

**HOUSTON COMMUNITY COLLEGE (Northeast)**

#  MICROBIOLOGY LAB FOR NON-SCIENCE MAJORS

#  BIOL 2120/CRN # 74564

 **Instruction Mode: In Person**

**INSTRUCTOR CONTACT INFORMATION**

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| **Instructor: L’Tanya Patton** |  | **Office Phone:936.701.6067** |  |
| **Office:** **936.701.6067** |  | **Office Hours: Th 12:00-1:00 pm** |  |
| **E-mail: ltanya.patton@hccs.edu**  |  |  |  |

**WELCOME TO**

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| --- | --- | --- | --- |
| **Course Title: MICROBIOLOGY Lab** |  | **Semester and Year: Fall 2017** |  |
| **Course Prefix: BIOL 2120** |  | **Class Days & Times: M-Th 1:00 – 3:15 pm** |  |
| **Course Number: 74564** |  | **Room #: 234, Codwell Hall** |  |
| **Credit Hours: 1** |  |  |  |
|  |  |  |  |

**COURSE OVERVIEW**

**Program Student Learning Outcomes (PSLOs) for the Biology Discipline**

1. Will display an understanding of biological systems and evolutionary processes spanning all ranges of biological complexity, including atoms, molecules, genes, cells, and organisms.
2. Will 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).
3. Will demonstrate proficiency and safe practices in the use of laboratory equipment and basic laboratory techniques.
4. Will apply principles of the scientific method to problems in biology in the collection, recording, quantitative measurement, analysis and reporting of scientific data.

**Course Description and Student Learning Outcomes (CSLOs)**

This course is a study of microorganisms, including a description of basic cell structure, biochemistry, metabolism, nutrition, reproduction, and genetics. Mechanisms of transmission, microbial entry, pathogenesis, prophylaxis, epidemiology, and microbial control of selected human pathogens will be explored. Basic body defense mechanisms and immunological responses to pathological conditions will be examined.

Completion of the specific Student Learning Outcomes listed below does NOT and will NOT guarantee the student any specific final course grade at the end of the semester!

* 1. Describe distinctive characteristics and diverse growth requirements of prokaryotic organisms compared to eukaryotic organisms.
	2. Provide examples of the impact of microorganisms on agriculture, environment, ecosystem, energy, and human health, including biofilms.
	3. Distinguish between mechanisms of physical and chemical agents to control microbial populations.
	4. Explain the unique characteristics of bacterial metabolism and bacterial genetics.
	5. Describe evidence for the evolution of cells, organelles, and major metabolic pathways from early prokaryotes and how phylogenetic trees reflect evolutionary relationships.
	6. Compare characteristics and replication of acellular infectious agents (viruses and prions) with characteristics and reproduction of cellular infectious agents (prokaryotes and eukaryotes).
	7. Describe functions of host defenses and the immune system in combating infectious diseases and explain how immunizations protect against specific diseases.
	8. Explain transmission and virulence mechanisms of cellular and acellular infectious agents.

**In our efforts to prepare students for a changing world, students may be expected to utilize computer technology while enrolled in classes, certificate, and/or degree programs. The specific requirements are listed below:**

**GETTING READY**

**Prerequisites:**

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

**Co-requisites:** None

**Required Material:**

**Lab Manual:** Laboratory Manual for Biology 2120 HCC 6th Edition, Wiersma and Sen “Microbiology”

**Learning Web:** Syllabus and other relevant course information may be posted on the Learning web found at the following link: http://learning.hccs.edu/faculty/

**CANVAS:** Assignments may be posted online on Eagle online CANVAS found at the following link: [eagleonline.hccs.edu](http://eagleonline.hccs.edu/). Your Username is same as your student ID number used for registration (For example: W0034567). Your default password is “distance”. Once you log-in, you can change the password.an

**Other Materials and resources:**

***Biology Lab Review Pages:*** <http://ctle.hccs.edu/biologylabs/index.html>you will get access to digital images, animations, and labeling exercises to review models, slides, and experiments that we cover in lab.

***STEM Website for students:*** [www.hccs.edu/district/students/stem](http://www.hccs.edu/district/students/stem) Great information on science clubs, seminars, symposium, and research opportunities that are available to HCC students. Check back often- updated regularly.

***Tutoring:*** <https://hccs.upswing.io/> Get expert one-on-one help, Online or In Campus, specifically for HCC students.

