GENETICS BIOL 2416
Department of Life Sciences
SPRING 2018

A. COURSE INFORMATION
Course number/section: BIOL 2416.001/.002
Class meeting time: BIOL 2416.001: MW 2:00-3:15 PM
BIOL 2416.002: MW 3:30-4:45 PM
Class location: Lecture: CS 101
Course Website: https://bb9.tamucc.edu/ (select BIOL2416)

B. INSTRUCTOR INFORMATION
Instructor: Dr. Brandi Kutil
Office location: FC 125
Office hours: MW 1:00-2:00
Telephone: 361-825-3456
e-mail: brandi.kutil@tamucc.edu
Appointments: Request via email.

C. COURSE DESCRIPTION
Catalog Course Description
Principles of genetic transmissions and molecular basis of heredity and variation. Weekly recitation periods will involve team assignments, problem solving activities, and seminars.

Extended Course Description
Genetic principles provide the context for all the biological and medical sciences, are utilized in courts of law, and help us understand who we are and how we function. Therefore, mastery of the principles learned in this course will benefit all students, either in their professional careers or personal lives.

This course introduces students to the basic principles of inheritance and expression of genetic information. Current topics in and applications of molecular genetics are briefly covered as well. Emphasis will be placed on critical thinking and problem solving in the context of inheritance and the molecular basis of heredity.

D. PREREQUISITES AND COREQUISITES
Prerequisites
Prerequisites: BIOL 1406 - Biology I with a grade of ‘C’ or above, BIOL 1407 - Biology II, CHEM 1411 - General Chemistry I and CHEM 1412 - General Chemistry II. Satisfies computer literacy requirements.

Corequisites
SMTE 0092
E. **REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES**

**Required Textbook(s)**

Top Hat: We will be using the Top Hat (www.tophat.com) classroom response system for in-class exercises. You will be able to submit answers using Apple or Android smartphones and tablets, laptops, or through text message. Top Hat subscriptions can purchased through the Top Hat website or through the bookstore.

**Optional Textbook(s) or Other References**

**Supplies**
Pencil, paper, lecture notes, and a computer or other electronic device for use with Top Hat.

F. **STUDENT LEARNING OUTCOMES AND ASSESSMENT**

Assessment is a process used by instructors to help improve learning. Assessment is essential for effective learning because it provides feedback to both students and instructors. A critical step in this process is making clear the course’s student learning outcomes that describe what students are expected to learn to be successful in the course. The student learning outcomes for this course are listed below. By collecting data and sharing it with students on how well they are accomplishing these learning outcomes, students can more efficiently and effectively focus their learning efforts. This information can also help instructors identify challenging areas for students and adjust their teaching approach to facilitate learning.

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

1. Demonstrate an understanding of where and how heritable information is stored
2. Describe the molecular structure and nature of heritable information
3. Demonstrate an understanding of how heritable information is accessed and used to construct and maintain living organisms
4. Demonstrate an understanding of how heritable information is replicated and transferred from one cell or individual to another
5. Explain the connection between genotype and phenotype
6. Understand basic principles of population genetic theory
7. Understand basic principles of evolutionary theory and how genetic processes lead to evolution.

Additionally, students should be able to:
8. Name several famous scientists in the field, and describe their most noteworthy findings.

9. Use the scientific method and statistical models to definitively answer questions and rigorously test hypotheses of a genetic nature.

G. INSTRUCTIONAL METHODS AND ACTIVITIES

BIOL 2416 consists of two 75 minute lectures and one 120-minute recitation each week. The recitation period is designed for discussion, idea exchange, and active learning activities to reinforce lecture material.

H. MAJOR COURSE REQUIREMENTS AND GRADING

Student learning outcomes will be assessed using in class exercises, recitation assignments, and exams. Your final grade will be based on the percentage you earn out of the total possible points, extra points may be built into exams or other assignments. It is also possible to lose points by turning in assignments late or failing to attend recitation. Statistical manipulations to adjust grades, if used (at the Instructor’s discretion), will be performed for each exam individually and all recitations in aggregate. A standard grading scale will be used:

