Biology 1406.002, Introductory Biology I, Fall 2011
We meet in CI 138 MW 3:30-4:45
Labs meet in CI 207 or CI 208

The instructor of record is Dr. David J. Grisé who is assisted by Arya Kudalmana (SI leader)

Office ST 311, e-mail david.grise@tamucc.edu, phone 825 3477

class web site: Please see BlackBoard

Office hours, other hours by appointment

OVERALL CONTEXT

-Course description: Presentation of basic biological concepts including scientific method, cytology, energetics, nucleic acids and genetics. This course is suitable for all majors. This course counts toward the natural science component of the University Core Curriculum.

-Exemplary education objectives for core courses met by bio 1406 (big hint: These are the broad areas that are covered by all core science courses in the state of Texas. I must demonstrate that I cover these points and that you have a working knowledge of these points. Therefore, I will ask questions on assignments and exams related to each of these points in some way during the semester.)
  1. To understand and apply method and appropriate technology to the study of natural sciences. (design and conduct experiments in lab, enzyme lab and yeast lab)
  2. To recognize scientific and quantitative methods and the differences between these approaches and other methods of inquiry and to communicate findings, analyses, and interpretation both orally and in writing. (interdisciplinary project)
  3. To identify and recognize the differences among competing scientific theories. (questions on assignments and exams)
  4. To demonstrate knowledge of the major issues and problems facing modern science, including issues that touch upon ethics, values, and public policies. (questions on assignments and exams)
  5. To demonstrate knowledge of the interdependence of science and technology and their influence on, and contribution to, modern culture. (questions on assignments and exams, PCR lab)

-General student learning outcomes for all sections of bio 1406
  1. To recognize scientific and quantitative methods and the differences between these approaches and other methods of inquiry.
  2. Understand the chemical basis of processes in living organisms.
  3. Have a functional knowledge of the theory of evolution and understand its importance as the unifying theme in biology.
  4. Understand the process of inheritance.
  5. To recognize DNA technology as an interdependence of science and technology and understand the influence of DNA technology on, and contribution to, modern culture.

-Learning outcomes specific for this section of bio 1406 (another big hint: Because I need to show that students have mastered these learning outcomes, I will ask questions related to these learning outcomes on assignments and exams! Read these learning outcomes before exams so you have an idea what I am going to ask about on the exam.)
1. To recognize scientific and quantitative methods and the differences between these approaches and other methods of inquiry. (questions on assignments and exams)
2. Be able to formulate testable hypotheses and predications from these hypotheses. (questions on assignments and exams, enzyme lab and yeast lab)
3. Have a functional knowledge of the theory of evolution and understand its importance as the unifying theme in biology. (questions on assignments and exams)
4. Understand the importance of biochemical pathways and the importance of cellular respiration and photosynthesis to organisms and the relationship between these processes. (questions on assignments and exams)
5. To identify and recognize the differences among competing theories about DNA as the genetic material and the mechanism of DNA replication. (questions on assignments and exams)
6. To understand the importance of DNA to organism function and the basic mechanisms of inheritance. (questions on assignments and exams, genetics lab)
7. To recognize DNA technology as an interdependence of science and technology and understand the influence of DNA technology on, and contribution to, modern culture. (questions on assignments and exams, PCR lab)
8. To understand and apply method and appropriate technology to the study of problems with a biological basis. (questions on assignments and exams, design and conduct experiments in lab such as enzyme lab and yeast lab)
9. Be able to collect, analyze and interpret results from experiments and communicate your findings to your colleagues. (questions on assignments and exams, lab experiments and the interdisciplinary project)

-A community of learners. I hope you are, or will become, an active member of the community of learners at TAMUCC. Each time I teach a course, I learn from students. I hope to establish an atmosphere in which students learn from each other. As a result of taking my class and working with your fellow students, I hope you learn how to learn about issues that have a biological basis. We should all be learning from each other and learning how to learn from each other. As a result of our collective efforts, I hope I continue to improve as an instructor and that you benefit from taking my course.

