<table>
<thead>
<tr>
<th>Course Description:</th>
<th>Discussions focus on biological chemistry, biological processes, cellular morphology, metabolism, genetics and molecular biology. Core curriculum course, cannot be used in conjunction with 1308.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Prerequisites:</td>
<td>One year of high school biology/high school chemistry recommended.</td>
</tr>
<tr>
<td>Course Goals:</td>
<td>To help the student in becoming a scientifically aware individual, and to prepare the student for advanced course work in biology.</td>
</tr>
<tr>
<td>Course Expectations:</td>
<td>You are spending a good deal of time, energy and money on this course – please, make the most of your investment! It takes approximately <strong>2-3 hours of study time for each hour of class time to master the material.</strong> This class will have over 96 contact hours (4 hr. credit). The <strong>class and study time necessary to succeed in this class will be close to 300 hours (20 hours per week)!</strong></td>
</tr>
<tr>
<td>Course Objectives:</td>
<td>1. To establish an understanding of the major historical events in biology and their impact on science.</td>
</tr>
</tbody>
</table>
2. To describe basic cell structure, biochemistry, metabolism, nutrition, reproduction, and genetics.
3. To demonstrate knowledge of the basic principles of cellular inheritance.
4. To demonstrate knowledge of the basic principles of molecular genetic technology.
5. To demonstrate skill in basic laboratory methodology, such as microscopy, and the careful analysis of laboratory data and results.

Program Student Learning Outcomes: (PSLO)

1) To recognize, identify, and describe the basic structures and functions associated with most life forms.
2) To develop basic laboratory techniques appropriate to the field of Biology.
3) To develop study skills and habits appropriate for pre-professional students interested in health-related fields.

Student Learning Outcomes: (SLO)

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!

1) The student will be able to recognize the basic structure and describe the function of eukaryotic cellular organelles and cell systems. (PSLO #1)

2) Given a DNA or RNA base sequence, the student will be able to deduce:
   a. the sequence of the complementary DNA strand
   b. the sequence of the complementary messenger RNA strand
   c. complementary codons and/or anticodons
   d. the proper amino acid sequence in a peptide by using a supplied table of genetic code. (PSLO #1)
3) The student will be able to explain synthesis and properties of
   a. carbohydrates
   b. lipids
   c. proteins
   d. nucleic acids
   (PSLO #1)

4) The student will be able to devise an experiment containing
   the correct experimental test points along with correct positive
   and negative controls. (PSLO #2)

5) The student will exhibit competence with bringing the
   brightfield microscope into focus. (PSLO #2)

6) The student will develop the habit of reliable attendance by
   being absent from class no more than four times per semester.
   (PSLO #3)

7) The student will demonstrate punctuality in the submission of
   class assignments on their due date. (PSLO #3)

General Course Calendar

<table>
<thead>
<tr>
<th>Week</th>
<th>Lecture Schedule</th>
<th>Lab Schedule</th>
</tr>
</thead>
</table>
| 1    | Ch.1 Exploring Life  
   Ch.2 The Chemical Context of Life  
   Ch.3 Water and the Fitness of the Environment.  
   Ch.4 Carbon and the Molecular Diversity of Life  
   Ch.5 The Structure and Function of Macromolecules. | Laboratory Safety  
   Rules and regulations,  
   Lab. Ex. 1 Basic Chemistry  
   Lab. Ex. 2 Properties of water  
   Lab. Ex. 3 Biochemistry  
   Project Announced |
| 2    | Lecture Exam 1 (Ch. 1-4)  
   Ch.6 A Tour of the Cell.  
   Ch.7 Membrane Structure and Function  
   Ch.8 An Introduction to Metabolism  
   Ch.9 Cellular Respiration: Harvesting Chemical Energy. | Lab. Ex. 4 Microscope  
   Lab. Ex. 5 Cell Structure  
   Lab. Ex. 6 Diffusion  
   Lab. Ex. 7 Enzymes  
   Lab. Ex. 8 Respiration |
|   | Lecture Exam 2 (Ch. 5 – 7)  
|   | Ch.10 Photosynthesis.  
|   | Ch.11 Cell Communication (self Study)  
|   | Ch.12 The Cell Cycle.  
|   | Ch.13 Meiosis and Sexual Life Cycles  
|   | Ch.14 Mendel and the Gene Idea  
|   | Lecture Exam 3 (Ch. 8 – 11) | Lab. Ex 9 Photosynthesis  
|   | Lab. Exam - Review  
|   | Lab. Exam - I  
|   | (Lab. Exercises 1 – 7)  
|   | Project I Submission  
|   | Lab. Ex. 10 Cell Division  
|   | Lab. Ex.11 Genetics  
| 4 | Ch.15 The Chromosomal Basis of Inheritance  
|   | Ch.16 The Molecular Basis of Inheritance.  
|   | Ch.17 From Gene to Protein.  
|   | Lecture Exam 4 (Ch. 12 – 15)  
|   | Ch.18 Regulation of Gene Expression.  
|   | Ch.19 Viruses  
|   | Ch.20 Biotechnology | Lab. Ex.12 DNA to Protein  
|   | Lab. Ex.13 Biotechnology & DNA Extraction  
|   | Lab Exam – Review  
|   | Final Exam – Review  
| 5 | Final Lecture Examination (comprehensive)  
|   | Departmental Final (comprehensive) | Lab. Exam - 2  
|   | (Lab. Exercises 8 – 12)  