- A = 90 - 100 %
- B = 80 - 89.9 %
- C = 70 - 79.9 %
- D = 60 - 69.9 %
- F = 0 - 59.9 %

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<thead>
<tr>
<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
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<tbody>
<tr>
<td>Exam 1</td>
<td>15</td>
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<td>Exam 2</td>
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<td>Exam 3</td>
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<td>Final Exam (comprehensive)</td>
<td>15</td>
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<td>In class exercises</td>
<td>15</td>
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<tr>
<td>Recitation Assignments</td>
<td>25</td>
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<td>Total</td>
<td>100</td>
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I. COURSE CONTENT/SCHEDULE
<table>
<thead>
<tr>
<th>Date</th>
<th>Lecture Topic</th>
<th>Reading</th>
<th>Recitation Topic(s)</th>
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<tbody>
<tr>
<td>1/16</td>
<td>Introduction to Genetics, Mendelian Inheritance I</td>
<td>Ch1, Ch2</td>
<td>Mendel, Probability, and Statistics</td>
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<tr>
<td>1/22</td>
<td>Mendelian Inheritance II</td>
<td>Ch 4</td>
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<td>1/24</td>
<td>DNA and the Molecular Basis of Inheritance</td>
<td>Ch9</td>
<td>Mendelian Inheritance</td>
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<td>1/29</td>
<td>Chromosomal Organization</td>
<td>Ch10</td>
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<td>01/31</td>
<td>Reproduction and Transmission of Genetic Material I</td>
<td>Ch3</td>
<td>DNA and Chromosome Structure</td>
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<tr>
<td>2/5</td>
<td>Reproduction and Transmission of Genetic Material II</td>
<td>Ch3</td>
<td></td>
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<tr>
<td>2/7</td>
<td>Linkage and Mapping I</td>
<td>Ch6</td>
<td>Transmission of Genetic Material; X-Linked Traits</td>
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<tr>
<td>2/12</td>
<td>Linkage and Mapping II: Genomic Analysis of DNA</td>
<td>Ch23</td>
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<tr>
<td>2/14</td>
<td><strong>Exam 1</strong></td>
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<tr>
<td>2/19</td>
<td>Chromosomal Mutations</td>
<td>Ch8</td>
<td>Mutations</td>
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<td>2/21</td>
<td>Recombination &amp; Transposition</td>
<td>Ch20</td>
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<tr>
<td>2/26</td>
<td>DNA Replication</td>
<td>Ch11</td>
<td>DNA Replication</td>
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<tr>
<td>2/28</td>
<td>DNA Replication II &amp; PCR</td>
<td>Ch21.1-3</td>
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<td>3/5</td>
<td>DNA Transcription</td>
<td>Ch12</td>
<td>Transcription</td>
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<td>3/7</td>
<td>Transcription &amp; Translation</td>
<td>Ch12, 13</td>
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<td>3/19</td>
<td>mRNA Translation II</td>
<td>Ch 13</td>
<td>Exam Review</td>
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<td>3/21</td>
<td><strong>Exam 2</strong></td>
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<td>3/26</td>
<td>Regulation of Gene Expression in Prokaryotes</td>
<td>Ch 14</td>
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<td>Date</td>
<td>Lecture Topic</td>
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<td>3/28</td>
<td>Regulation of Gene Expression in Eukaryotes</td>
<td>Ch 15</td>
<td>Gene Regulation</td>
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<td>4/2</td>
<td>Regulation of Gene Expression: Epigenetics</td>
<td>Ch16,17</td>
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<td>4/4</td>
<td>Non-Mendelian Inheritance</td>
<td>Ch5</td>
<td>Epigenetics</td>
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<td>4/9</td>
<td>Gene Mutation</td>
<td>Ch19</td>
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<td>4/11</td>
<td>Population Genetics/</td>
<td>Ch27</td>
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<td>4/16</td>
<td>Evolutionary Genetics</td>
<td>Ch29</td>
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<td>4/18</td>
<td><strong>EXAM 3</strong></td>
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<td>4/23</td>
<td>Genetics Ethics</td>
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<td>5/2</td>
<td><strong>Final Exam Review Session</strong></td>
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<td>5/7 or</td>
<td><strong>FINAL EXAM 1:45-4:15P</strong></td>
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<tr>
<td>5/9</td>
<td>(Comprehensive Final)</td>
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Note: Changes in this course schedule may be necessary and will be announced to the class by the Instructor. The assignments and exams shown are directly related to the Student Learning Outcomes described in Section F.
J. COURSE POLICIES

Attendance/Tardiness
Attendance is not taken in lecture but is mandatory for recitations. Failure to attend recitation will result in a 50 point deduction for that assignment. You are responsible for the material covered in every lecture and recitation, even if it is not in the book, regardless of your attendance. Therefore, both tardiness and lack of attendance are likely to negatively impact grades. Routine events (non-emergency medical visits, parent-teacher conferences, household or auto repairs) should be scheduled to avoid conflicts with class.

Documentation is required for an absence to be excused. For example, if you are too ill to attend a recitation, you must provide a doctor’s excuse on official stationary or a prescription form with applicable dates. Dr. Portnoy will make the final determination as to whether an absence is excused or not. This policy also applies to students participating in University-sanctioned activities (such as athletics); however, in such cases, arrangements must be made at least one week ahead of time, and excuses must be documented via a letter or memo on official university letterhead or an email from a university address by the supervising coach or faculty member. If you participate in University Athletics, please inform your coach that a form letter with a list of students on the team or on several teams is NOT acceptable. I need a letter or a list of students in Genetics only.

NOTE: If you are faced with an extensive illness or family emergency that keeps you out of all your classes for more than a day or two, you should contact the Vice President for Student Engagement and Success, Dr. Don Albrecht. This office assists students in difficult circumstances. Take advantage of these and other University services as you may need!

