

SYLLABUS FOR BIOL 1406 - 0179 Summer I, 2018

HOUSTON COMMUNITY COLLEGE-SOUTHWEST COLLEGE

INSTRUCTOR: DR. MUHAMMED A. SHAKIR

Contact Email: muhammed.shakir@hccs.edu

Course Title: BIOL 1406 – 0179 General Biology I

CRN: 74512 **Credit Hours:** 4

Class Location & Time:

West Houston Institute: Mondays, Wednesdays & Fridays (Room 233) @ 8:00 AM - 11:40 AM.

West Houston Institute: Tuesdays & Thursdays (Room 320) @ 8:00 AM - 11:40 AM

GETTING READY

Prerequisites:

Math 0106 or higher placement by testing, must be placed in college level reading.

Co-requisites: None

Required Material:

Textbook: Valuepack

Title: "Campbell Biology in Focus, Volume I with Modified MasteringBiology Package for Houston Community College"

ISBN:1323751432//9781323751435

Laboratory Manual: Biology 1406, Laboratory Manual (Third Edition), HCCS-Southwest, Department of Life Sciences.

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 BIOL 1308.

Course Prerequisite:

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

Course Goal:

To help student in becoming a scientifically aware individual and to prepare the student for advanced course works in biology.

COURSE OBJECTIVES:

1. To establish an understanding of the major historical events in biology and their impact on science.
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.

"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!"

PROGRAM LEVEL STUDENT LEARNING OUTCOMES:

COURSE DESCRIPTION

Fundamental principles of living organisms will be studied, including physical and chemical properties of life, organization, function, evolutionary adaptation, and classification. Concepts of cytology, reproduction, genetics, and scientific reasoning are included.

STUDENT LEARNING OUTCOMES

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

STUDENT LEARNING OUTCOMES FOR 1406:

SLO1: The student will be able to recognize the basic structure and describe the function of eukaryotic cellular organelles and cell systems.

SLO2: 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.

SLO3: The student will be able to explain the synthesis and properties of:

a. Carbohydrates

b. Lipids

c. Proteins

d. Nucleic acids

SLO4: The student will be able to devise an experiment containing the proper experimental test points along with proper positive and negative controls.

SLO5: The student will exhibit competence with bringing the brightfield microscope into focus.

SLO6: The student will develop the habit of reliable attendance. Come to class on time and give full attention to the topics discussed in class.

SLO7: The student will demonstrate punctuality in the submission of class assignments on their due date.

TENTATIVE INSTRUCTIONAL OUTLINE:

The Instructor reserves the right to change the instructional outline if needed. Students will be informed in a timely manner of any changes.

Week	LECTURE	LABORATORY
1. 06/04/2018	CLASS ORIENTATION Chapter 1 Introduction: Evolution and the Foundations of Biology Chapter 2 The Chemical Context of Life	
2. 06/05/2018	Chapter 3 Carbon and the Molecular diversity of life	Lab Orientation & Lab Safety Ex.1. Basic Chemistry
3. 06/06/2018	Continue on Chapter 3 Carbon and the Molecular diversity of Life Chapter 4 A Tour of the Cell	
4. 06/07/2018	Continue on Chapter 4 A Tour of the Cell	Ex. 2. Properties of water
5. 06/08/2018	Chapter 5 Membrane Transport and Cell Signaling	
6. 06/11/2018	LECTURE EXAM #1 (Chaps 1-3) Chapter 6 An Introduction to Metabolism	

