BIOL 1406 – General Biology I
CRN 11587 - Summer 2014
4 Credit Hour Lecture and Laboratory Course

Instructor: Humphrey A. Esechie, PhD

Instructor’s Contact Information
Electronic mail: humphrey.esechie@hccs.edu
Learning Web: http://learning.hccs.edu/faculty

Prerequisites: College reading skills (college reading level as determined by SAT, ACT, TASP; or successfully passing ENGL0305 with a “C” or better).

Instructional Materials

TEXTBOOK PUBLISHER WEBSITE: http://masteringbiology.com/. You must purchase a book or have an online subscription.


E-MAIL: Course correspondence will only be directed through an HCC e-mail address (all students have an HCC address issued to them by the registrar). Any difficulties should be directed to the registrar’s office for resolution.

Course location and times: Alief-Hayes Campus
MWF: 8:00 AM – 12:00 PM, Room B121 (Lecture)
TTR: 8:00 AM – 12:00 PM, Room D104 (Lab)

Communication
Please feel free to contact me concerning any problems that you are experiencing in the course. Your performance in my class is very important to me, so you do not wait until you have received a poor grade before asking for my assistance. I am available to listen to your concerns.
Course Description
A contemporary course, which covers cellular and molecular biology, biochemistry, classical and human genetics, virology and applications of the scientific method. Core Curriculum Course. Cannot be used in conjunction with BIOL 1308.

Course Goal
This course is intended for students majoring in one of the physical sciences, life sciences, engineering, or for students who are pursuing pre-professional programs in medicine, dentistry, pharmacy, veterinary medicine, or other health programs. The course is also beneficial to students who are preparing themselves for higher level science courses in their respective curricula.

Student Learning Outcomes and Learning Objectives are established through online quizzes on the Mastering Biology website.

Program Student Learning Outcomes (PSLO)
PSLO #1 – Students will display an understanding of biological systems and evolutionary processes spanning all ranges of biological complexity, including atoms, molecules, genes, cells, and organisms.

PSLO #2 – Students will demonstrate the ability to think critically and to integrate factual and conceptual information into an understanding of scientific data by written, oral, and/or visual communication; this may include successful completion of a course-specific research project or a case study module.

PSLO #3 – Students will apply principles of the scientific method to problems in biology and apply basic laboratory safety procedures in the collection, recording, quantitative measurement, analysis, and reporting of scientific data.

Course Student Learning Outcomes (CSLO)
CSLO #1 – The student will be able to describe the characteristics of life: its unity and diversity and the evidence for evolution through genetics, variation, and natural selection. (PLSO #1)

CSLO #2 – The student will be able to understand the basic requirements of life: explain atomic structure, types of chemical bonding, properties of water, and the structures/functions of the macromolecules of life: carbohydrates, lipids, proteins, and nucleic acids. (PLSO #1)

CSLO #3 – The student will be able to compare and contrast structures, reproduction, and characteristics of viruses, prokaryotic cells, and eukaryote cells. (PLSO #1)

CSLO #4 – The student will be able to identify the substrates, products, and important pathways in the metabolic processes of energy transformation, cell communication, cellular respiration, fermentation, and photosynthesis. (PLSO #1)
CSLO #5 – The student will understand the cell cycle and be able to differentiate between the processes and functions of mitosis and meiosis. (PLSO #1)

CSLO #6 – The student will understand the principles of genetics/inheritance and be able to quantitatively solve classical genetics problems. (PLSO #1)

CSLO #7 – The student will demonstrate knowledge of DNA structure, its replication, the flow of genetic information from gene to protein, gene expression, and ultimately their methodologies and applications in biotechnology. (PLSO #1)

CSLO #8 – The student will develop critical thinking skills and habits of active collaborative learning by successfully participating in an INSPIRE (Innovative Science Program Initiatives to Reform Education)-oriented case study module(s). (PLSO #1, PLSO #2, PLSO #3)

CSLO #9 – The student will utilize the scientific method, as well as quantitative and empirical skills to collect, record, measure, analyze, and communicate scientific data. (PLSO #2, PLSO #3)

CSLO #10 – The student will exhibit competence in the laboratory by appropriate use of the light microscope and other laboratory equipment to collect and analyze data. (PLSO #3)

Instructional Methods
The primary focus of the course will be on instructor lectures including PowerPoint presentations with illustrations and animations. The instruction will also include assigned textbook readings, group discussions and collaborative activities, internet research, short video documentaries, and laboratory exercises from the required laboratory manual. Lectures will follow the chapters in the textbook but there is a fair amount of material in the textbook that we will not be covered, and some material from the lectures that you will not find in the textbook. Lectures may be given during laboratory sessions to clarify or detail concepts. Topics and concepts covered during lectures or included in the assigned readings will be included in exams.