Note that your instructor reserves the right to change the schedule as needed at any point during the course.  
**A class specific schedule with dates is put up on Blackboard.**  

Project topics, rubric and due dates for project and online quizzes would be discussed in class and the information would be available on Blackboard.

| Instruction Methods: | The primary focus of the course will be on instructor lectures including illustrations, powerpoint presentations, animations, group activities and assigned textbook readings.  
|   | Lecture material will correspond to the topics covered in the required textbook, but your instructor may include more detail on certain topics. Lecture may be included during lab sessions to clarify or detail concepts.  
|   | Topics and concepts covered during lecture or included in the assigned reading will be included in exams.  
|   | Online chapter quizzes will be posted on Blackboard as graded activities.  
|   | Laboratory sessions will include exercises from laboratory manual.  

<p>| Student Assignments: | Students are required to read assigned chapters and to complete chapter quizzes posted on Blackboard. |</p>
<table>
<thead>
<tr>
<th>Student Assessments:</th>
<th>Students will be assessed via lecture and laboratory examinations, online chapter quizzes, project report, lab manual and comprehensive final lecture and lab examinations.</th>
</tr>
</thead>
</table>
Lab book: Biology 1406, Laboratory manual. HCCS- Southwest  
Web resources: Blackboard learning system  
Websites suggested by the instructor. |
| HCC Policy Statement: ADA | Any student with a documented disability (e.g. physical, learning, psychiatric, vision, hearing, etc.) who needs to arrange reasonable accommodations must contact the Disability Services Office at the respective college at the beginning of each semester. Instructors are authorized to provide only the accommodations 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.  
Southwest College, contact: Dr. Becky Hauri  
5407 Gulfton  
Houston, Texas 77081  
Phone: 713-718-7909  
Fax: 713-718-7781  
TTY: 713-718-7909 |
| HCC Policy Statement: Academic Honesty | Students are responsible for conducting themselves with honor and integrity in fulfilling course requirements. Disciplinary proceedings may be initiated by the college system against a student accused of scholastic dishonesty. Penalties can include a grade of "0" or "F" on the particular assignment, failure in the course, academic probation, or even dismissal from the college. Scholastic dishonesty includes, but is not limited to, cheating on a test, plagiarism, and collusion. A comprehensive statement on academic dishonesty can be found in the HCC Student Handbook. |
| Student Success Policy | **Tutoring**  
The college will provide tutoring for the students. More information will be available later. You can check the tutoring and open lab. schedule at [http://learning.swc.hccs.edu](http://learning.swc.hccs.edu)  
**Early Alert process**  
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 will 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.

<table>
<thead>
<tr>
<th>HCC Policy Statement: Student attendance, repeaters, withdrawal deadline</th>
<th>Attendance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students are expected to attend classes regularly and are responsible for materials covered during their absences.</td>
<td></td>
</tr>
</tbody>
</table>

Instructors check class attendance daily. 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.

Habitual tardiness will not be tolerated. Students are expected to be in attendance for the entirety of the scheduled class and are responsible for completing assignments scheduled during their absence/s. It is the responsibility of each student to amend their professional/personal schedule to meet the class schedule.

<table>
<thead>
<tr>
<th>Repeaters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students who repeat a course for a third or more times may soon face significant tuition/fee increases at HCC and other Texas public colleges and universities. Please ask your instructor / counselor about opportunities for tutoring / other assistance prior to considering course withdrawal or if you are not receiving passing grades.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Withdrawals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Withdrawal from the course until the official day of record (see current catalog) 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 drop from their instructors prior to the administrative drop date deadline. Abandoning the course or failing to formally drop, will result in a grade “F” on your transcript.</td>
</tr>
</tbody>
</table>

The State of Texas has begun to impose 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.

