BIOLOGY 2416.001- GENETICS
Recitation Sections 101, 102, 103, 104, 105, 106
Fall 2010

Lecture Meetings: Tuesdays/Thursdays 8-9:15AM   Center for Instruction 113
Recitations: Thursdays 2:00 – 3:55 PM   IH 267 (103) or CS 103 (106)
            Fridays 10-11:55AM   BH 126 (101) or ST201 (104)
            Fridays 1:00 – 2:55 PM   BH 126 (102) or ST 201 (105)

Prerequisites: Biology I, II (Biol 1406, 1407) AND General Chemistry I, II (Chem 1311, 1312); Recommended: Organic Chemistry I as pre- or co-

Instructor: Dr. R. Deborah Overath
Office: ST 312   Lab: CS241 or CS 127
Phone: 361-825-2467(Office)
Cell: 361-876-4542
E-mail: deborah.overath@tamucc.edu
Office Hours: MW 4-5PM and T 10AM-12PM or by appointment
[Subject to change pending advance notice]
Please note that you are welcome to come by anytime, though you may wish to call first. I will be glad to help you if I am not busy. My schedule is available on WebCT and on my office door.

Recitation Instructors: Phil Jose and Sarah Matakis
E-mail: philip.jose@tamucc.edu, sarah.matakis@tamucc.edu
Office Hours: Times and Locations TBD

Supplemental Instructor: Nicholas Rojas
Times and Locations TBD

Free Course Tutor:

ISBN 978-0077229726

Note: I purchased a copy of the text to be placed on reserve at the library for those students who do not want to carry the text back and forth and also for those who are waiting for financial aid or other
resources to purchase your text book. I don't want you to get behind in your reading!

**Required Supplies:**

**Calculator:** All students MUST have a functioning calculator suitable for basic calculations. You must bring it to all lectures, all exams, and all recitations.

**Quizdom Responder**

After the drop/add deadline, you are required to bring your functioning Qwizdom responder to each lecture class meeting for in-class quizzes. You should also keep extra batteries as dead batteries are not an excuse for missing an in-class quiz (see below for more information).

**Lecture Outlines and Study Guides**

Lecture outlines and study guides for each topic we cover will be given to each student officially enrolled in the course as a course packet near the beginning of the semester. Part of your course fees pay for this very useful resource. You should bring the packet to all lectures and recitations.

**Student Learning Outcomes:**

Upon successful completion of this course, the student will:

A. Have increased her/his:
   1. Critical thinking skills
   2. Problem-solving skills
   3. Knowledge of science as a way of knowing, using Genetics as an example

B. Understand and be able to explain:
   1. Mendelian inheritance and its extensions, including basic quantitative genetics
   2. The connection between mitosis, meiosis, and Mendelian Genetics
   3. Non-Mendelian inheritance
   4. Linkage, recombination and chromosome mapping
   5. Chromosome number, structure, and variations and mutations
   6. DNA structure and replication
   7. Transcription and RNA processing
   8. The genetic code, translation, and protein structure
   9. Basic mechanisms of regulation of gene expression
   10. The connections between Mendelian and molecular genetics
   11. Basics of recombinant DNA technology, genomics, and other new fields within genetics
   12. Genetics of populations including Hardy-Weinberg equilibrium and evolution
   13. The use, calculation, and interpretation of the $\chi^2$ tests in Genetics

**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 review of concepts.

**Evaluation:**
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. Statistical manipulations, if used (at the Instructor’s discretion), will be performed only once, at the end of the semester. A 10-point grading scale will be used:

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

**Components of Course Grade (Tentative)**

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Exams @ 100 pts</td>
<td>300</td>
</tr>
<tr>
<td>Final Exam (4th exam + comprehensive final)</td>
<td>200</td>
</tr>
<tr>
<td>Recitation Assignments</td>
<td>130</td>
</tr>
<tr>
<td>Homework Assignments</td>
<td>120</td>
</tr>
<tr>
<td>In-class Quizzes</td>
<td>100</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>850 pts</strong></td>
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It is the student’s duty to attend each class session and be aware of all assignments, deadlines, etc.

