOL) 0044 AND 0054; or (3) have met Texas Success Initiative (TSI) Reading and Writing standards AND the college Writing score prerequisite requirement.

Course Description: This course focuses on genetics. Topics include Mendelian inheritance, recombinant genetics, the biochemical theory of genetic material, and mutation theory. Plant and animal materials are used to study population genetics, linkage, gene structure and function, and other concepts of heredity.

CORE CURRICULUM Statement of Purpose

Through the Texas Core Curriculum, students gain a foundation of knowledge of human cultures and the physical and natural world, develop principles of personal and social responsibility for living in a diverse world, and advance intellectual and practical skills that are essential for all learning.

Core Objectives for the Sciences:

* Critical Thinking Skills - to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information

* Communication Skills - to include effective development, interpretation and expression of ideas through written, oral and visual communication

* Empirical and Quantitative Skills - to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions

* Teamwork - to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal.

Units of Instruction/Class Calendar: (see next page)
<table>
<thead>
<tr>
<th>WEEK OF:</th>
<th>Text Chapter and Lecture Topic</th>
<th>LAB</th>
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<tbody>
<tr>
<td>JAN 21-27</td>
<td>Ch. 1: Introduction to Genetics Ch. 2: Chromosomes and Cellular Reproduction</td>
<td>Lab Safety Training/Course Policies and Mendel’s Laws Lab&lt;br&gt;LG0 – Safety Training</td>
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<tr>
<td>[Classes begin on JAN 22]</td>
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<tr>
<td>JAN 28-FEB 3</td>
<td>Ch. 3: Basic Principles of Heredity</td>
<td>Cell Division Lab&lt;br&gt;LG1 – Mendel’s Laws Quiz</td>
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<tr>
<td>FEB 4-10</td>
<td>Ch. 4: Extensions and Modification of Basic Principles *HW1 – Problem Set due Wed 2/3/2019</td>
<td>Probability and Chi-Square Lab&lt;br&gt;LG2 – Cell Division Quiz</td>
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<tr>
<td>Feb 11-17</td>
<td>Ch. 4: Extensions and Modification of Basic Principles Ch. 5: Linkage, Recombination, and Eukaryotic Gene Mapping</td>
<td>Human Chromosomes and Karyotypes Lab&lt;br&gt;Three Point Linkage Lecture Workshop&lt;br&gt;LG3 – Prob/Chi-Square Assignment due Note: Friday Class completes activities online – Professor out of town 2/15/19 only</td>
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<tr>
<td>FEB 18-24</td>
<td>Ch. 6: Chromosome Variation</td>
<td>EXAM 1 (Chapters 1-6)</td>
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<tr>
<td>Feb 25-MAR 3</td>
<td>Ch. 7: Bacterial &amp; Viral Genetic Systems</td>
<td>Professional Development – No labs meet (Student Presentation guidelines and topics are posted and available for sign-up)</td>
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<tr>
<td>MAR 4-10</td>
<td>Ch. 8: DNA: The Chemical Nature of the Gene</td>
<td>Bacterial Transformation Lab&lt;br&gt;LG4 – Human Chromosomes and Karyotypes Quiz</td>
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<td>MAR 11-17</td>
<td>SPRING BREAK</td>
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<tr>
<td>MAR 18-24</td>
<td>Ch.9: DNA Replication</td>
<td>Yeast Mutagenesis I and CRISPR DEMO&lt;br&gt;LG5 – Bacterial Transformation Quiz</td>
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<td>MAR 25-31</td>
<td>Ch. 10: From DNA to Proteins: Transcription and RNA Processing *HW2 – Case Studies due Wed 4/3/2019</td>
<td>Yeast Mutagenesis II and Intro to Electrophoresis&lt;br&gt;LG6 – Yeast Mutagenesis In-Class Activity</td>
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<tr>
<td>APR 1-7</td>
<td>Ch. 11: From DNA to Proteins: Translation</td>
<td>PCR for Identification Purposes I&lt;br&gt;LG7 – Yeast Mutagenesis and Intro to Electrophoresis Quiz</td>
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<tr>
<td>APR 8-14</td>
<td>Ch. 12: Control of Gene Expression (focus: epigenetics)</td>
<td>EXAM 2 (Chapters 7-12)</td>
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<td>APR 15-21</td>
<td>Ch. 13: Gene Mutation, Transposable Elements, &amp; DNA Repair</td>
<td>Spring Holiday – No labs meet</td>
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<tr>
<td>APR 22-28</td>
<td>Chapter 14: Molecular Genetic Analysis, And Biotechnology Chapter 15: Genomics/Proteomics</td>
<td>PCR for Identification Purposes II&lt;br&gt;LG10 – PCR for ID In-Class Activity&lt;br&gt;LG8&amp;9 – Student Presentations</td>
</tr>
<tr>
<td>APR 29-MAY 5</td>
<td>Chapter 16: Cancer Genetics</td>
<td>Sickle Cell Anemia &amp; Protein Electrophoresis&lt;br&gt;LG11- PCR for ID Quiz&lt;br&gt;LG8&amp;9 – Student Presentations</td>
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<td>May 6-12</td>
<td>Ch. 18: Population and Evolutionary Genetics</td>
<td>Population Genetics and Hardy-Weinberg Equilibrium&lt;br&gt;LG12 – Sickle Cell Anemia &amp; Protein Electrophoresis Quiz&lt;br&gt;LG8&amp;9 – Student Presentations</td>
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<tr>
<td>MAY 13-16</td>
<td><strong>Final Exam (Chapters 13-16 &amp; 18)</strong> – refer to syllabus for date/time/place</td>
<td>Final Exams Week - No Labs</td>
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