RESOURCES TO ASSIST YOU IN BIO 1406.
-Supplemental Instruction (SI) sessions
Students who have done well in this class in the past have been hired to lead SI sessions outside of class meeting times. Please see the course BlackBoard site for a schedule of SI sessions. Please take advantage of your SI leader’s expertise.

Don’t wait until the session before the exam to start attending SI sessions. I have data that indicates that attending SI sessions on a regular basis increases your grade in the course. A great way to prepare for the comprehensive final is to attend the SI session just after an exam. At these sessions, your SI leader can go over any questions on the exam you had difficulty answering correctly. Asking questions about the questions you did not answer correctly on the exam will help you answer the question correctly on the comprehensive final.

STUDENT-CENTERED LEARNING
-Team Learning: We will use a team learning approach in this class. Permanent team learning groups will be established at the start of the course. Students will answer questions on their own then team learning groups will answer the SAME questions. Team learning groups will submit
group consensus answers to questions. 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 and course material in groups. We will use the team learning approach on in-class team learning assignments as described below.

In-class team learning assignments: Students will come to class having read the assigned portion of the text. These readings will be announced in lecture in advance of the in-class team learning assignment. These readings will also be listed on BlackBoard. On Friday, using the Qwizdom responders, students will INDIVIDUALLY submit their own answers to questions about the text reading. Then, each team learning group will discuss the same questions and submit a group answer to the questions.

Each in-class team learning assignment is worth 30 points. Your individual answers to these questions count for 40% of your score (12 points) for the in-class team learning assignment. The other 60% of the score (18 points) for each in-class team learning assignment will be based on your group’s answers to the questions. You are not permitted to use the text or notes about the readings for either portion of the assignment. After the group portion of the exam is completed, you may use the text to better understand the answers to the questions or to appeal questions.

Appeals: Students may not use the text, notes, or other resources during either the individual or group portions of in-class team learning assignments or team learning exams. However, once the assignment or exam has been completed, students may use any resource they wish to appeal any question for which the group feels the answer is incorrect or the question or answer choices are unclear. All appeals must be in writing, must fully explain why the group feels there is a problem with the question and must be agreed to by the entire group. If the group’s appeal is granted, the scores of all group members will be adjusted.

Peer evaluations: After the second exam, you will evaluate your group members. You will turn in this evaluation the Monday after the second exam. I will try to have you submit these evaluations electronically. Over the weekend, you will type a short evaluation of each of your group members. Your name will be on this evaluation but your peer members will not see your name. This is for points. After all evaluations are received, they will be distributed to the appropriate group member. Please leave space after your name and between the evaluations of your group members. An example of an evaluation is:

Group 3 Steve Smarts

Jane Yess. Jane comes to class prepared to discuss the TLA questions and participates in the discussion of the questions.

Joe Kno. Joe does not prepare for the TLA. It seems that he has not read the chapter and almost never participates in the discussion of the question. Joe needs to read the chapter before coming to class for the TLA.

At the final, you will turn in another typed evaluation of group members. Place your name on this evaluation. Your group members will not read this evaluation. Explain to me why you think each
group member should receive full points for group work or why they should receive less than full points for group work. An example of an evaluation is:

Group 3. Steve Smarts

Jane Yess. Jane continued to be prepared for each TLA and discussed the questions. Jane should receive full credit for group assignments.

Joe Kno. Joe turned things around during the second half of the course. Joe read the chapters before coming to the TLAs and participated in discussions. Joe should receive full credit for group assignments.

Absences: You MUST be present in class to receive points for the group portion of the team learning assignments. The only exceptions are medical appointments and University sponsored events. In the case that you have a scheduled medical appointment or University sponsored event that prevents you from attending lecture, please let me know in advance of lecture. Should you not be able to attend lecture due to a medical emergency, please let me know about the situation as soon as possible.

