Department: Life Sciences (Biology)

| General Biology 1<br>Spring 2017<br>Biol 1406 CRN# 20752 | |
|---|---|
| Course location and times: | West Loop, Tues Rm 162, Thurs TBA |
| Course semester credit hours: | 4 Semester Credit hours (3 Lecture; 3 Lab) |
| Course contact hours: | 96 hours |
| Course length: | 16 weeks |
| Instruction type: | On Campus |
| Instructor: | Nicole Ducharme, Ph.D. |
| Phone: | N/A |
| Email address: | nicole.ducharme@hccs.edu |
| Office location and hours: | By appointment only |

**COURSE DESCRIPTION:**

Discussions focus on biological chemistry, biological processes, cellular morphology, metabolism, genetics and molecular biology. Core curriculum course. Cannot be used in conjunction with 1308. This course is designed for Science Majors.

**COURSE PREREQUISITES:**

One year of high school biology/high school chemistry recommended.

- College-level reading (or take GUST 0342) and
- College-level writing (or take ENGL 0310/0349)

**COURSE GOALS:**

This course is intended for BIOLOGY or HEALTH SCIENCE MAJORS. The coursework and readings are geared toward students who intend to pursue biology (or a related discipline such as the health sciences) as a major. If you are not majoring in biology (or a related science/health discipline), you should enroll in BIOL 1308, the first semester of our biology for non-majors sequence. The overall goal of Biology 1406 is to prepare the student for advanced coursework in biology such as Anatomy & Physiology.

**PROGRAM STUDENT LEARNING OUTCOMES (PSLO) FOR BIOLOGY**

**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 integrate factual and conceptual information into an understanding of scientific concepts by written, oral, and/or visual communication.

**PSLO #3 –** Students will demonstrate proficiency and safe practices in the use of laboratory equipment and basic laboratory techniques.

**PSLO #4 –** Students will apply principles of the scientific method to problems in biology in the collection, recording, quantitative measurement, analysis, and reporting of scientific data.

**COURSE STUDENT LEARNING OUTCOMES (CSLO) FOR BIOLOY 1406**

1. Describe the characteristics of life. (PSLO 1)
2. Explain the methods of inquiry used by scientists. (PSLO 1)
3. Identify the basic requirements of life and the properties of the major molecules needed for life. (PSLO 1, 2)
4. Compare and contrast the structures, reproduction, and characteristics of viruses, prokaryotic cells, and eukaryotic cells. (PSLO 1, 2)
5. Describe the structure of cell membranes and the movement of molecules across a membrane. (PSLO 1)
6. Identify the substrates, products, and important chemical pathways in metabolism. (PSLO 1)
7. Identify the principles of inheritance and solve classical genetic problems. (PSLO 1, 2)
8. Identify the chemical structures, synthesis, and regulation of nucleic acids and proteins. (PSLO 1, 2)
9. Describe the unity and diversity of life and the evidence for evolution through natural selection. (PSLO 1, 2)
10. Develop critical thinking skills and habits of active collaborative learning (PSLO 2,4)
11. Apply scientific reasoning to investigate questions and utilize scientific tools such as microscopes and laboratory equipment to collect and analyze data. (PSLO 3, 4)
12. Use critical thinking and scientific problem-solving to make informed decisions in the laboratory. (PSLO 3)
13. Communicate effectively the results of scientific investigations. (PSLO 2, 4)

Successful completion of this course should provide the student with a good introduction to biological sciences and a grasp of biological principles. This will allow them to function as knowledgeable and informed citizens in a society that demands a greater sophistication in the modern sciences, particularly as they pertain to molecular technology, forensic and judiciary matters, environmental, and medical issues.