<table>
<thead>
<tr>
<th>International Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
</tr>
<tr>
<td>Lab policy:</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>Phones/electronic devices:</td>
</tr>
<tr>
<td>Testing procedures</td>
</tr>
<tr>
<td>Deportment:</td>
</tr>
<tr>
<td>Examination format:</td>
</tr>
</tbody>
</table>
| HCC Grading Scale: | A = 90-100%  
B = 80-89%  
C = 70-79%  
D = 60-69%  
F = less than 60% |
| Instructor Grading Criteria: | Students must adhere to testing schedule. Failure to take a test (lab or lecture) will result in a “0” for the missed exam. No makeup exams will be arranged except for work, family, or personal (health) emergency, and only if documented. Online quizzes would not be reset if you were not able to complete them or miss them. |
The exam question papers and scantron answer sheets for all exams shall be with the instructor as students performance record. The final exams are mandatory and failure to take them would result in grade "F" for the course irrespective of the average grade from other grading components. No exemption from final exam.

Grade Calculation

<table>
<thead>
<tr>
<th>Activity</th>
<th>Score calculation</th>
<th>Grade</th>
<th>Your Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 Lecture Exams</td>
<td>Average of 3 best scores, 20%</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>2 Lab. Exams</td>
<td>Average of 2 scores, 20%</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>12 Lab Manual Reports</td>
<td>Average of 12 scores, 10%</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>20 Chapter Quizzes</td>
<td>Average of 20 scores, 10%</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>1 Project</td>
<td>20%</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Final Exam (Instructor’s &amp; Departmental)</td>
<td>20%</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Final Score</td>
<td>100%</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

**Instructor Requirements:** Students should be on time for class and be prepared with required materials including textbook and lab manual. Full attention during lecture and lab is required. **Student is expected to review the lecture and lab. schedule sheet and accordingly prepare for the class.**

** Undertaking:** Read the instructions and the schedule before you sign and submit the, "Acknowledgement Page".

**Have a Great Semester & Enjoy Learning Biology!**

**ASSESSMENT RUBRICS**

**GENERAL BIOLOGY I - BIOLOGY 1406**

<table>
<thead>
<tr>
<th>Performance Factors</th>
<th>F</th>
<th>D</th>
<th>C</th>
<th>B</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1] The student will be able to recognize the basic structure and describe the function of eukaryotic cellular organelles and cell systems. <strong>PSLO #1</strong></td>
<td>Unable to demonstrate knowledge of shape, structure, or function of most eukaryotic cellular organelles. Unable to correlate organelles with their cell systems.</td>
<td>Occasionally able to demonstrate knowledge of shape and structure, or function of a few eukaryotic cellular organelles and cell systems.</td>
<td>Occasionally able to demonstrate knowledge of shape and structure, or function of most eukaryotic cellular organelles and cell systems.</td>
<td>Consistently able to demonstrate knowledge of shape, structure, and function of most eukaryotic cellular organelles and cell systems.</td>
<td>Consistently able to demonstrate knowledge of shape, structure, and function of all eukaryotic cellular organelles and cell systems</td>
</tr>
</tbody>
</table>
2) Given a DNA or RNA base sequence, the student will be able to deduce:
   a. the sequence of the complementary DNA strand
   b. the sequence of the complementary messenger RNA strand
   c. complementary codons and/or anticodons
   d. the proper amino acid sequence in a peptide by using a supplied table of genetic code.

   **PSLO #1**
   - 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, without error.

   **Performance Factors**

   **Rating Scale**

   F | D | C | B | A
---|---|---|---|---
3) The student will be able to explain the synthesis and properties of
   a. carbohydrates
   b. lipids
   c. proteins
   d. nucleic acids
   **PSLO #1**
   - Unable to explain both the synthesis of polymers and the properties of any class of biological macromolecule.
   - Able to explain the synthesis of polymers, and the properties of any one class of biological macromolecule.
   - 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 all four classes of biological macromolecules.

   **Performance Factors**

   **Rating Scale**

   F | D | C | B | A
---|---|---|---|---
4) The student will be able to devise an experiment containing the proper experimental test points along with proper positive and negative controls.
   **PSLO #2**
   - 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.

   **Performance Factors**

   **Rating Scale**

   F | D | C | B | A
---|---|---|---|---
5) The student will exhibit competence with bringing the brightfield microscope into focus.
   **PSLO #2**
   - 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.
<table>
<thead>
<tr>
<th>6] The student will develop the habit of reliable attendance by being absent from class no more than four times per semester. <strong>PSLO #3</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
</tr>
<tr>
<td>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.</td>
</tr>
<tr>
<td>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.</td>
</tr>
<tr>
<td>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.</td>
</tr>
<tr>
<td>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.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>7] The student will demonstrate punctuality in the submission of class assignments on their due date. <strong>PSLO #3</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Is tardy at turn-in frequently enough to interfere with class instruction. Submits assignments two or more weeks late, or ignores assignments.</td>
</tr>
<tr>
<td>Is tardy at turn-in frequently enough to interfere with class instruction or submits assignments no more than one week late.</td>
</tr>
<tr>
<td>Is occasionally a few minutes late for assignment turn-in. Submits assignments no more than one day late.</td>
</tr>
<tr>
<td>Is rarely late for assignment turn-in. Submits assignments late, but on the due date.</td>
</tr>
<tr>
<td>Is consistently on time for assignment turn-in. Always submits assignments on the due date.</td>
</tr>
</tbody>
</table>

---

**Read these goals and get geared up for a smooth run.....**

**Are You Going to Succeed in College?**

**Welcome to HCC**

This is not the 13th grade!

