

BIOLOGY 1406

COURSE SYLLABUS FALL '06

Instructor:**Professor Betsy Morgan****Office:** HSB 202 -S**Office Hours :**

TBA

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* I will return your call or email within 48 hours on weekdays.

Course Description (from the NHMCCD catalog):

A contemporary course including applications of the scientific method, cellular and molecular biology, biochemistry, classical and human genetics, virology and mechanisms of evolution.

Prerequisites:

College reading level as determined by SAT, ACT, TASP, or successfully passing ENGL 0305 with a "C" or better. ENGL 0305 or ENGL 0316 AND ENGL 0307 or 0326, OR higher level course (ENGL 1301), OR placement by testing, MATH 0308

Course Overview:

The first semester of Biology is a study of the organization of life on the cellular and molecular levels. In the first few weeks, students will learn chemistry and basic biochemistry that is important to the understanding of the cell. The study of the cell will not only include basic structure but also the functions of those structures. Students will then explore the mechanics and purposes of transport, cell division, specific pathways of energy production, and the process of protein synthesis. Students will study the history, structure and function of DNA relating it to the current Human Genome Project. Students will review Mendelian genetics and apply those concepts to gene technology and evolution.

2005 Learning Outcomes for BIOL 1406 (from the NHMCCD catalog)

- Apply the scientific method in a laboratory setting.
- Demonstrate an understanding of basic organic chemistry and apply chemical concepts to living systems, examine cell structure, function, and reproduction utilizing the Cell Theory as a unifying theme in biology.
- Examine the importance of energy flow by analyzing the interrelated processes of cellular respiration and photosynthesis.
- Analyze the genetic components responsible for heredity and examine current advances in bioscience technologies.
- Demonstrate basic knowledge of virology and the impact of viruses on living things.
- Demonstrate an understanding of the components of Darwin's Theory of Evolution and contrast microevolution with macroevolution.

Materials Needed:

Text: Biology, Seventh Edition; Solomon, Berg, Martin
Lab: Laboratory Exercises for Biology I
Tests: Scantrons (19641) # 2 pencil

Evaluation:

Your grade in this course will be determined according to the following formula:

Lecture (50%) Lab (35%) Final (15%)

A = 90-100

B = 80-89

C = 70-79

D = 60-69

F = 59 and below

Lecture 4 exams (450 pts.) and group presentation on genetic disorders (50 pts)

Laboratory Class participation, formal Lab Reports, Quizzes, Internet Exercises, cell drawings, mitosis lab drawings, DNA isolation analysis and electrophoresis, karyotype exercise, human genetics lab and genetics problems, group problem solving exercises.

Final Exam Comprehensive final

Lecture Grades:

The lecture grades will comprise 50% of the total grade for the course and consist of four (4) lecture exams and one (1) group presentation (500 points). None of the grades for lecture will be dropped. The lecture exams may consist of both objective and essay questions. The group presentation will be a research project and oral/PowerPoint presentation in front of the class.

NO MAKE-UP EXAMS WILL BE ADMINISTERED EXCEPT UNDER EXTRAORDINARY CIRCUMSTANCES (hospitalization, death in family). It is the responsibility of the student to provide adequate acceptable documentation (such as a doctor's note) to verify his/her claim.

Lab Grades:

The laboratory grades will comprise 35% of the total grade (350 points). The lab grade will be averaged from several grades including: class participation, 4 formal lab reports, quiz grades, lab drawings (cells/ mitosis), DNA isolation and electrophoresis, karyotype/pedigree exercise, genetics problems, human genetics lab, internet exercises and group problem solving activities. The lowest quiz grade and lowest lab grade will be dropped.

THERE WILL BE NO MAKE-UPS IN LAB EXCEPT UNDER EXTRAORDINARY CIRCUMSTANCES (hospitalization, death in family). It is the responsibility of the student to communicate with the instructor any problems preventing that student from attending lab. It is the responsibility of the student to provide adequate acceptable documentation (such as a doctor's note) to verify his/her claim.

Formal lab reports **MUST** be typed in 11 font and must follow the format as explained in class and on WebCT. Typically a pre-lab will be required and presented to the instructor before each lab. All lab reports (as well as any assignment) must be turned in on the due date (as per the schedule). **I WILL NOT accept late work!!** Anticipate problems and print your document early. If you are having printer problems, save it to a diskette and print it using the computer lab on campus. Do not arrive to class without your printed document in hand. In addition, students will be required to email their lab report to bio_morgan@yahoo.com.

Final Exam:

The final exam is mandatory, comprehensive and will comprise 15% of the grade (150 points).

INCOMPLETES

A grade of "Incomplete" will be given only in instances of documented and verified catastrophic events **occurring after the W date**. There will be no exceptions.

GRADES:

** One final word on grades. Instructors do not give grades. They assign them. Students get the grade they earn. Do not expect a curve or that grades will be "rounded up". Your final grade reflects an entire semester of effort. Make sure you work hard enough to earn the grade you want.