**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.

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| --- | --- |
| **Day** | **LAB** |
| June 4  |  Introductions, lab safety & Lab Exercise 1Lab Exercises 15, 16, 20 |
| June 5 | Lab Exercises 2, 3 |
| June 6 | Lab Exercise 4 |
| June 7 | Lab Exercise 5 |
| June 11 | Lab Exercises 6, 7 |
| June 12 | Lab Exercises 8, 9 |
| June 13 | Lab Exercise 10 |
| June 14 | Complete all lab reports, and Review for Practical Exam I |
| June 18 | **Lab Practical I** |
| June 19 | Lab Exercise 23 |
| June 20 | Lab Exercises 11, 12 |
| June 21 | Lab Exercises 13, 14 |
| June 25 | Lab Exercises 15, 16 |
| June 26 | Lab Exercise 20 |
| June 27 | Lab Exercises 17, 18 |
| June 28 | Lab Exercises 19, 21 |
| July 2 | Complete all lab reports, and Review for Practical Exam II |
| July 3 | **Lab Practical II (Final) \*\*\*\* 1:00 – 3:00 pm \*\*\*\*** |
| July 4 | **\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* HOLIDAY \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*** |
| July 5 | **Presentations (Department Final)** |

**INSTRUCTOR GUIDELINES AND POLICIES**

**Attendance:** Attendance is mandated by the state. You are expected to attend the entirety of the scheduled llecture and lab classes. You are also responsible for materials covered during your absences. Instructors may be willing to consult with you for make-up assignments, but it is your responsibility to contact the instructor. Class attendance is monitored daily. Although it is your responsibility to drop a course for nonattendance, the instructor has the authority to drop you for excessive absences. You may be dropped from a course after accumulating absences in excess of 12.5 percent of the total hours of instruction (lecture and lab). For example:

* 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.

**Academic Support:**  provides tutoring services for select subjects, Student Success Seminars, and other support services to help overcome academic difficulties you may be experiencing

**Withdrawal:** It is recommended that you consult with the class instructor before submitting a written withdrawal after the official day of record which will result in a “W” on the transcript and no credit will be awarded.

**Final Grades:** Grades will be available to students online, by noon by Dec 15

**Extra Credit:** TBA

***Email Policy:*** Generally, I read my emails throughout the day and if you send me an email allow me 24 hours to respond. If there’s an urgent problem, then contact the Department Office.

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**Assignments:**

**Final Exam:** Is a comprehensive examination consisting of all the information gathered throughout the semester.

**Pre-Labs and Labs:** Represents a combination of 13 Prelab/Lab assignments. Pre-Labs are submitted before class and the Lab Report is due at the end of class; it will not be accepted if student is not physically present to perform the lab but can still earn partial credit for pre-lab submission.

**Timed Lab practicals**: Lab Practical’s (2) consist of 50 fill-in-the-blank questions, based on stations set up in the lab. You may not leave the room after beginning an exam.

**Makeup work:** Missed Lab Practical’s Make-up Exams will be available within 7 days of original exam upon approval from instructor; furthermore, late pre-lab assignments will be penalized ***10 pts per day***. Any missed lab exams requires instructor approval and student has one week to complete the makeup exam.

**Electronic devices:** Please see that all mobile devices (tablets, phones, laptops, etc.) are silenced and put away during laboratory class time. Their use is not permitted during the lab.

**Lab and online Discussions:**

Online Discussion boards: Expectations is that you participate weekly in discussions. As an active participant you will read your posts as well as others and make comments to other students. Your grade will be based on 3 criteria:

1. Usage of careful, well thought-out statements and questions.

2. The degree of your involvement in the discussion

3. How you integrate other people’s comments into your own postings.

**Pre-Lab Assignments:** Consists of weekly Pre-labs which will be available every week and may be submitted online or in person, before lab class.

**Lab Reports-** There are NO MAKE-UP LABS. Arriving late to lab will result in not receiving full credit for completing the lab. You are still responsible for the material covered in lab and it is YOUR responsibility to obtain any notes from a classmate.

**Computer access:** Most of your coursework is in conjunction with a computer you must make sure that you have an easy and daily access to a computer that meets the minimum requirements as follows:

Refer to computer usage forms.

**Computer software:** Submit your word document in a pdf or word format.

**DRESS CODE:**

1. No flip flops, sandals and open toe shoes.
2. Long hair must be pulled baked and secured.
3. No short shorts and tank tops/cut off tops.

**NO EATING OR DRINKING OR SMOKING IN LABORATORY:** No food or drinks are allowed in the laboratory. In addition, no smoking is allowed.