-Daily in-class assignments: For almost every lecture, there will be a question worth a small amount of points to start lecture. Also, during lecture there will be questions for points. Students are encouraged to discuss these questions with other members of their team learning group. In addition, there will be a few times when groups will work on questions related to course material. These questions are designed to help students understand how to answer questions on the exams.

-Qwizdom responders. You are required to bring your functioning Qwizdom responder to each class meeting. You MUST be present to receive credit for in-class assignments. The only exceptions are medical appointments and University sponsored events. In the case that you have a scheduled medical appointment or University sponsored event that prevents you from attending lecture, please let me know in advance of lecture. Should you not be able to attend lecture due to a medical emergency, please let me know about the situation as soon as possible. You are not permitted to use another student’s responder. Answering questions for another student not present in lecture is cheating and will not be tolerated. If you are seen using two responders, both will be confiscated and we will all sort it out later.

I will not accept a piece of paper with your answers for ANY question answered using Qwizdom responders. There are no exceptions to this policy.

I will NOT check the results of a Qwizdom assignment for ANY student. When you take an assignment using Qwizdom, the Qwizdom responder shows you the answer you selected. Be sure you see the answer you intended to select. Since I have been using the Qwizdom system, I have checked answers at the request of students well over one hundred times. I have never found a problem with the Qwizdom system. Most of the time, a student mistakenly selected an incorrect answer or didn’t answer the question at all.
Calibrated Peer Review (CPR) assignments. Using guiding questions, you will summarize parts of chapters containing material covered in the course. Doing these assignments should help you to better understand the material and better understand the process of scientific writing. Questions on exams will ask you about material covered in these assignments. The link to access the CPR system is on BlackBoard. All students are expected to be able to access this system, submit their summaries and complete the assignments on time.

Be sure you access the system for the first time well in advance of the deadline for submission of your summary for the first assignment. Report any problems to Dr. Grisé immediately. Dr. Grisé will NOT submit summaries for any student. If a student misses the deadline for text entry, they will not be able to complete the remaining portions of the assignment and will receive a zero out of 25 points for the assignment. Should a student submit their summary but fail to complete the assignment, it is likely that their score for the assignment will be about 4 points out of 25 points. Missing a CPR deadline may drop in your grade in the course down by a whole letter grade. Don’t let this happen to you! Because you have several weeks to complete these assignments, there will be no exceptions to this policy. Please do not allow these assignments to negatively affect your grade in the course. Take time to write your summary, complete the calibrations and review other students work. Be sure you complete the assignments in a timely manner. Remember that the material on these assignments is very important and may not also be covered in lecture. However, exam questions will be based on this material.

Because I have approximately 400 students in my sections of 1406, I cannot review grades on CPR assignments. I have to trust that students will carefully and fairly review other student’s work.

The CPR assignments are a significant amount of work for both you and me. I only use teaching techniques and technology that improve student understanding and skills. One important skill to have as a scientist is the skill to review other people’s work. The analysis below indicates that students become more competent reviewers over the course of the semester. These data are the reason I continue to use the CPR system. Please put time and effort into the CPR assignments. Doing so will help you gain a valuable and useful skill that will be useful in your career.

Results of repeated measures Analysis of Variance (ANOVA) where the student is the repeated unit indicate that students become more competent reviewers over the course of the semester.

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1 Program = STEP calculus, STEP pre-calculus, non-STEP learning community

RESOURCES REQUIRED FOR BIO 1406

Lab coats. All students are required to have a lab coat when entering the labs for any reason. In addition, to the lab coat, students must be wearing long pants and closed-toe, close-heal shoes to enter the labs at any time.
-All students must have a TAMU-CC e-mail account and posting grades
All students must have a TAMU-CC e-mail account (your islander account). I e-mail your grades to your islander e-mail account. Grades will NOT be posted anywhere! Please go to http://www.tamucc.edu/ise.html to obtain a new islander account.