Extra Credit:

Extra credit may be earned by doing **ONE** of the two assignments listed below:

1. Book Review

Extra credit worth up to 25 points may be achieved by reading a book from a select list and writing a book review. The review must be at least 2-3 typed pages. Students will need to describe and evaluate the content of the book on the basis of the concepts learned in class. A well-organized paper would contain three points the student wishes to discuss and citations from the book to support those points. Students are also expected to state their opinion about the book demonstrating evidence of critical thinking. Published book reviews such as those found in *Science* might be helpful to use as a model.

2. Article Journal

Extra credit worth up to 25 points may be achieved by submitting an article journal containing news stories relating to topics in Biology I. Twenty-five articles from newspapers or magazines should be collected. The articles must be collected throughout the semester. The article may be an original or photocopy. Follow the directions carefully to achieve credit:

1. Attach the article to a sheet of paper with the date and source of publication identified.
2. Write a 1-2 paragraph evaluation of the article based on the following:
 1. How does the article show evidence of scientific method? Provide examples.
 2. Is the information based on facts or opinion? How do you know?
 3. How does this information impact you? How does this information impact society?
 4. What is your opinion? Can you support your opinion with information you have gleaned from this course?
3. Simply staple the sheets of paper together. Folders and binders are not necessary.

NOTE: A summary of the article will NOT be acceptable! No points will be awarded!

The extra credit assignments are due _____.

Attendance:

Class attendance is mandatory. Attendance will be taken at each class meeting. Students will be participating in group activities as well as lab activities. Part of your grade is based on your participation in these activities.

It is recommended that students exchange phone numbers/email so that they will have someone to contact in case they are absent due to illness, etc. If you must miss a class, please call my voice mail to let me know. In case of prolonged absence, the instructor should be notified.

If you decide to drop this course, you **MUST** fill out a drop slip, which may be picked up in the Registrar's office and come visit with the instructor. **You are still enrolled in this course until you have completed and submitted this form and scheduled a conference with me. A grade of F will result if the student does not attend class and a drop form has not been submitted.**

Course Objectives:

Objectives for each chapter are found at the beginning of the chapter. Students are encouraged to read through the objectives to help them focus on the concepts being presented in the chapter. The instructor may identify specific objectives for particular study but it is the student's responsibility to be aware of the objectives for each chapter.

Laboratory Objectives:

1. Use and understand correct laboratory safety procedures.
2. Demonstrate working knowledge of scientific method and experimental design.
3. Make careful observations and record data accurately.
4. Further develop analytical reasoning skills.
5. Correctly use and clean basic laboratory equipment and glassware including slides.
6. Accurately perform both qualitative and quantitative procedures.
7. Properly use, maintain, and store a compound light microscope.
8. Make scientifically accurate drawings and measurements of organisms viewed through a microscope.
9. Demonstrate the ability to follow directions.

Study Tips:

1. Use the syllabus. It contains a wealth of information. The course outline provides the order in which the lectures will be presented. Read the appropriate material before coming to class.
2. Attend class regularly. Take good notes and correlate those notes with the text within 24 hours. Objectives for each chapter will be provided and are a good way to check for understanding. Use the concept maps to organize the way you study. Do not simply read and reread your notes.
3. Find a study partner or group. Practice explaining the more difficult concepts to each other. If you can teach it to someone else, you have successfully mastered the concept.
4. **Expect and prepare for pop quizzes** over lecture and lab material. Do not wait until the night before to begin studying for the test.
5. Please inform me of any changes in your situation. You can expect an answer within 48 hours if it is a weekday. I do not answer email over the weekend. If you send an email on Friday, you may not receive a response until the next Monday. If you do not receive a response within 48 hours, please resend the email. Sometimes the system is down and emails are lost.

Classroom Environment:

Each student is entitled to an environment conducive to learning. Please be respectful of your fellow students and me by adhering to the following:

1. Be on time.

2. Be prepared for class.
3. Turn off cell phones/pagers.
4. Do not bring friends, spouses, and children to class.
5. Turn in work on the due date. No late work will be accepted. Extraordinary, catastrophic situations preventing the student from submitting their work will require documentation. If you are ill, send the assignment via a friend, fax or email.

ACADEMIC INTEGRITY (from the NHMCCD Catalog):

“NHMCCD is committed to a high standard of academic integrity in the academic community. In becoming a part of the academic community, students are responsible for honesty and independent effort. Failure to uphold these standards includes, but is not limited to, the following: plagiarizing written works or projects, cheating on exams or assignments, collusion on an exam or project, and misrepresentation of credential or prerequisites when registering for a course. Cheating includes looking at or copying from another student’s exam, orally communication or receiving answers during an exam, having another person take an exam or complete a project or assignment, using unauthorized notes, texts, or other materials for an exam, and obtaining or distributing an unauthorized copy of an exam or any part of an exam. Plagiarism means passing off as ones own, the ideas or writings of another (that is, without giving proper credit by documenting sources). Plagiarism includes submitting a paper, report or project that someone else has prepared, in whole or in part. Collusion is inappropriately collaborating on assignments designed to be completed independently. These definitions are not exhaustive.