**INSTRUCTION METHODS:**

This class will meet weekly for lecture, discussion, laboratory, and course related activities. In addition, HCCS Eagle Online will be utilized for this course and students are expected to log onto Eagle regularly. Students will read assigned pages in textbook, complete related Mastering Biology assignments, and view available animations/videos.

| | |
|---|---|
| Student Assignments: | Students are required to read assigned chapters, participate in discussions, and complete assignments. |
| Student Assessments: | Students will be assessed via substantive participation in discussions, completion of assignments, lecture exams, and a comprehensive final. |

**INSTRUCTOR REQUIREMENTS**

You are spending a good deal of time, energy and money on this course – please, make the most of your investment! My purpose in this class is to **act as your guide** through this subject material. I also must make sure that your grade in this class indicates **your mastery** of the subject material required by this college. I am **not** here **to spoon-feed you**. It takes approximately **3 hours of study time for each hour of class time to master the material**. This class will have the equivalent of 96 contact hours (4 hr. credit) compared to 48 contact hours that comprise the normal class (3 hr. credit).

The class and study time necessary to succeed in this class will be close to **300 hours (20 hours per week)!**

**Basic requirements**

- Students should be on time for class and be prepared with required materials including the textbook.
- Full class attendance is required for the duration of each class session.
- Full attention during lecture is required.
- No use of any electronic devices during the class period. Cell phones, etc. must be on vibrate.

**Attendance Policy**

Attendance at lecture is importance since most exam material will come from the lecture notes. Students are expected to attend classes regularly and on time. Latecomers distract the class and are not appreciated. Students are responsible for materials covered during their absences. Class attendance is checked daily by instructors. A student may be dropped from a course for excessive absences after the student has accumulated absences in excess of 12.5% of the hours of instruction (including lecture and laboratory time). **Note that 12.5% is approximately 4 classes or labs for a 4-semester hour course.** If circumstances significantly prevent you from attending classes, please inform me. It is the responsibility of each student to amend his or her professional/personal schedule to meet the class schedule.

You may decide not to come to class for whatever reason. As an adult making the decision not to attend, you do not have to notify the instructor prior to missing a class (except when an exam is being administered). However, if this happens too many times, you may suddenly find that you have "lost" the class.

Poor attendance records tend to correlate with poor grades. If you miss any class, including the first week, you are responsible for all material missed. It is a good idea to find a friend or a buddy in class who would be willing to share class notes or discussion or be able to hand in paper if you unavoidably miss a class. If you wish to drop the course, it is your responsibility to go online and do it. I will not drop students for non-attendance. I will however, give a grade of "Fx".

**DEPARTMENT GUIDELINES:**

Students are expected to conduct themselves as adults. This includes courteous and respectful behavior towards instructor and classmates. Disruptive behavior or any behavior that interferes with any educational activity being performed by the instructor will not be allowed. Additionally, no student may interfere with his/her fellow students' right to pursue their academic goals to the fullest in an atmosphere appropriate to a community of scholars. Disruptive behavior may result in removal from the class.

As your instructor and as a student in this class, it is our shared responsibility to develop and maintain a positive learning environment for everyone. Your instructor takes this responsibility very seriously and will inform members of the class if their behavior makes it difficult for him/her to carry out this task. As a fellow learner, you are asked to respect the learning needs of your classmates and assist your instructor in achieving this critical goal.

**GRADE CALCULATION**

| | |
|---|---|
| Class participation/Assignments | 130 |
| Mastering Biology Assignments (drop lowest 2) | 180 |
| Chapter Quizzes (5 pts/quiz; drop lowest 2) | 90 |
| Lecture Exams (100 pts each; drop lowest) | 300 |
| Lab Practical (100 pts each) | 200 |
| Final Exam | 100 |
| | |
| Extra Credit | Up to 50 points |
| **Final Score** | **1000** |

**BASIC REQUIREMENTS**

| | | |
|---|---|---|
| HCC Grading Scale: | A = 100- 90 | 4 points per semester hour |
| | B = 89 - 80: | 3 points per semester hour |
| | C = 79 - 70: | 2 points per semester hour |
| | D = 69 - 60: | 1 point per semester hour |
| | 59 and below = F | 0 points per semester hour |
| | FX (Failure due to non-attendance) | 0 points per semester hour |
| | IP (In Progress) | 0 points per semester hour |
| | W (Withdrawn) | 0 points per semester hour |
| | I (Incomplete) | 0 points per semester hour |
| | AUD (Audit) | 0 points per semester hour |

IP (In Progress) is given only in certain developmental courses. The student must re-enroll to receive credit. COM (Completed) is given in non-credit and continuing education courses.