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| 7. 06/12/2018 | Continue on Chapter 6 | Ex. 3. Biochemistry – Detection of Biological Molecules |
| 8. 06/13/2018 | Chapter 7 Cellular Respiration
Chapter 8 Photosynthesis | |
| 9. 06/14/2018 | Continue on Chapter 8 | Ex. 4. Care & use of Microscope
EX. 5. Cell Structure |
| 10. 06/15/2018 | Chapter 9 The Cell Cycle | |
| 11. 06/18/2018 | LECTURE EXAM #2 (Chaps 4-6)
Continue Chapter 9 The Cell Cycle | |
| 12. 06/19/2018 | Chapter 10 Meiosis and Sexual Life Cycles | Ex. 6. Diffusion and Osmosis
Ex. 7. Enzymes
Review for lab exam I |
| 13. 06/20/2018 | Lab Exam I
Chapter 11 Mendel and the Gene Idea | |
| 14. 06/21/2018 | Continue Chapter 11 | Ex. 8. Respiration and Fermentation
Ex. 9. Photosynthesis |
| 15. 06/22/2018 | Chapter 12: The Chromosomal Basis of Inheritance | |
| 16. 06/25/2018 | LECTURE EXAM 3 (Chaps 7-9)
Chapter 12: The Chromosomal Basis of Inheritance
Chapter 13 The Molecular Basis of Inheritance | |
| 17. 06/26/2018 | Chapter 13 The Molecular Basis of Inheritance | Ex. 10. Cell Division
Ex. 11. Genetics |
| 18. 06/27/2018 | Chapter 14 Expression: From Gene to Protein
Chapter 15 Regulation of gene Expression | |
| 19. 06/28/2018 | Chapter 15 Regulation of gene Expression | Ex. 12. DNA to Protein
Ex. 13. Biotechnology |
| 20. 06/29/2018 | LECTURE EXAM 4 (Chaps 10-13)
Chapter 16 Development, Stem Cells and Cancer | |
| 21. 07/02/2018 | Chapter 16 Development, Stem Cells and Cancer
Chapter 17 Viruses | |
| 22. 07/03/2018 | Chapter 18 Genomes and their Evolution | |

23. 07/05/2018 LECTURE EXAM 5 (Chaps 14-16)
Lab Exam II

24. 07/06/2018 Lecture Exam Final – Comprehensive

You can access the syllabus and lecture notes from the learning web page or blackboard from the HCCS home page: <http://www.hccs.cc.tx.us>, under southwest college

Instructor Requirements: Basic requirements

Students should be on time for class and be prepared with required materials including textbook and lab manual. Full class attendance is required including lecture and lab portions. Full attention during lecture and lab is required. No use of any electronic devices during the class period. Students are expected to conduct themselves as adults. This includes courteous and respectful behavior towards the 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.

Attendance:

For a 3 credit hour lecture class meeting 3 hours per week (48 hours of instruction), you can be dropped after 6 hours of absence.

For a 4 credit hour lecture/lab course meeting 6 hours per week (96 hours of instruction), you can be dropped after 12 hours of absence.

Departments and programs governed by accreditation or certification standards may have different attendance policies. Administrative drops are at the discretion of the instructor. Failure to withdraw officially can result in a grade of "F" or "FX" in the course.

NO EATING OR DRINKING OR SMOKING IN LABORATORY:

No food or drinks are allowed in the laboratory. In addition, no smoking is allowed.

DRESS CODE

Student Services Policies:

Access up-to-date Student Services Policies on their Web site:
<http://www.hccs.edu/district/students/student-handbook/>

QUESTIONS/PROBLEMS:

Please make sure that if you have any questions or problems at any time, that you first contact me as soon as possible. The worst thing you can do is wait to contact me or to not take advantage of the resources available to you. By taking an active part in your education, you will make your academic experience much more rewarding and exciting!!

Examination:

There will be 5 lecture exams and a final exam. Lecture exams will consist of multiple-choice questions. Out of the 5 lecture exams only 4 will be considered towards the final grade. They will cover materials that covered in class, important concepts and discussion from the text book as well as figures from the text book. You will get a maximum of one hour or one and half-hour period to complete your lecture exam. The final exam will be comprehensive (it will cover all the chapters). There will be a departmental final that all students need to take. You will take 2 finals one by the department and one by your instructor. The average of both final exams will be

included in your final grade. The lecture or lab exams will follow either lab exercise or lecture.

No cell phones are allowed in use at any time as it disturbs the class. Audible cell phone ringing may result in your removal from class that day. Cell phone use during examination is cheating and will result in course failure.

Online Homework Assignments;

There will be mandatory online homework assignment on the Mastering Biology site (www.masteringbio.com). The course ID for your course is will be given to you on your first day of class. Each student is responsible to register on the mastering biology website using an access code. The access code comes with the new book. The information regarding the access code will be given to you. The homework assignments will be graded and will contribute to 10% of the final grade. The due dates for the assignments will not be extended. Please read the

instructions regarding mastering biology on the learning web or blackboard before you start taking the assignments.

Make-up Examination:

There will be no make-up exams and final exams are mandatory. One lecture exam (out of five) will be dropped for the final computation. If you miss one lecture exam, it will be counted as a dropped exam. Please note: All students are required to take the final exam. Failure to take the final exam will result in an "F" grade.

