GENETICS: BIOL 2416  
Department of Life Sciences  
Spring 2017

A. COURSE INFORMATION  
Course number/section: BIOL 2416.001 & .002  
Class meeting time:  
Lec T, R: 2:00pm – 3:15 pm & 11:00am – 12:15pm, respectively  
Rec 101 F 8:00am – 10:50am  
Rec 102 F 11:00am – 1:50pm  
Rec 103 M 4:00pm – 6:50pm  
Rec 104 T 3:00pm – 5:50pm  
Rec 105 F 2:00pm – 4:50pm  
Rec 106 W 3:30pm – 6:20pm  
Class location: Lecture: BH -103 & CS-101, respectively  
Course Website: bb9.tamucc.edu

B. INSTRUCTOR INFORMATION  
Instructor: Xavier F. Gonzales, PhD, MSPH  
Office location: Engineering 310C  
Office hours: T,R: 9:30am-10:50am & 3:30pm-4:40pm  
Telephone: 361-825-3824  
e-mail: Xavier.Gonzales@tamucc.edu  
Appointments: email me to set up appointments  
Recitation Instructor: 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  
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. 

The recitation period is designed for discussion, idea exchange, and active learning activities to reinforce lecture material. Emphasis will be placed on problem-solving activities, critical thinking skills for data analysis and collaborative learning.
D. PREREQUISITES AND COREQUISITES

<table>
<thead>
<tr>
<th>Prerequisites</th>
<th>Corequisites</th>
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</thead>
<tbody>
<tr>
<td>BIOL 1406</td>
<td>CHEM 1311</td>
</tr>
<tr>
<td>BIOL 1407</td>
<td>CHEM 1312</td>
</tr>
</tbody>
</table>

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES

**Required Textbook(s)**

**Required Course Registration:**

**Other References**
- Primary literature as directed by instructor: student will be responsible for obtaining the assigned reading from the library or online database

**Supplies**
- Textbook, paper, and pencil (scantrons when indicated)

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.

By the end of this course, students should be able to:
1. Describe Mendelian inheritance and its extensions, including basic quantitative genetics
2. Discuss DNA structure and replication
3. Recognize chromosome number and structure
4. Discuss the connection between mitosis, meiosis, and Mendelian Genetics
5. Demonstrate linkage, recombination and chromosome mapping
6. Support connections between Mendelian and molecular genetics
7. Assess transcription, RNA processing, genetic code, translation, and protein structure
8. Describe basic mechanisms of regulation of gene expression
9. Describe Non-Mendelian inheritance
G. INSTRUCTIONAL METHODS AND ACTIVITIES

Learner-Centered Teaching: Collaborative work, control of content selection, personal reflection, learning skill demonstration

H. MAJOR COURSE REQUIREMENTS AND GRADING

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exams</td>
<td>~ 54</td>
</tr>
<tr>
<td>Quizzes</td>
<td>~ 18</td>
</tr>
<tr>
<td>Recitation</td>
<td>~ 28</td>
</tr>
</tbody>
</table>

Grading scale: A>90%   B=80-89.9%   C=70-79.9%   D=60-69%   F<60%

Lecture/Recitation
3 class Individual Assessment Exams @ 100 pts. Each = 300 pts
3 class Group Reassessment Exams @ 20 pts. Each = 60 pts
Cumulative final exam = 100 pts
Connect or in class Quizzes @ 10 pts each = 150 pts
Recitation (assignments/participation/homework @ 15-30 pts each) = 240 pts
Total = 850 pts

I will be posting total points scored on exams and assignments for lecture and recitation in Blackboard, however it is your responsibility to figure out your grade based on the point totals.

Nature of Assignments:

Team Learning: We will use a team learning approach in this class. Permanent groups will be established at the start of the course (you pick or I can help you). Research examining team learning assignments show that the group score is HIGHER than individual scores and that students understand concepts much better as a result of discussing questions in groups. Sometimes each group member will submit answers individually and sometimes groups will submit group consensus answers to questions. We will use the team learning approach on in-class recitation assignments and lecture exams as described below.