FINAL GRADE OF FX: Students who stop attending class and do not withdraw themselves prior to the withdrawal deadline may either be dropped by their professor for excessive absences or be assigned the final grade of "FX" at the end of the semester. Students who stop attending classes will receive a grade of "FX", compared to an earned grade of "F" which is due to poor performance. Logging into a DE course without active participation is seen as non-attending. Please note that HCC will not disperse financial aid funding for students who have never attended class.

Students who receive financial aid but fail to attend class will be reported to the Department of Education and may have to pay back their aid. A grade of "FX" is treated exactly the same as a grade of "F" in terms of GPA, probation, suspension, and satisfactory academic progress.

To compute grade point average (GPA), divide the total grade points by the total number of semester hours attempted. The grades "IP," "COM" and "I" do not affect GPA.

**ONLINE HOMEWORK ASSIGNMENTS**

There is mandatory online homework through Mastering Biology. These graded assignments are designed to help you master the material covered in the course.

**CHAPTER QUIZZES**

For each ***chapter*** that is assigned as reading in the textbook, you will complete a timed quiz (10 multiple-choice questions in 20 minutes) that will be submitted to your instructor via PearsonMastering in Eagle **prior to** the date of the next lecture period after that chapter is covered in lecture. Exact due dates are always listed under "Assignments" in Eagle. Therefore, most Mastering Biology chapter quizzes will be **due on Tuesdays or Thursdays before 10:50 AM** on the due date (see due dates in Eagle/PearsonMastering.com). Late quizzes will not be accepted, even for an excused absence. Quizzes are late after 11:00 AM and will not be accepted by PearsonMastering.com; therefore, there is no conceivable reason to skip lecture to complete them! Your lowest two quiz grades will be dropped.

**IN CLASS ASSIGNMENTS**
We will be utilizing in class activities that allow you to experience the process of science or how science applies to real life.

**UNIT EXAMS**
There will be four unit exams that ask you to apply what we have learned. Most often, this will take the form of applying what we have learned to experimental designs and critical thinking. Your lowest exam grade will be dropped

**FINAL EXAM**
A comprehensive final examination will be given.

**EXTRA CREDIT**
Opportunities for extra credit will be available throughout the semester to boost your grade up to half of a letter grade (50 points).

| | |
|---|---|
| Instructional Materials: | **Required Textbook:**<br>Reece, J. B, et al. 2014. *Campbell Biology,* 10th edition *(Volume I—Biology 1406) (Custom Edition for Houston Community College)*, Pearson. Get the **NEW** book available at HCC bookstores bundled with a PearsonMastering.com access code. ISBN: 978-1-26988114-2 (HCC custom package).<br><br>I highly suggest you buy a NEW version of the textbook because it will come with the **Modified Mastering (pearsonmastering.com)** access code you will need to do your online homework and quiz assignments, as well as the e-text. If you purchase a used book, you will need to purchase the access code online (but you will likely pay more overall)!<br><br>**Required Lab Manual:**<br>Biology 1406, Laboratory manual. HCCS-Southwest, Dept. of Life Sciences.<br><br>**Web resources:**<br>Eagle Online and Mastering Biology<br><br>**Required Textbook Web Resources:**<br>**PearsonMastering.com** – The Modified MasteringBiology platform is an online study guide, tutorial, homework, and assessment system for biology. Students are ***required*** to purchase an access code to use PearsonMastering.com this semester. If you purchase your textbook new at an HCC bookstore, this code along with the e-text will be bundled with it at **no extra charge**. If you purchase a used book from any vendor, you will be responsible for purchasing an access code at additional expense.<br><br>**Registering for PearsonMastering.com:**<br>Sign in to Canvas and enter your Canvas course.<br>Do one of the following:<br>➢ Select any Pearson link from any module.<br>➢ Select **the MyLab & Mastering** in the Course Navigation, and then select any course link on the Pearson page.<br>**Get Access to Your Pearson Course Content:**<br>1. Enter your Pearson account **username** and **password** to **Link Accounts**. You have an account if you have ever used a Pearson MyLab & Mastering product, such as MyMathLab, MyITLab, MySpanishLab, MasteringBiology or MasteringPhysics. |