**Nature of Assignments:**

- **Exams** will be comprised of at least 50% multiple choice questions. Some may be setup as matching or fill-in the blank. Problems and/or essay questions will make up the rest of the exam. Most questions, including multiple choice questions, typically require analysis and interpretation of data or experimental design to assess critical thinking skills. **You should bring a calculator to every exam.** The **Final Exam (Thursday, December 9, 2010)** will consist of approximately one-half new material (will serve as Exam 4) and one-half comprehensive review of entire course content. **Cell phones should be turned off and put away during all lecture and recitations meetings, including exams; you will not be permitted to use them as a calculator or look at them for anything else during the exam.**

- **In-class Quizzes** will be conducted using the Quizdom Responder system. These quizzes will test basic knowledge of the material assigned in the text and lecture during the week. The objectives of these quizzes are to help you see if you are learning the basic facts that you need to apply to successfully complete the course, to prepare you for activities in
recitation, and to be able to answer recommended chapter problems. There will be at least 15 unannounced in-class quizzes. They may occur at any point during the lecture. ONLY your top 10 scores will count; all others will be dropped. I will NOT drop scores for excused absences; these will come out of your 5+ quizzes that will be dropped. USE THEM WISELY! NOTE: I will NOT check the answers you selected for any Qwizdom assignment for ANY student. When you take a quiz using Qwizdom, the Qwizdom responder shows you the answer you selected. Be sure you see the answer you intended to select. Dr. Grisé has been using the Qwizdom system in BIOL 1406 and 1407 for several years. He has checked answers for individual questions at the request of students well over one hundred times. He has never found a problem with the Qwizdom system. The problem has been that a student mistakenly selected an incorrect answer or didn’t answer the question at all.

Recitation Assignments will vary depending on the activity conducted each week. All activities will involve group work. Groups will be assigned at the beginning of the semester after the first recitation. Most weeks, you first review the in-class quiz(izes) and then 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, or even homework.

Homework Assignments will be assigned in recitation each week and will be due at the beginning of the recitation the following week. Exact assignments will vary from week to week and will normally tie into that week’s recitation activity. You are encouraged to get together and work on problem-solving as a group. However, any assignments must be turned in individually (unless specified otherwise) and be written in your own words, NOT COPIED from someone else.

Outside reading may be assigned and provided on reserve at the library or online via WebCT.

All assignments and examination answers must be legible to the Instructor. Illegible answers will receive a “0”.

University Rules:

All TAMU-CC policies are in force and described in the TAMU-CC Undergraduate catalog (2010-2011 edition) and in the Student Handbook.

Course Policies:

1. COMMUNICATING WITH INSTRUCTORS: ALL STUDENTS SHOULD COMMUNICATE WITH THE INSTRUCTORS USING THEIR TAMU-CC (islander) account. Your instructors will not discuss grades and related info via email unless the message originates from your islander account. Information for using and accessing this account can be found on WebCT (see below). If you run into difficulties that are not being resolved by the student computer help desk, please contact Dr. Overath ASAP.

You will periodically receive grade reports via email from Dr. Overath to your Islander email. This will allow you to be sure that your grades are properly recorded. If you do not receive these emails, please check your “junk” or “spam” folder. You will have FIVE DAYS (not
including weekends) to correct any new scores. After the five days, your instructors will assume that your scores were recorded correctly and will not make corrections. It is your responsibility to keep up with this.

2. ATTENDANCE and MAKE-UP Policy:
   
   Attendance is required for all lectures and recitations. 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. Overath 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 Affairs, Dr. Eliot Chenaux. This office assists students in difficult circumstances. Take advantage of these and other University services as you may need!

   There are NO make-ups: For university-sanctioned events or activities, you may arrange to take a lecture exam before, but not after, its scheduled time. Otherwise, your grade on the comprehensive part of the final exam will be counted twice to make up for a missed exam. For recitations, you may make arrangements to attend another time if you can do so without missing another class. If an excuse is granted and you cannot attend another recitation, the missing recitation assignment grade will not count against you (it will be “dropped”). In such cases, your homework will be due before you leave for the event. For in-class quizzes, only the top 10 scores (out of at least 15) will be counted. If you miss more than that, you will receive a “0” for any quiz missed EVEN IT IS FOR AN EXCUSED ABSENCE. Do not “waste” those “drops!”