**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!!

**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 near the end of the term, 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 department chairs for continual improvement of instruction.  Go to [www.hccs.edu/egls3](https://webmail.hccs.edu/owa/redir.aspx?C=Qn4naV07jUqU4Ug6JHhEjYA4RsgZ4dAIuO0C9y3S9ZH1xDI9PwKOKmfWFXqrkg5nrwTMtRmwwjI.&URL=http%3a%2f%2fwww.hccs.edu%2fegls3) for more information.

**Grade Determination:**

 **Final Exam (Presentation) ………......20%**

 **Lab Practical (2) …………………….....…40%**

 **Class Participation ……………………….40%**

**The HCC grading scale is:**

A = 90 – 100: …………………………………4 points per semester hour

B = 80 – 89: …………………………………….3 points per semester hour

C = 70 – 79: …………………………………….2 points per semester hour

D = 60 – 59: …………………………………….1 point per semester hour

59 and below = F……………………………..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. 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**.**

**REPEATING COURSES (THREE-PEAT RULE)**

As a result of recent Texas legislative changes, please be advised that HCC is charging additional tuition for students who enroll in the same class three or more times at HCC. While it is the hope of HCC that students will be successful in their first attempt at classes, we realize that life demands, academic struggles, and other issues may result in students needing to take the same class more than once. Speaking with an advisor will help you develop student success skills, improving your overall academic performance. If a student repeats a course in which a grade (A-F) has been received, the highest grade received at HCC is the permanent grade for the course and will be used in computing the GPA. All grades earned in a given course will be reflected on the transcript. Other colleges may compute the GPA differently than HCC.

**COURSE WITHDRAWLS (6-Drop Rule)**

Students must withdraw by the withdrawal deadline in order to receive a “W” on a transcript. Final withdrawal deadlines vary each semester and/or depending on class length, please visit the online Academic Calendar, any HCC Registration Office, or any HCC advisor to determine class withdrawal deadlines.

Be certain you understand HCC policies about dropping a course and consult with a counselor/advisor to determine if withdrawing is in your best interest. It is your responsibility to withdraw officially from a class and prevent an “F” from appearing on your transcript. Senate Bill 1231 limits the number of W’s a student can have to 6 classes over the course of their entire academic career. This policy is effective for students entering higher education for the first time in fall 2007 and subsequent terms. Withdrawals accumulated at any other Texas public higher education institution count toward the 6 course total. Withdrawals for certain circumstances beyond the students control may not be counted toward the 6-drop limit. In addition, withdrawing from a course may impact your financial aid award or eligibility. Contact the Financial Aid Office or website to learn more about the impact of withdrawing on financial aid.

**HCCS IS COMMITTED TO YOUR SUCCESS**

**Early Intervention Program and Services**

**Your success is our primary concern!** If you are experiencing challenges achieving your academic goals, please contact your instructor or an early intervention coach. We can provide assistance with academic needs, ADA accommodations, classroom difficulties, financial concerns, and other issues.

**Tutoring**

HCCS provides free online and on campus tutoring for all HCC students. Go to <https://hccs.upswing.io/>

**Counseling Services**

Counseling services are available to students who are experiencing difficulty with academic issues, selection of college major, career planning, disability accommodations, or personal issues. <http://learning.hccs.edu/programs/counseling>

**Accommodations due to a qualified disability**

HCC strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including mental health, chronic or temporary medical conditions), please meet with a campus Abilities Counselor as soon as possible in order to establish reasonable accommodations. Reasonable accommodations are established through an interactive process between you, your instructor(s) and Ability Services.  It is the policy and practice of HCC to create inclusive and accessible learning environments consistent with federal and state law. For more information, please go to <http://www.hccs.edu/district/students/disability-services/>

**AMERICANS WITH DISABILITIES ACT STATEMENT**

HCCS is dedicated to providing the least restrictive environment for all students. We promote equity in academic access through the implementation of reasonable accommodations as required by the Vocational Rehabilitation Act of 1973, Title V, Section 504 and the Americans with Disabilities Act of 1990 (ADA) which will enable students with disabilities to participate in and benefit from all post-secondary educational activities.

If you require reasonable accommodations because of a physical, mental, or learning disability, please contact the Counseling Office to obtain the necessary information to request accommodations [http://www.hccs.edu/district/students/disability-services/ada-counselors/.](http://www.hccs.edu/district/students/disability-services/ada-counselors/)

Upon completion of this process, please notify your instructor as soon as possible and preferably before the end of the first two weeks of class to arrange for reasonable accommodations.