**Life Sciences Department Recommendations and Expectations**

Guidelines to take Biology 1406 (1st. year class): high school biology & chemistry with B or better. If not-take Biology 1308 first.

**Failure to meet these recommended guidelines can result in failing the class. Don't be impatient! Get the Tools you need so you can Succeed!**

**Student/Faculty Orientation Checklist**

**I. College Level Expectations/Responsibilities**

- Be on time for your class. Do not sneak in late and interrupt the class. If you are late wait until the next break to enter the classroom.
- You will be expected to behave as an adult. This includes not talking on cell phones or any use of an electronic device not approved by your instructor during class.
- Do not expect multiple “changes”, such as being able to re-take exams or re-do assignments. Do not ask your instructor for an “extra assignment” to alter your grade.
- You must meet deadlines. Most professors do not accept late assignments or they make significant grade reductions with late submittals.
- Read directions carefully and follow them. Review directions before turning in an assignment to make sure they have all been met.
- Plan to spend about three hours studying outside the classroom for every one hour in the classroom. Do not take too many classes if you are working or have heavy family/personal responsibilities. **DO NOT attempt to take more than one**
Biology course per semester unless you already have a strong Biology/Science background.

- Set realistic goals and develop a plan to achieve them.
- Stay organized. Use a binder to store your class notes, syllabus and handouts. If your class utilizes the Blackboard classroom management system, make sure to copy the syllabus, notes and other materials you might need on to your computer desktop or an external storage device to use when an Internet connection is not possible. If you have trouble accessing Blackboard contact the help desk number listed at the bottom of the Blackboard home page. Your instructor cannot reset passwords or register students in Blackboard.
- Contact your professor and/or a counselor when you first begin to experience a problem in a class. **Do not wait.** Most professors want to help, but it is your responsibility to ask for it. It is your academic career. If you decide to drop a class make sure you go to the registrar and drop the course (official drop “withdrawal” date is April 21st 2011, 4:30pm). **DO NOT assume that your instructor will drop you if you abandon the course, doing so may result in an “F”**.
- Buy your textbook at the beginning of the semester and begin reading it. If you have financial or other issues that keep you from doing so, talk with your professor immediately. Also purchase your Scranton’s early. They are sold at the college bookstores, which may not open early enough for an 8:00am class. Make sure you have them before your examinations.

II. Syllabi

- You will receive a different syllabus for each class.
- Read every syllabus carefully, as each professor has different policies and you are responsible for following them. Make sure you do not have any personal or professional appointments that conflict with test dates or times.
- Learn your professor’s name and contact information. They are included in your syllabus.

III. Attendance

- Attend class beginning the first day. This is important for understanding expectations and getting to know your professor and classmates. Lab rules and safety procedures are covered during the first few days.
- You must attend class regularly. You cannot receive credit for a class if more than 12 hours of instruction have been missed.
- You are held responsible for content missed during an absence including announcements, notes, handouts and assignments.
- Get to know your classmates, exchange contact information from at least three classmates at the beginning of the semester so that you have someone to contact if you miss a class.
- Get to class on time, allowing time for traffic, parking. Plan to be on campus at least 15 minutes before your scheduled class.

IV. Tutoring

- Online tutoring is available for free to all HCC Biology students at: [http://hccs.askonline.net/](http://hccs.askonline.net/)
- In-person tutoring is provided at each of our campuses beginning during the third week of the semester. Notices will specific locations and times will be posted in Biology lecture and lab rooms.
Friday open labs, where students can review Biology models is typically held at the Scarcella building at the Stafford campus, room S118 beginning on the third week of the semester to the week before finals. Look for notices posted in Biology lecture and lab rooms.

V. Building Codes
- Scarcella Building—STF2
- Stafford Building—STAF3
- Building B—B
- Temporary buildings – T
- West Loop – WLOP
- Alief – ALIF
- Missouri City – MOCC
- Green Briar Annex – GRNBR

Acknowledgement Page

I acknowledge that I have read the syllabus for Biology 1406 and understand the effort and time commitment necessary to succeed in this Science Majors Class.

(OVER 300 HOURS OF STUDY)

Name_____________________________________________________

Signature ________________________

Email Address ________________________________

Current Phone # ________________________________