| | |
|---|---|
| | ➢ If you don't have a Pearson account, select **Create** and follow the instructions.<br>Select an access option:<br>➢ Enter the access code that came with your textbook or was purchased separately from the bookstore.<br>➢ Buy access using a credit card or PayPal account.<br>➢ If available, get temporary access by selecting the link near the bottom of the page.<br>From the You're Done page, select **Go to My Courses**.<br>**Note:** We recommend you always enter your MyLab & Modified Mastering course through Canvas. |

## CLASS SCHEDULE

**Tentative Course Calendar (Spring 2017)**

| Wk | Date | Lecture Topic | Assignment | Mastering Bio Assignment and Quiz | Lab |
|---|---|---|---|---|---|
| 1 | 17-Jan | Introduction Chapter 1 | Process of Science 1 | | |
| | 19-Jan | Chemical Context of Life (Chapter 2) | | Mastering Bio 2 | Exercise 1: Basic Chemistry |
| 2 | 24-Jan | Water and the Fitness of the Environment (chapter 3) | | Mastering Bio 3 | Exercise 2: Properties of Water |
| | 26-Jan | Carbon and the Molecular Diversity of Life (chapter 4) | Process of Science 2 | Mastering Bio 4 | |
| 3 | 31-Jan | Structure and Function of Macromolecules (chapter 5) | | Mastering Bio 5 | Exercise 3: Biochemistry |
| | 2-Feb | Tour of the Cell (chapter 6) | Review for Exam | Mastering Bio 6 | |
| 4 | 7-Feb | | **Exam 1 (ch 1-5)** | **Mastering Bio 2-5 cut off** | Exercise 4 & 5: Cell Structure |
| | 9-Feb | Membrane Structure and Function (chapter 7) | Process of Science 3 | Mastering Bio 7 | |
| 5 | 14-Feb | | | | Exercise 6: Diffusion and Osmosis |
| | 16-Feb | Introduction to Metabolism (chapter 8) | Process of Science 4 | Mastering Bio 8 | |
| 6 | 21-Feb | | **Lab Practical (labs 1-6)** | | Exercise 7 Enzymes |
| | 23-Feb | Cellular Respiration (chapter 9) | Process of Science 5 | Mastering Bio 9 | |
| 7 | 28-Feb | | | | Exercise 8: Respiration |
| | 2-Mar | Photosynthesis (chapter 10) | Review for Exam | Mastering Bio 10 | |