**ACADEMIC INTEGRITY**

This instructor is committed to a high standard of academic integrity in the academic community. In becoming a part of the academic community, students are responsible for honesty and independent effort. Failure to uphold these standards includes, but is not limited to, the following: plagiarizing written work or projects, cheating on exams or assignments, collusion on an exam or project, and misrepresentation of credentials or prerequisites when registering for a course. Cheating includes looking at or copying from another student's exam, orally communicating or receiving answers during an exam, having another person take an exam or complete a project or assignment, using unauthorized notes, texts, or other materials for an exam, and obtaining or distributing an unauthorized copy of an exam or any part of an exam. Plagiarism means passing off as his/her own the ideas or writings of another (that is, without giving proper credit by documenting sources). Plagiarism includes submitting a paper, report, or project that someone else has prepared, in whole or in part. Collusion is inappropriately collaborating on assignments designed to be completed independently. These definitions are not exhaustive. When there is clear evidence of cheating, plagiarism, collusion, or misrepresentation, disciplinary action may include but is not limited to requiring you to retake or resubmit an exam or assignment, assigning a grade of zero or "F" for an exam or assignment; or assigning a grade of "F" for the course. Additional sanctions including being withdrawn from the course, program or expelled from school may be imposed on a students who violate the standards of academic integrity.

**STUDENT BEHAVIOR EXPECTATIONS**

Students are expected to conduct themselves appropriately while on College property or in an online environment. The instructor would institute established HCCS disciplinary action. Students who pose a threat to the safety of others will be subject to immediate withdrawal from the classroom. Please refer to the HCC Student Handbook.

**COMPUTER VIRUS PROTECTION**

Computer viruses are, unfortunately, a fact of life. Using removable devices on more than one computer creates the possibility of infecting computers and diskettes with a computer virus. This exposes the computers of the college, your personal computer, and any others you may be using to potentially damaging viruses. The college has aggressive anti-virus procedures in place to protect its computers, but cannot guarantee that a virus might not temporarily infect one of its machines. It is your responsibility to protect all computers under your control and use and ensure that each diskette you use, whenever or wherever you use it, has been scanned with anti-virus software. Since new viruses arise continually, your anti-virus software must be kept current. And, since no anti-virus software will find every virus, keeping backup copies is extremely important.

**EQUAL OPPORTUNITY STATEMENT**

It is the policy of the HCCS to provide equal employment, admission and educational opportunities without regard to race, color, creed, national origin, gender, age, veteran's status, sexual orientation, or disability.

**FERPA**

The academic, financial and non-directory information on your student account is confidential and protected by the Family Educational Rights & Privacy Act (FERPA). We cannot release certain information to another person without your written authorization. Further information regarding Student Records and FERPA can be found at; http://www.hccs.edu/district/about-us/procedures/student-rights-policies--procedures/

**HCC Policy Statement: Sexual Misconduct**

Houston Community College is committed to cultivating an environment free from inappropriate conduct of a sexual or gender-based nature including sex discrimination, sexual assault, sexual harassment, and sexual violence.  Sex discrimination includes all forms of sexual and gender-based misconduct and violates an individual’s fundamental rights and personal dignity.  Title IX prohibits discrimination on the basis of sex-including pregnancy and parental status-in educational programs and activities.  If you require an accommodation due to pregnancy please contact an Abilities Services Counselor.  The Director of EEO/Compliance is designated as the Title IX Coordinator and Section 504 Coordinator.  All inquiries concerning HCC policies, compliance with applicable laws, statutes, and regulations (such as Title VI, Title IX, and Section 504), and complaints may be directed to:

David Cross, Director EEO/Compliance Office of Institutional Equity & Diversity 3100 Main (713)718-8271 Houston, TX 77266-7517 or Institutional.Equity@hccs.edu

**HCC Online and/or Continuing Education Policies**

All students are responsible for reading and understanding the HCC Online Student Handbook, which contains policies, information about conduct, and other important information. For the HCC Online Student Handbook click on the link below or go to the HCC Online page on the HCC website.

The HCC Online Student Handbook contains policies and procedures unique to the online student. Students should have reviewed the handbook as part of the mandatory orientation. It is the student's responsibility to be familiar with the handbook's contents. The handbook contains valuable information, answers, and resources, such as HCC Online contacts, policies and procedures (how to drop, attendance requirements, etc.), student services (ADA, financial aid, degree planning, etc.), course information, testing procedures, technical support, and academic calendars. Refer to the HCC Online Student Handbook by visiting this link:

<http://www.hccs.edu/media/houston-community-college/distance-education/student-services/HCC-Online-Student-Handbook.pdf>

Access CE Policies on their Web site:

<http://www.hccs.edu/continuing-education/>

**HCC Campus Carry**

At HCC the safety of our students, staff, and faculty is our first priority. As of August 1, 2017, Houston Community College is subject to the Campus Carry Law (SB11 2015). For more information, visit the HCC Campus Carry web page at <http://www.hccs.edu/district/departments/police/campus-carry/>

**FINAL EXAMINATIONS**

A final evaluation activity will occur during the published final evaluation period. The appropriate dean, director, or department chair must approve any variation to this schedule.