UNIVERSITY AND CLASS POLICIES
- Class attendance
My attendance policy is the same as the University's. Please read the University’s attendance policy on page 33 in the 2007-2008 catalog. I expect students to attend every scheduled class meeting including labs. Attendance is not used to determine grades. If you come to class often, you should do well in my course. In addition, there will be in-class assignments during most lectures, so coming to lecture on a regular basis should result in a higher grade.

-Scores sent by e-mail
Please check your scores I send to your Islander e-mail account! It is your responsibility to be sure that I have correctly recorded your scores. From the time I e-mail grades for an assignment or exam, you have five class days to inform me there might be a problem with your score. After five class days, I will assume that scores for that assignment or exam are correctly recorded.

-Dropping the course
If you drop the class between 1 September and 5 November, you will be assigned a grade of W. Please be sure you read and understand the University’s drop policy found on page 32 of the catalog before you drop any class.

-Academic Honesty
All students are expected to be familiar with TAMU-CC’s Academic Honesty Statement found on page 38 of the 2007-2008 catalog.

-Students with Disabilities and Veterans
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 or visit Disability Services at (361) 825-5816 in Driftwood 101.

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.

-Grade Appeal Process. As stated in University Rule 13.02.99.C2, Student Grade Appeals, 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 Rule 13.02.99.C2, Student Grade Appeals, and University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules Web site 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.

-Make-up exams
Because of my workload and the number of students in my courses, I strictly adhere to the University policy regarding make-up exams. If you miss an exam for personal reasons, medical reasons or family circumstances, your exam score will be the average of the other exams you do take during the semester. For example, if you miss the second exam to because you attended a funeral, at the end of the semester I will use the average of your first, third, fourth and comprehensive final exams as your second exam score.

If you miss an exam for an approved University-related event (attendance at a scientific meeting, athletic event, etc.) you will be allowed to take a make-up exam.

-Religious obligations
Any student missing class for religious obligations will be excused from class assignments for the days they miss. A student must tell me in advance of the days they will miss and I will excuse them.

-Extra credit
THERE IS NO EXTRA CREDIT!
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THERE IS NO EXTRA CREDIT!
THERE IS NO EXTRA CREDIT!

Evaluation of students
Points from lab will constitute 1/4 of your grade. Points from lecture will provide the remaining 3/4 of your grade.

There are a total of five individual exams (three individual exams given during a lecture period and the fourth exam and comprehensive exam given at the time scheduled for the final). The three individual exams given during a lecture period are 100 points each. The final is a two part exam for a total of 200 points. The first 100 points of the final covers the last block of material (it is the fourth individual exam). The second 100 points of the final covers material from the first three blocks of material. You may use calculators during all exams. However, use of cell phone calculators is NOT permitted. No other electronic devices of any kind are permitted during exams. Grades will be assigned as follows:

1406 non-learning community fall 2011
### Exam Dates

Exam dates are 21 September, 12 October, and 9 November.

Final exam, Wednesday, 14 December, 1:45 to 4:15

Please notify me as soon as possible if you are not able to take the final at the scheduled time or if you have three finals on that day.

### Schedule of Lecture topics

According to HB 2504, syllabi are to include a schedule of topics to be covered each lecture. This schedule is for the MWF class. I will make a calendar for the MW section as I go through the semester this year. Today, when I wrote this, is 19 May. I pace the class based on student understanding of the course material. I do not move on unless I think the majority of students understand the material. I use many methods to convey material during class. Because it is difficult for me to determine what I am doing on 17 November, this is a tentative schedule and is subject to

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<th>Points</th>
<th>% of Grade</th>
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<td>Individual exams</td>
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<tr>
<td>In-class team learning</td>
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<td>Daily in-class</td>
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<tr>
<td>CPR</td>
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<tr>
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A = 89.5-100 % of total points
B = 79.5-89.4 % of total points
C = 69.5-79.4 % of total points
D = 54.5-69.4 % of total points

I use the above percentages to assign grades. After reading this section, you should know how I am going to assign grades. Please be sure you get enough points to get the grade you want. There will always be someone who just missed a D, or a C, or a B, or an A. I have to draw lines between grades. No matter where I draw the line, someone is on the wrong side of the line. Don’t let that someone be you. You have plenty of help in my class. Take advantage of the resources I offer.