Exams will be comprised mainly of multiple choice questions. Some may be setup as matching or fill-in the blank. Problems and/or essay questions may appear on the exams. Most questions, including multiple choice questions typically require analysis and interpretation of data or experimental design to assess critical thinking skills. You may use a standard scientific calculator for exams. The Final Exam (Tuesday, May 9th) will be comprehensive. Cell phones must be turned off and put away during exams.
For each regular assessment exam, students will INDIVIDUALLY take the exam on assigned dates. This score will constitute 83% of your 120 point exam score (100 points). The other 20 points of your exam score will be from a GROUP Reassessment exam. Without using any outside resources during the group portion of the exam. Each group must reach a consensus on each question and submit a single set of answers for the whole group. There is no group component on the final exam.

I may allow students to use one sheet of handwritten notes on the cumulative final exam. This is not a right, but a privilege which must be earned and may be taken away by the instructor at any time. Only the front and back of a single 8.5” x 11” page with no typing, photocopying or computer generated information of any kind will be allowed. If at any time during the semester you engage in academic dishonesty on any assignment, you will forfeit this privilege for the rest of the term. This includes cheating, helping others to cheat, and even failure to report the dishonest actions of others.

Quizzes will be given at the instructor’s discretion. Quizzes may be multiple choice or short answer, primarily evaluating your mastery of the previous day’s material (lecture, recitation and homework). Quizzes must be completed individually, with no assistance from peers, notes or aids of any kind.

In most cases, Quizzes will be available through the textbook Connect site. Students must purchase access. It is the student’s responsibility to constantly check the Connect site for quizzes that are due. Instructor reserves the right to administer pop-quizzes during class.

Recitation Assignments will vary depending on the activity conducted each week. All activities will involve group work. You will select your groups at the beginning of the semester after the first recitation. Most weeks you will work on an activity as a group; however, you will complete and turn in most written assignments individually (unless otherwise specified) using your own words. Assignments may involve solving problems, data analysis, explaining concepts, or other hands-on applications of the concepts being covered in lecture. Occasionally we will cover a concept in recitation before it is covered in lecture, and some topics will be covered only in lecture or recitation, but not both.

The majority of the credit for recitation will be gained in development of active-learning activities to explain assigned topics to peers. (30 pts for each tidbit presentation; based on instructor and peer review. In some cases, take home handouts will be given and must be completed at next meeting date (practice problems (30pts each), quizzes (15pts each)).
## I. COURSE CONTENT/SCHEDULE

