GENETICS BIOL 2416  
Department of Life Sciences  
FALL 2015

A. COURSE INFORMATION

Course number/section: BIOL 2416.001 & 2416.002
Class meeting time:  
- Lecture: MW 2-3:15PM & MW 3:30-4:45
- RCT 101: Th 2-3:50PM
- RCT 102: Th 2-3:50PM
- RCT 103: F 10-11:50AM
- RCT 104: Th 8-9:50PM
- RCT 105: F 12-1:50PM
- RCT 106: Th 10-11:50AM

Class location:  
- Lecture: (2:00 pm) BH-103 & (3:30 pm) EN-106
- RCT 101: CI-128
- RCT 102: IH-267
- RCT 103: BH-127
- RCT 104: CI-108
- RCT 105: BH-127
- RCT 106: IH-163

Course Website:  
https://bb9.tamucc.edu/   (select BIOL2416)

B. INSTRUCTOR INFORMATION

Instructor: Dr. Christopher E. Bird
Office location: CS 246
Office hours: MW 4:45-7PM  
Telephone: 361-825-6024
E-mail: chris.bird@tamucc.edu (use blackboard messenger)
Appointments: by phone or blackboard messenger

TA: Ms. Patricia Cockett
TA: Ms. Lauren Gurski
TA: Ms. Luz Lopez de Mesa
Office location: CS 239
Office hours: TBA
Telephone: NA
E-mail: patricia.cockett@tamucc.edu  
lauren.gurski@tamucc.edu  
llopezdemesa@tamucc.edu
Appointments: TBA
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 aspects of 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
None

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES

Required Textbook(s)

Optional Textbook(s) or Other References

Supplies
Pencil, paper, lecture notes, and a computer may be helpful in some recitations

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 describe and explain:

1. where and how the heritable information is stored
2. the molecular structure of the information
3. the nature of the information
4. the stability of the information and the molecular processes that lead to changes in the information, itself, the combinations of different pieces of information, and ultimately the variation in all life
5. the molecular mechanisms by which the information is accessed and used to construct and maintain a living organism
6. how the information is replicated and transferred from either one cell or individual to another
7. how the information can be replicated and read by scientists
8. emergent patterns of Mendelian and non-Mendelian inheritance and their molecular and cellular underpinnings
9. the connection between genotype and phenotype
10. how stochastic processes generate predictable population genetic patterns
11. the fundamental unit of evolutionary measure and how population genetic processes lead to evolution.

Additionally, students should be able to:

12. name several famous geneticists, and describe their most noteworthy findings
13. 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 quizzes, recitation assignments, and exams. Your final grade will be based on the percentage you earn out of the total possible points.
Individual extra credit is not possible, but 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 %