Laboratory Policy:

Lab safety will be reviewed on the first day of lab. Experiments will be performed in groups. Each student should arrive at the lab on time, with his or her lab manual. Each student is responsible for completing the lab reports at the end of each lab.

Grade Determination:

All the exams will be considered towards final grade.

Four Lecture exams & Final exam = 65%

Assignments on Mastering Biology = 10%

Lab. exam = 20%

Lab. Report = 5%

Grades:

A = 90-100,

B = 80-89,

C = 70-79,

D = 60-69,

F = Below 60.

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 student's papers or in any way try to cheat on any examination. All cell phones and laptops or any types of electronic media and wrist watch should be in your back pack and the back pack should be closed and away from you. Going outside during the exam is NOT allowed.** Cheating can lead to expulsion from Houston Community College. You will be

given a warning in writing for the first offense, which, if repeated will result in automatic failure in the course.

Phones/electronic devices

Absolutely no phone or other personal electronic devices are to be used during class (lecture and lab). This includes making or taking a call, reviewing messages, texting, playing games, checking email, surfing the web, anything that involves a phone or other personal electronic device. If your work or family situation requires that you be available via phone, your phone can be on vibrate mode and you can take the call during our regular scheduled breaks or you can exit the class to receive the call. Notify your friends, family, employers, and anyone else who regularly contacts you that you will be in class and that you should be contacted only when is extremely necessary. The taking of calls during class is not only disruptive but it is also discourteous to classmates and the instructor.

Last Day for Administrative and Student Withdrawals

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. Either way, I want to be accessible and supportive. I do not believe in "weed out" classes, and I consider you to be much more than just a name or number! Note my office hours, above; if you need assistance, I'm here to help. Please e-mail me to make appointments outside office hours. **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 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.

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.

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>

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 soon 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

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:

a. the sequence
of the
complementary
DNA strand

Unable to
demonstrate

Able to
demonstrate

knowledge of
base pairing
rules for DNA

Able to
demonstrate

knowledge of
base pairing
rules for both
DNA and RNA.

Able to
demonstrate

knowledge of
base pairing
rules for both
DNA and

Able to
demonstrate

knowledge of
base pairing
rules for both
DNA and

b. the sequence
of the
complementary
messenger RNA
strand

knowledge of
base pairing
rules. Unable
to demonstrate
the ability to
perform
replication and
transcription
and
translation, by
scenario.

only. Able to
demonstrate
the ability to
perform
replication by
scenario.
Unable to
demonstrate
the ability to
perform

knowledge of
base pairing
rules for both
DNA and RNA.

Able to
demonstrate
the ability to
perform
replication and
transcription
OR translation,
by scenario.

knowledge of
base pairing
rules for both
DNA and

RNA. Able to
demonstrate
the ability to
perform

replication and
transcription
AND
translation, by
scenario.

RNA. Able to
demonstrate
the ability to
perform

replication and
transcription
AND
translation, by

c.
complementary
codons and/or
anticodons

scenario.

transcription or
translation, by
scenario.

OR translation,
by scenario.

AND
translation, by
scenario.

scenario
without error.

d. the proper
amino acid
sequence in a
peptide by using
a supplied table
of genetic code.

Performance Factors

Rating Scale

F

D

C

B

A

3] The

Unable to

Able to explain

Able to explain

Able to explain

Able to explain

student will be able to explain the synthesis and properties of	explain both the synthesis of polymers and the properties of any class of biological macromolecules.	the synthesis of polymers, and the properties of any one class of biological macromolecules.	the synthesis of polymers, and the properties of any two classes of biological macromolecules.	the synthesis of polymers, and the properties of any three classes of biological macromolecules.	the synthesis of polymers, and the properties of all four classes of biological macromolecules.
a. carbohydrates					
b. lipids					
c. proteins					

d. nucleic acids

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.
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Performance Factors

Rating Scale

F	D	C	B	A
5] The student will exhibit competence	Consistently unable to find the specimen on	Occasionally able to find the specimen on	Occasionally able to find the specimen on	Consistently able to find the specimen on

with bringing the brightfield microscope into focus.	the microscope slide, and consistently unable to focus a microscope without the instructor's help.	the microscope slide, but consistently unable to focus without the instructor's help	the microscope slide, and occasionally able to focus without the instructor's help	microscope slide, and occasionally able to focus without the instructor's help	the microscope slide, and consistently able to focus without the instructor's help
		When absent, is never	When absent, is only		
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. Infractions the HCC attendance policies.	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.	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 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.