***DISCLAIMER:*** *It is your responsibility to read the syllabus in its entirety by the second class period and contact the Instructor if you have any questions and/or need clarifications.*

**I. Laboratory Safety Procedures for All Biology Laboratories**

**A. GENERAL**

1. Work carefully and cautiously in the laboratory, using common sense and good judgment at all times.

2. EATING. DRINKING AND SMOKING ARE PROHIBITED in the laboratory and in the laboratory space of a combined lecture/laboratory room.

3. Long hair must be tied back during laboratory sessions.

4. Open toed shoes are prohibited.

5. Identify the location of all exits from the laboratory and from the building.

6. Be familiar with the location and proper use of fire extinguishers, fire blankets, first aid kits, spill response kits, and eye wash stations in each laboratory.

7. Report all injuries, spills, breakage of glass or other items, unsafe conditions, and accidents of any kind, no matter how minor, to the instructor immediately.

8. Keep sinks free of paper or any debris that could interfere with drainage.

9. Lab tables must be clear of all items that are not necessary for the lab exercise.

10. Wash hands and the lab tables with the appropriate cleaning agents before and after every laboratory session.

**B. OPEN FLAMES - FIRE HAZARD**

1. Identify and be familiar with the use of dry chemical fire extinguishers that are located in the hallways and laboratory rooms.

2. Flames are only to be used under the supervision of the instructor.

**C. SHARP OBJECTS AND BROKEN GLASS**

1. Pointed dissection probes, scalpels, razor blades, scissors, and microtome knives must be used with great care, and placed in a safe position when not in use.

2. Containers designated for the disposal of sharps (scalpel blades, razor blades, needles; dissection pins, etc.) and containers designated for broken glass are present in each laboratory. Never dispose of any sharp object in the regular trash containers.

3. Report all cuts, no matter how minor, to the instructor.

4. Do not touch broken glass with bare hands. Put on gloves and use a broom and dustpan to clean up glass. Dispose of ALL broken glass in the specific container marked for glass. Do not place broken glass in the regular trash.

5. When cutting with a scalpel or other sharp instrument, forceps may be used to help hold the specimen. Never use fingers to hold a part of the specimen while cutting.

6. Scalpels and other sharp instruments are only to be used to make cuts in the specimen, never as a probe or a pointer.

**D. INSTRUMENTS AND EQUIPMENT**

Care must be used when handling any equipment in the laboratory. Students are responsible for being familiar with and following correct safety practices for all instruments and equipment used in the laboratory.

***Microscope Handling***

1. Microscopes must be carried upright, with one hand supporting the arm of the microscope and the other hand supporting the base. Nothing else should be carried at the same time.

2. Microscope must be positioned safely on the table, NOT near the edge.

3. After plugging the microscope into the electrical outlet, the cord should be draped carefully up onto the table and never allowed to dangle dangerously to the floor.

4. The coarse adjustment must NEVER be used to focus a specimen when the 40x or oil immersion lens is in place.

5. When finished with the microscope, the cord should be carefully wrapped around the microscope before returning it to the cabinet.

6. The microscope must be placed upright and in the appropriate numbered slot in the cabinet.

7. All prepared microscope glass slides are to be returned to their appropriate slide trays; wet mount preparations are to be disposed of properly.

8. Malfunctioning microscopes should be reported to the instructor.

**E. PRESERVED SPECIMENS**

1. Gloves (latex and no latex) are mandatory when handling preserved specimens.

2. When larger specimens are being dissected, the part of the specimen that is not being dissected should be kept enclosed in the plastic bag.

3. When dissecting smaller specimens, seal the bag after removing the specimen, so as to confine the preservative in the specimen bag.

4. Notify the instructor if there is a spill of preservative.

5. Body parts or scraps of the specimen are NOT to be disposed of in the sink.

6. Dispose of dissecting pins or other sharp objects in the red sharps containers, NOT in the regular trash.

7. Specimens are to be clearly labeled and stored in designated containers or cabinets when not in use.

8. Follow the directions of the instructor concerning the proper disposal of preserved specimens after they are finished being used.