| | | | | | |
|---|---|---|---|---|---|
| 8 | 7-Mar | | **Exam 2 (ch 6-10)** | **Mastering Bio 6-10 cut off** | Exercise 9: Photosynthesis |
| | 9-Mar | Cell Communication (chapter 11) | | Mastering Bio 11 | |
| 9 | 14-Mar | Spring Break | | | |
| | 16-Mar | | | | |
| 10 | 21-Mar | The Cell Cycle (chapter 12) | | Mastering Bio 12 | Exercise 10: Cell Division |
| | 23-Mar | Meiosis (chapter 13) | Process of Science 6 | Mastering Bio 13 | Exercise 10: Cell Division |
| 11 | 28-Mar | Mendelian Genetics (chapter 14) | | Mastering Bio 14 | Exercise 11: Genetics |
| | 30-Mar | Chromosomal Basis of Inheritance (chapter 15) | Review for Exam | Mastering Bio 15 | Exercise 11: Genetics |
| 12 | 4-Apr | Molecular Basis of Inheritance (chapter 16) | **Exam 3 (ch 11-15)** | Mastering Bio 16<br>**Mastering Bio 11-15 cut off** | |
| | 6-Apr | From DNA to Protein (chapter 17) | Process of Science 7 | Mastering Bio 17 | |
| 13 | 11-Apr | | | | Exercise 12: DNA to Protein |
| | 13-Apr | Regulation of Gene Expression (chapter 18) | Process of Science 8 | Mastering Bio 18 | |
| 14 | 18-Apr | Viruses (chapter 19) | Lab Practical (labs 8-12) | Mastering Bio 19 | |
| | 20-Apr | Biotechnology (chapter 20) | Process of Science 9 | Mastering Bio 20 | |
| 15 | 25-Apr | Genomes and their Evolution (chapter 21) | | Mastering Bio 21 | Exercise 13: Biotechnology |
| | 27-Apr | | **Exam 4 (ch 16-21)**<br>Process of Science 10 | **Mastering Bio 16-21 cut off** | |
| 16 | 2-May | Review for Final | | | |
| | 4-May | Review for Final | | | |
| 17 | 9-May | **Final Exam** | | | |

**TUTORING:**

| | |
|---|---|
| Biology Department: | The college provides free tutoring for students. |
| **In Person Tutoring** | More information will be available later. You can check the tutoring schedule at http://learning.swc.hccs.edu |
| **Online Tutoring** | Online tutoring is available free to all HCC Biology students at: http://hccs.askonline.net/. |
| **Lab Review 24/7** | These Biology Lab Study pages (http://hccs.edu/biologylabs) are for HCC students to review lab materials 24/7. The pages include models, microscope slides, experiments, dissections, animations, and practice quizzes. |

**HCC POLICY STATEMENTS**
Access Student Services Policies on their Web site: http://hccs.edu/student-rights

**ACADEMIC HONESTY:**
Students are expected to comply with stated policies in HCCS student handbook concerning academic honesty. Cheating will not be tolerated. There will be no talking, looking on other people's papers, or any other way of trying to cheat on any examination. This can lead to expulsion from Houston Community College. **This is your official warning! Your first offense will be your last in my class.**

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 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 the University's Policy on Academic Honesty, found in the catalog. What that means is: 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 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 students' 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 part the contents of a test that has not been administered;
- Bribing another person to obtain a test that is to be 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** mean the unauthorized collaboration with another person in preparing written work offered for credit. Possible punishments for academic dishonesty may include a grade of 0 or F in the particular assignment, failure in the course, and/or recommendation for probation or dismissal from the College System. (See the Student Handbook.)

**ACCESS CE POLICIES ON THEIR WEB SITE:**
http://hccs.edu/CE-student-guidelines

**SAFE AND SECURE LEARNING ENVIRONMENT**
It is the policy of HCC to provide a safe and secure environment within which learning can take place effectively. Accordingly, disruptive, threatening, or violent behavior in the classroom will not be tolerated. Disruptive, threatening, or violent individuals will be asked to leave the classroom for that day. Failure to comply with this request may lead to removal and/or arrest by the police. This is in addition to any college disciplinary action to which the individual might be liable.

**LAST DAY FOR ADMINISTRATIVE AND STUDENT WITHDRAWALS: 4/3/17 @4:30**
Refer to the syllabus for the last date. I urge any student who is contemplating withdrawing from the class to see me first! You may be doing better than you think. It is the student's responsibility to withdraw from the class before the last day of withdrawal. The instructor cannot give a "W" after the withdrawal date. Abandoning the course or failing to formally drop will result in a grade being given based on the work completed for the entire course (including missed exams).