<table>
<thead>
<tr>
<th>Date</th>
<th>Lecture Topic</th>
<th>Reading</th>
<th>HW Due</th>
<th>Quiz</th>
</tr>
</thead>
<tbody>
<tr>
<td>01/19</td>
<td>Genetics Introduction</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>01/24</td>
<td>Mendelian Inheritance I</td>
<td>Ch 2</td>
<td>Becoming Mendel &amp; Ch 2</td>
<td></td>
</tr>
<tr>
<td>01/26</td>
<td>Mendelian Inheritance II (Probability Practice in Class)</td>
<td></td>
<td></td>
<td>Ch 2</td>
</tr>
<tr>
<td>01/31</td>
<td>Extensions Mendelian Inheritance I (Watch YouTube lecture prior to class)</td>
<td>Ch 4</td>
<td>Ch 4</td>
<td></td>
</tr>
<tr>
<td>02/02</td>
<td>Extensions Mendelian Inheritance II</td>
<td></td>
<td></td>
<td>Ch 4</td>
</tr>
<tr>
<td>02/07</td>
<td>DNA and Molecular Basis of Inheritance</td>
<td>Ch 9</td>
<td>Ch 9</td>
<td>Ch 9</td>
</tr>
<tr>
<td>02/09</td>
<td>Chromosomal Organization (Watch YouTube lecture prior to class)</td>
<td>Ch 10</td>
<td>Ch 10</td>
<td>Ch 10</td>
</tr>
<tr>
<td>02/13</td>
<td>Reproduction &amp; Transmission of Genetic Material</td>
<td>Ch 3</td>
<td>Ch 3</td>
<td>Ch 3</td>
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<tr>
<td>02/16</td>
<td>Individual Assessment Exam I</td>
<td></td>
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<tr>
<td>02/21</td>
<td>Group Reassessment Exam I</td>
<td></td>
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<tr>
<td>02/23</td>
<td>Linkage &amp; Mapping I</td>
<td>Ch 6</td>
<td>Ch 6</td>
<td></td>
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<tr>
<td>02/28</td>
<td>Linkage &amp; Mapping II</td>
<td>Ch 22.3</td>
<td>Ch 22.3</td>
<td>Ch 6 &amp; 22.3</td>
</tr>
<tr>
<td>03/02</td>
<td>DNA Replication (Watch YouTube lecture prior to class)</td>
<td>Ch 11</td>
<td>Ch 11</td>
<td>Ch 11</td>
</tr>
<tr>
<td>03/07</td>
<td>Central Dogma in Inheritance: I</td>
<td>Ch 12</td>
<td>Ch 12</td>
<td>Ch 12</td>
</tr>
<tr>
<td>03/09</td>
<td>Central Dogma in Inheritance: II (Watch YouTube lecture prior to class)</td>
<td>Ch 13</td>
<td>Ch 13</td>
<td>Ch 13</td>
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<tr>
<td>03/14 &amp; 03/16</td>
<td>Spring Break</td>
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<tr>
<td>03/21</td>
<td>Recapture Lecture</td>
<td>Chpts. 6, 22, 11, 12, 13</td>
<td></td>
<td>In Class after lecture</td>
</tr>
<tr>
<td>Date</td>
<td>Subject</td>
<td>Chapters</td>
<td>Details</td>
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<tr>
<td>03/23</td>
<td>Regulation of Gene Expression: I</td>
<td>Ch 14</td>
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<tr>
<td>03/28</td>
<td>Regulation of Gene Expression: II</td>
<td>Ch 15</td>
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<tr>
<td>03/30</td>
<td>Individual Assessment Exam II</td>
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<tr>
<td>04/04</td>
<td>Group Reassessment Exam II</td>
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<tr>
<td>04/06</td>
<td>Non-Mendelian Inheritance</td>
<td>Ch 5</td>
<td></td>
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<tr>
<td>04/11</td>
<td>Chromosomal Aberrations</td>
<td>Ch 8</td>
<td>Ch 5 &amp; 8</td>
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<tr>
<td>04/13</td>
<td>Gene Mutation</td>
<td>Ch 18</td>
<td>Ch 18</td>
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<tr>
<td>04/18</td>
<td>Medical Genetics I</td>
<td>Ch 24</td>
<td>Ch 24</td>
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<tr>
<td>04/20</td>
<td>Medical Genetics II</td>
<td>Journal</td>
<td>TBA</td>
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<tr>
<td>04/27</td>
<td>Individual Assessment Exam III</td>
<td></td>
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<tr>
<td>05/02</td>
<td>Group Reassessment Exam III</td>
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</tbody>
</table>
| 05/09  | Final Exam                                   |          | 2416.001: 1:45pm- 4:15pm BH 103  
2416.002: 11:00am-1:30pm CS 101 |

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.
<table>
<thead>
<tr>
<th>Week</th>
<th>Recitation Topic</th>
<th>Reading</th>
<th>Homework Due</th>
<th>Quiz</th>
</tr>
</thead>
<tbody>
<tr>
<td>01/23</td>
<td>Description of Tidbits</td>
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<tr>
<td>01/30</td>
<td>Extensions of Mendelian Inheritance</td>
<td>Ch 4</td>
<td></td>
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<tr>
<td>02/06</td>
<td>Extensions of Mendelian Inheritance</td>
<td>Script &amp; Presentation</td>
<td></td>
<td>Extensions of Mendelian Inheritance</td>
</tr>
<tr>
<td>02/13</td>
<td>DNA Basis, Chromosomes, DNA reproduction</td>
<td>Ch 9,10,3</td>
<td>Take Home Practice Problems</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>02/21</td>
<td>Linkage &amp; Mapping</td>
<td>Ch 6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>02/27</td>
<td>Linkage &amp; Mapping</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>03/06</td>
<td>DNA Replication, Transcription &amp; Translation</td>
<td>Ch 11,12,13</td>
<td>Take Home Practice Problems</td>
<td>Linkage &amp; Mapping</td>
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<tr>
<td>03/12</td>
<td>Spring Break</td>
<td></td>
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<tr>
<td>03/20</td>
<td>Regulation of Gene Expression</td>
<td>Ch 14 &amp; 15</td>
<td></td>
<td></td>
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<tr>
<td>03/27</td>
<td>Regulation of Gene Expression</td>
<td></td>
<td></td>
<td>Take Home Quiz</td>
</tr>
<tr>
<td>04/03</td>
<td>Non-Mendelian Inheritance</td>
<td>Ch 5</td>
<td></td>
<td></td>
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<tr>
<td>04/10</td>
<td>Non-Mendelian Inheritance</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>04/17</td>
<td>Chromosomal Aberrations &amp; Gene Mutation</td>
<td>Ch 8 &amp; 18</td>
<td>Take Home Practice Problems</td>
<td>Non-Mendelian Inheritance</td>
</tr>
<tr>
<td>04/24</td>
<td>Medical Genetics</td>
<td>Journal</td>
<td></td>
<td>At end of recitation</td>
</tr>
<tr>
<td>05/01</td>
<td>Prepare for your exams: your final will be over everything covered in exams given throughout the semester</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
J. COURSE POLICIES