Late Work and Make-up Exams
Ten points are deducted per day (week or weekend days) on late assignments. For university-sanctioned events or activities, you may arrange to take a lecture exam at a prior time; notify Dr. Portnoy at least one week prior to scheduled exam. For recitations, you may make arrangements to attend another section, if you can do so without missing another class. If you cannot attend another recitation, specifics should be worked out with your TA. For a medical emergency a make-up exam may be granted but it must be scheduled within three days of the students return to campus.

Cell Phone, Tablet, and Laptop Use
Please refrain from using smart phones in class except for specific class exercise. Prohibited uses include texting, tweeting, posting or any other such shenanigans. Laptop use in class is permitted as long as the student is using it to facilitate the learning process. Appropriate uses include; taking notes, looking up materials during discussion and looking at relevant papers. Inappropriate uses include; checking email, looking at Facebook and playing Hello Kitty Island Adventure. If a student continually abuses the privilege of using electronic devices in class, they will be asked not to use it any more.
Food in Class
Eating in class is not prohibited unless it proves disruptive.

Participation
Participation in recitation is required. 50 points will be deducted from a recitation assignment if a recitation was not attended.

Black Board and McGraw Hill Connect
Students are responsible for visiting the course BlackBoard site regularly. Updates to lecture outlines or study guides and other information, such as homework assignments, will be available on this site.

If you have never used BlackBoard before, click on Island Online on the homepage, choose BlackBoard under “Island Online Login” and then on “I am a new user” and follow the instructions. If you have any problems logging into BlackBoard, please call the Online Help Desk at x2825 (or 825-2825 from off-campus or 1-866-353-2491 for long distance).

Students should also register for and use the textbook-associated website, McGraw Hill Connect. It contains answers to ALL textbook chapter problems, outlines, animations, self-quizzes, links, etc. A link to this website is available on BlackBoard.

K. COLLEGE AND UNIVERSITY POLICIES

- **Academic Integrity (University)**
  It is expected that university students will demonstrate a high level of maturity, self-direction, and ability to manage their own affairs. Students are viewed as individuals who possess the qualities of worth, dignity, and the capacity for self-direction in personal behavior.
  See Full University Policy at http://catalog.tamucc.edu/content.php?catoid=10&navoid=313#Academic_Integrity

- **Classroom/Professional Behavior**
  - All TAMUCC policies are in force and described in the TAMUCC Undergraduate catalog (2014-2015 edition) and in the Student Handbook.
  - As university students, you are expected to act with courtesy and common sense. Disruptive, disrespectful, or abusive language/behavior towards anyone in class (student, staff, faculty) will not be tolerated and could result in permanent removal from class. This includes talking in class and insubordination. Children are not allowed in class unless you make arrangements with the instructor ahead of time.
  - Academic dishonesty in any form, including plagiarism, will not be tolerated. Students found responsible for violating this policy WILL be prosecuted to the fullest extent of University Regulations (see the current TAMU-CC catalog).
  - **Special Note for exams:** You must be prepared to present a photo ID at all
examinations. Different test forms may be prepared for a single examination. Follow instructions! Cell phones must be turned off AND put away. You will not be permitted to look at your cell phone or other electronic devices, except calculators.

- **Statement of Civility**
  Texas A&M University-Corpus Christi has a diverse student population that represents the population of the state. Our goal is to provide you with a high quality educational experience that is free from repression. You are responsible for following the rules of the University, city, state and federal government. We expect that you will behave in a manner that is dignified, respectful and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated.

- **Deadline for Dropping a Course with a Grade of W (University)**
  I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. Please consult with your academic advisor, the Financial Aid Office, and me, before you decide to drop this course. Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. Please consult the Academic Calendar ([http://www.tamucc.edu/academics/calendar/](http://www.tamucc.edu/academics/calendar/)) for the last day to drop a course.

- **Grade Appeals (College of Science and Engineering)**
  As stated in University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at [http://www.tamucc.edu/provost/university_rules/index.html](http://www.tamucc.edu/provost/university_rules/index.html), and the College of Science and Engineering Grade Appeals webpage at [http://sci.tamucc.edu/students/GradeAppeal.html](http://sci.tamucc.edu/students/GradeAppeal.html). For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school, the Office of the College of Science and Engineering Dean, or the Office of the Provost.

- **Disability Services**
  Disability Services (DS) is the hub for coordinating services and accommodations to ensure accessibility and utilization of all programs for all Texas A&M University-
Corpus Christi students with disabilities. Our services are designed to meet the unique educational needs of enrolled students with documented permanent or temporary disabilities. DS provides intake and consultation services to students seeking to register with our office. DS reviews an individual’s documentation of disability and assesses eligibility for services and the determination of reasonable accommodations. For more information visit the Disability Services Office at 116 Corpus Christi Hall or go to http://disabilityservices.tamucc.edu/ 

- **Statement of Academic Continuity**  
  In the event of an unforeseen adverse event, such as a major hurricane and classes could not be held on the campus of Texas A&M University–Corpus Christi; this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow continuation of the course. Ideally, University facilities (i.e., emails, web sites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students need to make certain that the course instructor has a primary and a secondary means of contacting each student.

**GENERAL DISCLAIMER**

I reserve the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. I will announce such changes in a timely manner during regularly scheduled lecture periods.