I do not assign a curve to each exam. **THERE IS NO EXTRA CREDIT!** For more information about how to calculate your grade, please see the page about how to determine your grade on BlackBoard. For dates of the exams, CPR assignments and due dates for the team learning assignments, please see the calendar on BlackBoard.

Please check your scores I send to your Islander e-mail account! It is your responsibility to be sure that I have correctly recorded your scores. From the time I e-mail grades for an assignment or exam, you have five class days to inform me there might be a problem with your score. After five class days, I will assume that scores for that assignment or exam are correctly recorded.
change. Actually, what is below is mostly a total guess. There is not chance that the schedule below will actually match up with what occurs in the classroom. I doubt anybody is reading the syllabus down to this page. I only include this section because I must. To get a realistic appreciation of what we will cover and when we will cover that material, please see the lecture slides posted on BlackBoard. We cover about 20-25 slides per lecture. I spend a lot of time working on the lecture slides for the course. I will not spend time repeating the contents of those slides here.

24 August, first day of class. Introduction of myself, CELLS mentors, SI leaders and STEP mentors. Expectations for the course. How lab relates to the course. Why bio 1406 is a core science course and the reason why we have core courses. Why this is a great time to be a scientist and how you can become a scientist.

26 August. The nature and logic of science including hypotheses and predictions from hypotheses.

29 August. The nature and logic of science including why science cannot be used to prove anything to be true.

31 August, examples of how a person’s background affects the questions they ask as a scientist and why it is important that not all scientists look like me (bald white guy). Basic experimental design. Inductive and deductive reasoning (again).

2 September, first team learning assignment, chapter 2.

7 September, validity and truth, truth table, hypothesis testing, basic experimental design.

9 September, second team learning assignment, chapter 3.

12 September, standard deviation, experimental design and hypothesis testing, creativity in science.

14 September, presentation of data on graphs, interpretation of graphs, tradeoffs.

16 September, third team learning assignment, chapter 6.

19 September, characteristics of living organisms, evolution, natural selection.

21 September, 1st group exam.

23 September, 1st individual exam.

26 September, natural selection, adaptive traits, sexual selection, genetic drift.

28 September, carbon, macromolecules, cell size and diffusion.

30 September, fourth team learning assignment, chapter 6, metabolism.

3 October, active transport, enzyme function, factors affecting enzyme function, competitive and non-competitive enzyme inhibitors.
5 October, Cellular respiration

7 October, fifth team learning assignment, chapter 9, cellular respiration

10 October, cellular respiration, fermentation pathways

12 October, the cell cycle

14 October, mitosis and meiosis

17 October, the importance of meiosis to sexually reproducing organisms

19 October, 2nd group exam.

21 October, 2nd individual exam.

24 October, DNA structure, chromosomes, homozygous and heterozygous

26 October, dominance relationships, PTC case study

28 October, 7th Team Learning assignment

30 October, regulation of RUBISCO, chi square test to determine location of loci

2 November, chi square test to determine location of loci, incomplete dominance

4 November, 8th Team Learning assignment

6 November, codominance, allele frequencies

9 November, 3rd group exam.

11 November, 3rd individual exam.

14 November, PCR so that can better understand lab, multiple alleles, ABO blood types

16 November, ABO blood types, lethal alleles, interacting genes, polygenic inheritance, environmental effect on phenotype

18 November, 9th Team Learning assignment

21 November, X chromosome inactivation, genes on X chromosome, protein structure, linkage and mapping, operons

23 November, buying local at farmers’ markets, reducing carbon footprint by buying local at farmers’ markets, problems on interaction genes, X chromosome, lethal alleles and DNA gels
28 November, genetics

30 November, DNA technology, PCR

2 December, DNA technology, determining what is present in PCR products

5 December, DNA technology, biological races, the lack of biological races in humans