Emails
I am happy to communicate with you through emails but I do expect you to do so in a professional manner. Emails are not text messages, therefore, do not right them in that style. I expect an appropriate salutation followed by a brief explanation of the purpose of your email. I would prefer that you ask everything at once and it would be best to put all your questions in bullets to allow me to answer behind the question. Further, I do not answer emails on the weekend. If you sent your email during professional working hours (M-F: 9am-5pm) and it did not get answered after 24hrs it was more than likely lost in all my emails. Please resend the email.

Attendance/Tardiness
Attendance: Students are expected to attend every scheduled class and recitation meeting. It is the responsibility of the student to obtain any material missed during an absence from his/her classmates. For recitation, the instructor (TA) should be notified PRIOR to recitation if the student will be absent (except in emergency situations). Students must attend the recitation section for which they originally registered. “Make-up” by attending other recitation sections is NOT permitted except in emergencies, only with prior approval.

Tardiness: Students may enter when late but be respectful of your peers and do not disrupt the class as you enter.

Late Work and Make-up Exams
No late work will be accepted without a valid excuse (i.e. doctors note, athletics pass). It is your responsibility to review the syllabus for when items are due. It is also your responsibility to get it turned in through the appropriate outlet on the designated day.

No make-up exams will be given; one exam can be dropped and replaced by the grade from the Cumulative Final Exam.

Extra Credit
Missed extra credit opportunities—Instructor is not obligated to give make-up assignments for extra credit opportunities, whether excused or unexcused.

Cell Phone Use
Lecture/Recitation: Students are not allowed to use cell phones in recitation. Students will be asked to leave the room if found using cell phones in class or recitation. If it is urgent for you to use your phone feel free to exit the room to utilize your phone.

Laptop Use
Lecture: Students may utilize their laptops as long as it does not disrupt others in class. Recitation: Students are allowed to use laptops as long as it does not disrupt the activities.
Food in Class
Lecture/Recitation: Students may eat food as long as it does not disrupt others in class. It is the student’s responsibility to clean up after themselves. If you fail to do so, you will no longer be allowed to have food in class.

Missed Exam
No make-up exams will be given; one exam can be dropped and replaced by the grade from the Cumulative Final Exam.

Participation
Lecture: Students are required to participate in all group activities. Peer evaluations will be given with each activity to determine your final assessment.
Recitation: Students are expected to attend every session and have an equal contribution in the completion of the group activities. Peer evaluations will be given with each session to determine your final assessment.

BlackBoard Genetics Course and Other Electronic Resources:
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.

I will be posting total points scored on exams and assignments for lecture and recitation, however it is your responsibility to figure out your grade based on the point totals.

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).

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
  Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit
from the instructional program may be considered a breach of the peace and is subject to
disciplinary sanction outlined in article VII of the Student Code of Conduct. Students
engaging in unacceptable behavior may be instructed to leave the classroom. This
prohibition applies to all instructional forums, including classrooms, electronic
classrooms, labs, discussion groups, field trips, etc.

**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 April
07, 2017. 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 April 07, 2017 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, and the College of Science
and Engineering Grade Appeals webpage at
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**
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that
provides comprehensive civil rights protection for persons with disabilities. Among other
things, this legislation requires that all students with disabilities be guaranteed a learning
environment that provides for reasonable accommodation of their disabilities. If you
believe you have a disability requiring an accommodation, please call (361) 825-5816 or
visit Disability Services in Corpus Christi Hall 116.

If you are a returning veteran and are experiencing cognitive and/or physical access
issues in the classroom or on campus, please contact the Disability Services office
for assistance at (361) 825-5816.

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.

L. **OTHER INFORMATION**

Have a great semester and enjoy your journey to discover new knowledge

**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 and within Blackboard.