When there is clear evidence of cheating, plagiarism, collusion or misrepresentation, a faculty member will take disciplinary action including but not limited to: requiring the student to retake or resubmit an exam or assignment, assigning a grade of zero or “F” for an exam or assignment, or assigning a grade of “F” for the course/program or being expelled from school may be imposed on a student who violates the standards of academic integrity.”

No form of academic dishonesty will be tolerated in this class and may result in a grade of F for this course and other disciplinary action.

WITHDRAWAL / DROP POLICY (adapted from NHMCCD catalog):

In the event that your situation changes and you are unable to successfully complete the course requirements, you may wish to drop this class. Withdrawal from a class after the official day of record will result in a mark of “W” on your transcript and no credit will be awarded for the course. Prior to the official withdrawal date, the “W” date, it is your responsibility to initiate a request for withdrawal from any course. It is in your best interest to visit with me before making that decision. There may be some options you haven’t considered. However, if you decide to drop this class, it is your responsibility to complete a drop slip that may be obtained from the Admissions Office. My signature is required on the form. You are still enrolled in this course until you have submitted this form. Non-attendance without properly dropping the course may result in a grade of **F**.

Satisfactory academic progress is required for continuing eligibility for financial aid. Consult with the college’s financial aid office regarding the course completion requirements.

EQUAL OPPORTUNITY STATEMENT (from NHMCCD catalog):

The North Harris Montgomery Community College District is committed to the principle of equal opportunity in education and employment. The district does not discriminate against individuals on the basis of race, color, gender, religion, disability, age, veteran status, national origin, or ethnicity in the administration of its educational policies, admissions, policies, employment policies, scholarship and loan programs, and other district or college administrated programs and activities.

ADA STATEMENT (from NHMCCD catalog):

NHMCCD is dedicated to providing the least restrictive learning environment for all students. The college district promotes equity in academic access through the implementation of reasonable accommodations as required by The Vocational Rehabilitation Act of 1973, Title V, Section 504 and the Americans with Disabilities Act of 1990 (ADA)

which will enable students with disabilities to participate in and benefit from all post-secondary educational programs and activities.

If you believe you have a disability requiring an accommodation, please contact the Student Services office at the beginning of the semester so that accommodations may be made in a timely fashion.

**COURSE OUTLINE
AND
LAB SCHEDULE**

(Tentative and subject to change at the Professor's discretion)

| <i>Unit 1</i> | <i>Topic</i> | <i>Lab/Group Activity</i> |
|---------------|---|---|
| Chpt. 1 | A View of Life | Scientific Method activity |
| Chpt. 2 | Atoms & Molecules: The Chemical Basis of Life | Model Building |
| Chpt. 3 | The Chemistry of Life: Organic Compounds | Lab #1 – Identifying Carbohydrates Lab #2 – Identifying Proteins and Lipids Lab #3 – Identifying Unknowns |

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|-------------------|-------------------------------------|--|
| Chpt. 4 | Organization of the Cell | Lab #7-8 – Use of Microscope/Cells |
| EXAM 1 | Chpt. 1,2, 3, 4 | |
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| Unit 2 | | |
| Chpt. 5 | Biological Membranes | Lab #9 – Passive Transport |
| Chpt. 6 | Energy and Metabolism | Lab #4 – Factors influencing the Functioning of Pepsin |
| Chpt. 8 | Photosynthesis | Lab #5 – Absorption Spectrum Lab #6 - Chromatography |
| Chpt. 7 | Cellular Respiration | Fermentation Lab |
| EXAM 2 | Chpt. 5, 6, 7, & 8 | |
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| Unit 3 | | |
| Chpt. 11 | DNA:Carrier of Genetic Information | Lab# 12 – DNA Isolation |
| Chpt. 9 | Chromosomes, Mitosis and Meiosis | Lab # 11 – Mitosis / Meiosis Activity |
| Chpt. 10 | Principles of Heredity | Genetics Problems |
| EXAM 3 | Chpt. 9,10 & 11 | |
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| Unit 4 | | |
| Chpt. 12 | RNA and Protein Synthesis | Protein Synthesis Activity |
| Chpt. 13/14 | Gene Regulation/Genetic Engineering | Lab #13 - Electrophoresis |
| Chpt. 15 | The Human Genome | Human Pedigree Analysis, Karyotype Analysis Genetic Disorder Presentations |
| EXAM 4 | Chpt. 12,13,14 &15 | |
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| Unit 5 | | |
| Chpt. 16 | Genes and Development | Group discussions/ Watch GATTACA |
| Chpt. 17 | Introduction to Evolution | |
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| FINAL EXAM | Comprehensive | |