To help students avoid having to drop/withdraw from any class, HCC has instituted an Early Alert process by which your professor will "alert" you that you might fail a class because of excessive absences and/or poor academic performance. The counselors with work with you to learn about what, if any, HCC interventions might be available to assist you – online tutoring, child care, financial aid, job placement, etc. – to stay in class and improve your academic performance.

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

**TITLE IX OF THE EDUCATION AMENDMENTS OF 1972, 20 U.S.C. A§ 1681 ET. SEQ.**
Title IX of the Education Amendments of 1972 requires that institutions have policies and procedures that protect students' rights with regard to sex/gender discrimination. Information regarding these rights are on the HCC website under Students-Anti-discrimination. Students who are pregnant and require accommodations should contact any of the ADA Counselors for assistance. It is important that every student understands and conforms to respectful behavior while at HCC. Sexual misconduct is not condoned and will be addressed promptly. Know your rights and how to avoid these difficult situations.

Log in to: www.edurisksolutions.org. Sign in using your HCC student e-mail account, then go to the button at the top right that says "**Login**" and enter your student number.

**DISABILITY SUPPORT SERVICES (DSS)**
Any Student with a documented disability (e.g. physical, learning, psychiatric, vision, hearing, etc.) who needs to arrange reasonable accommodations should inform the instructor within one week of the first class session and must contact the Counselor at 713-718 7889, or contact the DSS office for assistance. At Southwest College, contact Dr. Becky Hauri, 713-718-7909.

**IMPORTANT NOTICE:**
Student who repeats a course three times or more may face significant tuition/fee increases at HCC and other public colleges and universities. 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, reading and writing homework, test-taking skills, attendance, course participation, and opportunities for tutoring or other assistance that might be available. 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

**EGLS3: EVALUATION FOR GREATER LEARNING STUDENT SURVEY SYSTEM**
At Houston Community College, professors believe that thoughtful student feedback is necessary to improve teaching and learning. During a designated time, you will be asked to answer a short online survey of research based questions related to instruction. The anonymous results of the survey will be made available to your professors and division chairs for the continual improvement of instruction. Look for the survey as part of the Houston Community College Student System online near the end of the term.

*ASSESSMENT RUBRICS*
*GENERAL BIOLOGY I -*
*BIOLOGY 1406*

**GENERAL ASSESSMENT RUBRICS**

The following Student Learning Outcomes with their associated assessment criteria are not meant to be all inclusive, and are meant to be used along with all other course learning outcomes and assessment devices, listed under Course Objectives, in the determination of the student's final course grade. Completion of the specific Student Learning Outcomes listed below, at any assessment grading level, does NOT and will NOT guarantee the student that final course grade at the end of the semester!

| Performance Factors | Rating Scale | | | | |
|---|---|---|---|---|---|
| | F | D | C | B | A |
| 1] The student will be able to recognize the basic structure and describe the function of eukaryotic cellular organelles and cell systems. | Unable to demonstrate knowledge of shape, structure, or function of most eukaryotic cellular organelles. Unable to correlate organelles with their cell systems. | Occasionally able to demonstrate knowledge of shape and structure, or function of a few eukaryotic cellular organelles and cell systems. | Occasionally able to demonstrate knowledge of shape and structure, or function of most eukaryotic cellular organelles and cell systems. | Consistently able to demonstrate knowledge of shape, structure, and function of most eukaryotic cellular organelles and cell systems. | Consistently able to demonstrate knowledge of shape, structure, and function of all eukaryotic cellular organelles and cell systems |
| 2] Given a DNA or RNA base sequence, the student will be able to deduce:<br>a. the sequence of the complementary DNA strand<br><br>b. the sequence of the complementary messenger RNA strand<br><br>c. complementary codons and/or anticodons<br><br>d. the proper amino acid sequence in a peptide by using a supplied table of genetic code. | Unable to demonstrate knowledge of base pairing rules. Unable to demonstrate the ability to perform replication and transcription and translation, by scenario. | Able to demonstrate knowledge of base pairing rules for DNA only. Able to demonstrate the ability to perform replication by scenario. Unable to demonstrate the ability to perform transcription or translation, by scenario. | Able to demonstrate knowledge of base pairing rules for both DNA and RNA. Able to demonstrate the ability to perform replication and transcription OR translation, by scenario. | Able to demonstrate knowledge of base pairing rules for both DNA and RNA. Able to demonstrate the ability to perform replication and transcription AND translation, by scenario. | Able to demonstrate knowledge of base pairing rules for both DNA and RNA. Able to demonstrate the ability to perform replication and transcription AND translation, by scenario without error. |