   ALL arrangements for exams or recitations under this policy MUST be made with Dr. Overath using the two weeks notice mentioned above.

3. Web-CT Genetics Course and other electronic resources:

   Students are responsible for visiting the course Web-CT 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 WebCT before, click on WebCT on the homepage and then on “I am
a new user” and follow the instructions. If you have any problems logging into WebCT, 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 class textbook-associated website. It contains answers to **ALL** textbook chapter problems, outlines, animations, self-quizzes, links, etc. A link to this website is available on WebCT.

4. **Policy on Academic Dishonesty:**
   
   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 Quizdom and in-class quizzes:** You MUST be present to receive credit for in-class quizzes. You are not permitted to use another student’s responder. Answering questions for another student not present in lecture is violation of academic honesty and will not be tolerated. If you are seen using two responders, both will be confiscated and you will be prosecuted according to the University Regulations on Academic Dishonesty.

**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.
- Bring a calculator to each exam. You must have your own calculator. Cell phone calculators are NOT acceptable.

5. **Policy on Grade Appeals**
   
   As stated in the Texas A&M University-Corpus Christi University Rules and Procedures (Section B [Academic Program], Part 13 [Students]: 13.02.99.C2 [Student Grade Appeals] and 13.02.99C2.01 [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 on 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, consult the University Rules and Procedures specified above (accessible through the University Rules and Procedures website at http://www.tamucc.edu/provost/university_rules/index.html). For assistance and/or guidance in the grade appeal process, students may contact the Office of Student Affairs.

6. **Policy on Respect:**
   
   As adult 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, insubordination, and electronic disturbances (cell phones, pagers, gameboys, etc). Turn them off! Children are not allowed in class unless you make arrangements with the instructor ahead of time.

7. Policy on Electronic Devices
   While laptops are encouraged in lecture and recitation, cell phones and other electronic devices should be turned off at these class meetings. Anyone wishing to record lectures or recitations should seek the instructor’s permission first. If you have some kind of emergency that necessitates keeping a cell phone or pager on during class (e.g., a sick family member), please discuss it with your instructor.

8. Policy on Disability and Veterans’ Services
   Texas A&M University-Corpus Christi is committed to providing persons with disabilities an equal opportunity to access campus facilities, resources and programs. 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. Support and accommodations are also available for returning veterans who experience cognitive and/or physical access issues in the classroom or on campus. Our Office of Disability Services arranges such support and academic accommodations. To make a request, or for more information, call (361) 825-5816 or visit Driftwood 101. It is important to contact the Office of Disability Services in a timely fashion as it will take time for them to review requests and prepare accommodations and accommodation letters.
# TENTATIVE SCHEDULE FOR GENETICS