Grading and Assessment
Your instructor will conduct exams and assessments that you can use to determine how successful you are at achieving the course learning outcomes. If you find that you are not mastering the material and skills, you are advised to reflect on how you study and prepare for each class. Your instructor welcomes a dialogue on what you discover and he may be able to assist you in finding resources on campus that will improve your performance.
BIOL 1406: LECTURE SCHEDULE*

WEEK 1  LECTURES & EXAMINATIONS
Chap 1: Introduction: Themes in the Study of Life
Chap 2: The Chemical Context of Life
Chap 3: Water & Life
Chap 4: Carbon and the Molecular Diversity of Life

EXAM I (Chapters 1 - 4) Tuesday, June 10

WEEK 2
Chap 5: The Structure and Function of Large Biological Molecules
Chap 6: A Tour of the Cell
Chap 7: Membrane Structure and Function
Chap 8: An Introduction to Metabolism

EXAM II (Chapters 5 - 8) Tuesday, June 17

WEEK 3
Chap 9: Cellular Respiration: Harvesting Chemical Energy
Chap 10: Photosynthesis
Chap 11: Cell Communication
Chap 12: The Cell Cycle

EXAM III (Chapters 9 - 12) Tuesday, June 24

WEEK 4
Chap 13: Meiosis & Sexual Life Cycles
Chap 14: Mendel and the Gene Idea
Chap 15: The Chromosomal Basis of Inheritance
Chap 16: The Molecular Basis of Inheritance

WEEK 5
Chap 17: From Gene to Protein
Chap 18: Regulation of Gene Expression
Chap 19: Viruses
Chap 20: Biotechnology

CLASS PRESENTATION (July 01)

FINAL EXAM (Chapters 13 - 20) TBA

*The instructor reserves the right to modify the lecture schedule and will notify the students of any changes in a timely manner. Not all materials in each chapter will be studied or on the exam.
**LABORATORY EXERCISES** (others may be assigned during the semester)

<table>
<thead>
<tr>
<th>WEEK</th>
<th>EXERCISE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Laboratory Safety</td>
</tr>
<tr>
<td>1</td>
<td>Basic Chemistry</td>
</tr>
<tr>
<td>2</td>
<td>Properties of Water</td>
</tr>
<tr>
<td>2</td>
<td>3 Biomolecules &amp; Scientific Methods</td>
</tr>
<tr>
<td>4</td>
<td>5 Cell Structure</td>
</tr>
<tr>
<td>6</td>
<td>Diffusion and Osmosis</td>
</tr>
<tr>
<td>4</td>
<td>9 Photosynthesis and Spectrophotometry</td>
</tr>
<tr>
<td>11</td>
<td>Genetics</td>
</tr>
<tr>
<td>5</td>
<td>12 Presentation of Students’ Projects</td>
</tr>
</tbody>
</table>

**LAB EXAMINATION July 02**

**Student Assignments**
Students are required to read assigned chapters and any additional supplemental readings as determined by the instructor. They are also required to come prepared for all laboratory sessions. Announced and unannounced quizzes may be given throughout the semester.

**Lecture Exams and Laboratory Practical Exams:** There will be a total of three lecture exams, one laboratory practical exams and one final lecture exam. Each exam will contain a number of multiple-choice questions covering designated textbook chapters or laboratory exercises. Questions will include knowledge and comprehension questions covering biological definitions and terminology. Questions will also include analysis, synthesis, and evaluation of biological theories.

**Pre-Lab and Lab Reports:** Although students work in groups, each individual is responsible for the completion of his/her own lab report.

**Comprehensive Final Exam:** An HCC system wide, concept driven final exam will be taken. The exam questions are multiple choice types, containing 50 questions. Final grades are posted online at www.hccs.edu or by telephone 1-877-341-4300.
### Basis of Grading

<table>
<thead>
<tr>
<th>Component</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quizzes</td>
<td>20</td>
</tr>
<tr>
<td>Lecture Exams</td>
<td>20</td>
</tr>
<tr>
<td>Lab Report</td>
<td>10</td>
</tr>
<tr>
<td>Lab Exam</td>
<td>10</td>
</tr>
<tr>
<td>Final Lab Exam</td>
<td>10</td>
</tr>
<tr>
<td>Research Project</td>
<td>10</td>
</tr>
<tr>
<td>Final Exam</td>
<td>20</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

### Grade Scale

- **A** (90 – 100)
- **B** (80 – 89)
- **C** (70 – 79)
- **D** (60 – 69)
- **F** (below 60)