| | | | | | |
|---|---|---|---|---|---|
| 3] The student will be able to explain the synthesis and properties of<br>a) carbohydrates<br>b) lipids<br>c) proteins<br>d) nucleic acids | Unable to explain both the synthesis of polymers and the properties of any class of biological macromolecules. | Able to explain the synthesis of polymers, and the properties of any one class of biological macromolecules. | Able to explain the synthesis of polymers, and the properties of any two classes of biological macromolecules. | Able to explain the synthesis of polymers, and the properties of any three classes of biological macromolecules. | Able to explain the synthesis of polymers, and the properties of all four classes of biological macromolecules. |
| 4] The student will be able to devise an experiment containing the proper experimental test points along with proper positive and negative controls. | Consistently cannot differentiate between appropriate and inappropriate experimental design, in practice or by scenario. | Occasionally differentiates between appropriate and inappropriate experimental design, but needs direction to proceed to next step. | Consistently differentiates between appropriate and inappropriate experimental design, but needs direction to proceed to next step. | Consistently differentiates between appropriate and inappropriate experimental design. Attempts to perform some appropriate corrective action or explain some appropriate action; needs some assistance from instructor. | Consistently differentiates between appropriate and inappropriate experimental design. Takes appropriate steps or explains appropriate steps independently and correctly. |
| 5] The student will exhibit competence with bringing the brightfield microscope into focus. | Consistently unable to find the specimen on the microscope slide, and consistently unable to focus a microscope without the instructor's help. | Occasionally able to find the specimen on the microscope slide, but consistently unable to focus without the instructor's help | Occasionally able to find the specimen on the microscope slide, and occasionally able to focus without the instructor's help | Consistently able to find the specimen on the microscope slide, and occasionally able to focus without the instructor's help | Consistently able to find the specimen on the microscope slide, and consistently able to focus without the instructor's help |

| | | | | | |
|---|---|---|---|---|---|
| 6] The student will develop the habit of reliable attendance by being absent from class no more than four times per semester. | Is absent frequently enough to interfere with instruction and the completion of the course objectives, and/or is frequently not where he/she is expected to be. Infracts the HCC attendance policies. | When absent, is never aware of the schedule for the day upon return, and must be reminded or encouraged to complete objectives missed during the absence. Is occasionally not where he/she is expected to be. | When absent, is only occasionally unaware of the schedule for the day upon return. Completes objectives missed during the absence only with the help of the instructor and/or classmates, and is where he/she is expected to be at all times. | When absent, independently or with little help completes objectives missed during the absence. Always aware of the schedule for the day, and is where he/she is expected to be at all times. | Is never absent, always aware of the schedule for the day, and is where he/she is expected to be at all times. Consistently and willingly follows HCC attendance policies without being reminded. |
| 7] The student will demonstrate punctuality in the submission of class assignments on their due date. | Is tardy at turn-in frequently enough to interfere with class instruction. Submits assignments two or more weeks late, or ignores assignments. | Is tardy at turn-in frequently enough to interfere with class instruction or submits assignments no more than one week late. | Is occasionally a few minutes late for assignment turn-in. submits assignments no more than one day late. | Is rarely late for assignment turn-in. Submits assignments late, but on the due date. | Is consistently on time for assignment turn-in. Always submits assignments on the due date. |