<table>
<thead>
<tr>
<th>Date</th>
<th>Lecture Topic</th>
<th>Reading</th>
<th>Recitation Topic(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/26</td>
<td>Syllabus and Pretest</td>
<td>Syllabus</td>
<td>No Recitation</td>
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<tr>
<td>8/31</td>
<td>Introduction to Genetics</td>
<td>Chapt 1</td>
<td></td>
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<tr>
<td>9/2</td>
<td>Mendelian Inheritance I</td>
<td>Chapt 2</td>
<td>Introduction to Genetics Problems</td>
</tr>
<tr>
<td>9/7</td>
<td>Mendelian Inheritance II</td>
<td>Chapt 2</td>
<td></td>
</tr>
<tr>
<td>9/9</td>
<td>Sex Linkage and Chromosomal Transmission</td>
<td>Chapt 3</td>
<td>Pedigree Analysis</td>
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<td>9/14</td>
<td>Extensions of Mendel I: Single Genes</td>
<td>Chapt 4</td>
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<tr>
<td>9/16</td>
<td>Extensions of Mendel II: Interacting Genes</td>
<td>Chapt 4</td>
<td>Probability and Statistics</td>
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<td>9/21</td>
<td>Extensions of Mendel III: Polygenic Inheritance</td>
<td>Chapt 25</td>
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<td>9/23</td>
<td><strong>EXAM 1 (Chapts. 1 – 4, 25)</strong></td>
<td></td>
<td>Solving Genetics Problems</td>
</tr>
<tr>
<td>9/28</td>
<td>Linkage and Mapping in Eukaryotes I</td>
<td>Chapt 5</td>
<td></td>
</tr>
<tr>
<td>9/30</td>
<td>Linkage and Mapping in Eukaryotes II</td>
<td>Chapt 5</td>
<td>Two-Point Testcross</td>
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<td>10/5</td>
<td>Linkage and Mapping in Bacteria</td>
<td>Chapt 6</td>
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<tr>
<td>10/7</td>
<td>Non-Mendelian Inheritance</td>
<td>Chapt 7</td>
<td>Three-Point Testcross</td>
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<td>10/12</td>
<td>DNA and the Molecular Basis of Inheritance I</td>
<td>Chapt 9</td>
<td></td>
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<tr>
<td>10/14</td>
<td>DNA and the Molecular Basis of Inheritance II</td>
<td>Chapt 9</td>
<td>More Genetics Problems</td>
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<td>10/19</td>
<td><strong>EXAM 2 (Chapts. 5-8)</strong></td>
<td></td>
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<tr>
<td>10/21</td>
<td>Chromosomal Mutations and Organization</td>
<td>Chapt 8 &amp; 10</td>
<td>TBA</td>
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<td>Date</td>
<td>Lecture Topic</td>
<td>Reading</td>
<td>Recitation Topic(s)</td>
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<tr>
<td>10/26</td>
<td>DNA Replication I</td>
<td>Chapt 11</td>
<td></td>
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<tr>
<td>10/28</td>
<td>DNA Replication II</td>
<td>Chapt 11</td>
<td>DNA-related Problems</td>
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<tr>
<td>11/2</td>
<td>Gene Expression I: Overview and Transcription</td>
<td>Chapt 12</td>
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<td>11/4</td>
<td>Gene Expression II: Translation</td>
<td>Chapt 13</td>
<td>Replication Review</td>
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<td>11/9</td>
<td>Regulation of Gene Expression I</td>
<td>Chapt 14</td>
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<td>11/11</td>
<td><strong>EXAM 3 (Chapt. 8-13)</strong></td>
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<td>Transcription/Translation Review</td>
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<tr>
<td>11/16</td>
<td>Regulation of Gene Expression II</td>
<td>Chapt 15</td>
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<td>11/18</td>
<td>Gene Mutation</td>
<td>Chapt 16</td>
<td>Gene Regulation Problems</td>
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<td>11/23</td>
<td>Biotechnology I</td>
<td>Chapt 17</td>
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<td>11/25</td>
<td>THANKSGIVING – No Class</td>
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<td>Mutation Problems</td>
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<td>11/30</td>
<td>Biotechnology II</td>
<td>Parts of</td>
<td>Population Genetics, Biotechnology, and/or Ethics</td>
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<tr>
<td></td>
<td></td>
<td>18-21</td>
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<tr>
<td>12/2</td>
<td>Populations Genetics I</td>
<td>TBA</td>
<td>Population Genetics, Biotechnology, and/or Ethics</td>
</tr>
<tr>
<td>12/7</td>
<td>Population Genetics II</td>
<td>TBA</td>
<td></td>
</tr>
<tr>
<td>12/9</td>
<td><strong>FINAL EXAM (8-10:30AM)</strong></td>
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**General Disclaimer:**

The Instructor reserves the right to modify the schedules and policies in this syllabus if and when necessary. Such changes will be announced during regularly scheduled lecture or recitation periods, but no attempt will be made to contact students who were absent when an announcement was made. Nevertheless, all students are responsible for abiding by all announced changes, and it is a student’s responsibility to obtain this information. Changes will be announced in a timely manner, but be aware that some modifications may be implemented without prior warning.