### Classroom Rules and Regulations

- **Textbooks and laboratory manuals are required.**
- The laboratory safety release form must be signed during the first lab session.
- As a core curriculum course, BIOL 1406 cannot be used with BIOL 1308.
- Students must read the relevant lecture and laboratory assignments before class and bring the manuals and textbooks to all laboratory sessions and lectures.
- Lecture and laboratory materials are posted on the LEARNING WEB at http://learning.hccs.edu/; for (Professor) enter [Esechie or Humphrey].
- Eating and/or drinking are forbidden in the laboratory; children are not allowed in the laboratory.
- Attendance is mandatory! Students with more than **four unexcused absences** will be administratively dropped without notice. You are advised to attend classes regularly, be on time and remain until the end of period. If you have an attendance problem, please notify me. Students are responsible for everything covered during their absence. If you miss a class, have your classmates fill you in on missed material.
- If you are late for an exam, you will be allowed to take the exam (within the remaining time allotted) as long as no one else has completed the exam and left the room. **There will be no makeup exams.**
- All pagers and cell phones must be set on “silent mode” during lecture and laboratory sessions.

### HCC Policy Statement - ADA

Any student with a documented disability (physical, learning, psychiatric, vision, hearing, etc.) who needs a reasonable accommodation must contact the Disability Services Office at the respective college at the beginning of each semester. Instructors are authorized to provide only the accommodation requested by the Disability Support Services Office. If you have any special needs or disabilities that may affect your ability to succeed in college classes or participate in any college programs or activities, please contact the DSS office for assistance. At the Northwest College, contact:
HCC Policy Statement: Academic Honesty
A student who is academically dishonest is, by definition, not showing that the coursework has been learned, and that student is claiming an advantage not available to other students. The instructor is responsible for measuring each student's individual achievements and also for ensuring that all students compete on a level playing field. Thus, in our system, the instructor has teaching, grading, and enforcement roles. You are expected to be familiar with College Policy on Academic Honesty available in the catalog. Therefore, if you are charged with an offense, pleading ignorance of the rules will not help you. Students are responsible for conducting themselves with honor and integrity in fulfilling course requirements. Penalties and/or disciplinary proceedings may be initiated by the College System officials against a student accused of scholastic dishonesty. Scholastic dishonesty includes, but is not limited to, cheating on a test, plagiarism, and collusion.

Cheating on a test includes:

- Copying from another student’s test paper;
- Using materials not authorized by the person giving the test;
- Collaborating with another student during a test without authorization;
- Knowingly using, buying, selling, stealing, transporting, or soliciting in whole or in part the contents of a test that has not been administered.

Plagiarism means the appropriation of another’s work and the unacknowledged incorporation of that work in one’s own written work offered for credit.

Collusion means the unauthorized collaboration with another person in preparing written work offered for credit.

Possible punishments for academic dishonesty may include a grade of F in the particular assignment, failure in the course, and/or recommendation for probation or dismissal from the College System. (See the Student Handbook.)

HCC Course Withdrawal Policy
Withdrawal from the course after the official day of record will result in a final grade of “W” on the student transcript and no credit will be awarded. It is the student’s responsibility to initiate and complete a request for withdrawal from any course. Students will be required to formally request a withdrawal from their instructors prior to the administrative withdrawal deadline. Abandoning the course or failing to formally drop or withdraw will result in a grade being given based on the work completed for the entire course (including missed exams).
The State of Texas now imposes penalties on students who drop courses excessively. For example, if you repeat the same course more than twice, you have to pay extra tuition. Beginning in fall 2007, the Texas Legislature passed a law limiting first time entering freshmen to no more than six total course withdrawals throughout their educational career in obtaining a certificate and/or degree.

Receiving a "W" in a course may affect the status of your student’s Visa. Once a W is given for the course, it will not be changed to an F because of the visa consideration. You are advised to contact the International Student Office at 713-718-8520 if you have any questions about your visa status and other transfer issues.

**Repeat Course Fee**

The State of Texas encourages students to complete college without having to repeat failed classes. To increase student success, students who repeat the same course more than twice, are required to pay extra tuition. Effective fall 2006, HCC will charge a higher tuition rate to students registering the third or subsequent times for a course. If you are considering course withdrawal because you are not earning passing grades, confer with your instructor/counselor as early as possible about your study habits, test taking skills, attendance, course participation, and opportunities for tutoring or other assistance that may be available.

**Use of Camera and/or Recording Devices**

Use of recording devices, including camera phones and tape recorders, is prohibited in classrooms and laboratories. Students with disabilities who need to use a recording device as a reasonable accommodation should contact the Office for Students with Disabilities for information regarding reasonable accommodation.