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam 1</td>
<td>17</td>
</tr>
<tr>
<td>Exam 2</td>
<td>17</td>
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<tr>
<td>Exam 3</td>
<td>17</td>
</tr>
<tr>
<td>Final Exam (comprehensive)</td>
<td>17</td>
</tr>
<tr>
<td>Quizzes</td>
<td>7</td>
</tr>
<tr>
<td>Recitation Assignments</td>
<td>25</td>
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<tr>
<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>Quiz</th>
<th>Recitation Topic(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>08/26</td>
<td>Introduction to Genetics, Mendelian Inheritance I</td>
<td>Ch1, Ch2</td>
<td>No</td>
<td>Mendel, Probability, and Statistics</td>
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<tr>
<td>08/31</td>
<td>Mendelian Inheritance II</td>
<td>Ch 4</td>
<td>Yes</td>
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<tr>
<td>09/02</td>
<td>DNA and the Molecular Basis of Inheritance</td>
<td>Ch9</td>
<td>Y</td>
<td>Mendelian Inheritance</td>
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<tr>
<td>09/07</td>
<td>Labor Day Holiday</td>
<td></td>
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<tr>
<td>09/09</td>
<td>Chromosomal Organization</td>
<td>Ch10</td>
<td>Y</td>
<td>DNA and Chromosome Structure</td>
</tr>
<tr>
<td>09/14</td>
<td>Reproduction and Transmission of Genetic Material I</td>
<td>Ch3</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>09/16-7</td>
<td>Reproduction and Transmission of Genetic Material II</td>
<td>Ch3</td>
<td>N</td>
<td>Transmission of Genetic Material; X-Linked Traits</td>
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<tr>
<td>09/21</td>
<td>Linkage and Mapping I</td>
<td>Ch6</td>
<td>Y</td>
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<tr>
<td>09/23</td>
<td>Linkage and Mapping II: Genomic Analysis of DNA</td>
<td>Ch22</td>
<td>Y</td>
<td>Exam Review Session</td>
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<tr>
<td>09/28</td>
<td><strong>Exam 1</strong></td>
<td></td>
<td>N</td>
<td></td>
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<tr>
<td>09/30</td>
<td>Chromosomal Mutations</td>
<td>Ch8</td>
<td>Y</td>
<td>Mutations</td>
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<tr>
<td>10/05</td>
<td>Recombination &amp; Transposition</td>
<td>Ch19</td>
<td>Y</td>
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<td>10/07</td>
<td>DNA Replication</td>
<td>Ch11</td>
<td>Y</td>
<td>DNA Replication</td>
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<tr>
<td>10/12</td>
<td>DNA Replication II &amp; PCR</td>
<td>Ch20.2-3</td>
<td>Y</td>
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<td>10/14</td>
<td>DNA Transcription</td>
<td>Ch12</td>
<td>Y</td>
<td>Transcription</td>
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<tr>
<td>10/19</td>
<td>Transcription &amp; Translation</td>
<td>Ch13</td>
<td>Y</td>
<td></td>
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<tr>
<td>10/21</td>
<td>mRNA Translation II</td>
<td>Ch 13</td>
<td>N</td>
<td>Exam Review</td>
</tr>
<tr>
<td><strong>10/26</strong></td>
<td><strong>Exam 2</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>Lecture Topic</td>
<td>Reading</td>
<td>Quiz</td>
<td>Recitation Topic(s)</td>
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<tr>
<td>10/28</td>
<td>Regulation of Gene Expression in Prokaryotes</td>
<td>Ch 14</td>
<td>Y</td>
<td>Gene Regulation</td>
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<td>11/02</td>
<td>Regulation of Gene Expression in Eukaryotes</td>
<td>Ch 15</td>
<td>Y</td>
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<td>11/04</td>
<td>Regulation of Gene Expression: Epigenetics</td>
<td>Ch16</td>
<td>Y</td>
<td>Epigenetics</td>
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<td>11/06</td>
<td><strong>Last Day to Drop</strong></td>
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<td>11/09</td>
<td>Non-Mendelian Inheritance</td>
<td>Ch5</td>
<td>Y</td>
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<tr>
<td>11/11</td>
<td>Developmental Genetics</td>
<td>Ch25</td>
<td>Y</td>
<td>Developmental Genetics &amp; Gene Mutation</td>
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<tr>
<td>11/16</td>
<td>Gene Mutation</td>
<td>Ch16</td>
<td>Y</td>
<td></td>
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<tr>
<td>11/18</td>
<td>Population Genetics</td>
<td>Ch26</td>
<td>Y</td>
<td>Population Genetics</td>
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<tr>
<td>11/23</td>
<td>Evolutionary Genetics</td>
<td>Ch28</td>
<td>Y</td>
<td></td>
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<tr>
<td>11/26</td>
<td>Exam Review</td>
<td></td>
<td></td>
<td>Thanksgiving, no recitation!</td>
</tr>
<tr>
<td>11/30</td>
<td><strong>EXAM 3</strong></td>
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<tr>
<td>12/02</td>
<td>Final Exam Review Session</td>
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<tr>
<td>12/07</td>
<td><strong>FINAL EXAM for Section 1 (1:45-4:15PM)</strong></td>
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<td>(Comprehensive Final)</td>
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<tr>
<td>12/09</td>
<td><strong>FINAL EXAM for Section 2 (1:45-4:15PM)</strong></td>
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<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 required for all lectures and 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. 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. Bird 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 two weeks 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. Examples: (1) One second late is the equivalent to one day late. (2) One day and one second late is the equivalent of two days late. (3) Your assignment was due Friday at noon, but you turn it in late on Monday at 1pm - that is 4 days late.

There are no make-ups. For university-sanctioned events or activities, you may arrange to take a lecture exam at an alternate time. For recitations, you may make arrangements to attend another section if you can do so without missing another class. If an excuse is granted and you cannot attend another recitation, specifics should be worked out with your TA.

**Cell Phone, Tablet, and Laptop Use**
Set to silent, don’t make or accept calls. You may use a smartphone, tablet or computer to take notes or access the internet to find information.

**Missed Exam**
If you are going to miss an exam, you must inform Dr. Bird at least 2 weeks prior to the exam.
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.

- **Deadline for Dropping a Course with a Grade of W (University)**
  The grade of W will be assigned to any student officially dropping a course by November 6, 2015. No student is eligible to receive a W without completing the official drop process by this deadline. Visit the Office of the University Registrar for the Course Drop Form that must submitted. After November 6, 2015 a student will not be allowed 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/](http://disabilityservices.tamucc.edu/)

**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.