



Division of Earth, Life & Natural Sciences
Biology Department

<https://www.hccs.edu/programs/areas-of-study/science-technology-engineering--math/biology/>

**BIOL 2320: Microbiology for Health Science Majors
| Online Lecture | CRN# 22739**

Spring 2021 | 16 weeks: Regular term

Mode of instruction: WS (synchronous online) | Mon/Wed 2PM-3:20PM

3 Credit Hours | 48 hours per semester

Instructor Contact Information

Instructor:	Cassidy Johnson, Ph.D.	Office Phone:	713-718-2367
Office:	Angela Morales, Room 101	Office Hours:	see Cisco Webex sched.
HCC Email:	cassidy.johnson@hccs.edu	Office Location:	Southeast Campus

Please feel free to contact me concerning any problems that you are experiencing in this course. Your performance in my class is very important to me. I am available to hear the concerns and just to discuss course topics.

Instructor's Preferred Method of Contact

My HCC Email address is my preferred method of contact. Please contact me using the mail function in Canvas so. I will respond to emails within 24-48 hours Monday through Friday; I will reply to weekend messages during the following week.

What's Exciting About This Course

In this course you will gain an understanding of the major historical events in microbiology and their impact on medical science. You will learn basic cell structure, biochemistry, metabolism, nutrition, reproduction, and genetics of microorganisms, with an emphasis on bacteria and their medical significance.

We will compare and contrast the various types of pathogenic microorganisms, including bacteria, fungi, viruses, protists, and helminths, with an emphasis on their medical significance, describe various means of microbial control, both in vivo and in vitro. You

will demonstrate knowledge of the basic principles of epidemiology and the basic principles of immunology. You will discover the basics of biotechnology and genetic engineering, providing you with an understanding of the importance of molecular methods in the construction of microbial products for scientific, medical and industrial uses. Finally, we will compare and contrast the mechanisms of transmission, entry, pathogenesis and prophylaxis of selected human pathogens.

The information in this course will enable you to understand microorganisms as well as helping you develop new habits to increase your personal success.

My Personal Welcome

Hello, students! Welcome to Microbiology 2320. I am so excited to work with you this term and assist you in achieving your educational goals. I truly look forward to our class and getting to know each of you. I realize that many of you may be apprehensive of the online learning modality. I would rather be in the classroom too; however, being online is the right thing to do for our personal safety and for the safety of our friends, family, and community. I have designed this course to be as flexible as possible and will work with you throughout the semester to make adjustments as needed. Dedication, grit, perseverance, and kindness will not only get us through this class, but it will also help us through this difficult time in our society.

Prerequisites and/or Co-Requisites

Biology 1306/1106, or equivalent, is strongly recommended for this course!!! We require college-level reading (or take GUST 0342) and college-level writing (or take ENGL 0310/0349).

This is a NON-MAJORS level microbiology offering!! While acceptable for most nursing and allied health schools, this course may not transfer to certain healthcare related professional program schools. The student is advised to check with these schools regarding the acceptability of BIOL. 2320 before completing this course.

Please carefully read the repeater policy in the [HCCS Student Handbook](#).

Canvas Learning Management System

All Biology sections utilize Canvas (<https://eagleonline.hccs.edu>) to supplement in-class assignments, exams, and activities.

Open Lab Locations

[HCCS Open Computer Lab locations](#) may be used to access the Internet and Canvas. **USE FIREFOX OR CHROME AS THE INTERNET BROWSER.**

HCC Online Information and Policies

For online/hybrid students. As an online/hybrid student, you are responsible for all information/requirements provided by the online college. Here is the link to information

about HCC Online classes <http://www.hccs.edu/online/>. This includes the mandatory online course prior to start of class.

Scoring Rubrics, Sample Assignments, etc.

When applicable, look in Canvas for the scoring rubrics for assignments, samples of class assignments, and other information to assist you in the course.

<https://eagleonline.hccs.edu/login/ldap>

Instructional Materials

Required Resources

The textbook listed below is **required** for this course. However, it is FREE and will be provided to you in Canvas. You can also download the book from the following website:

<https://openstax.org/details/books/microbiology>

Microbiology from OpenStax

Publishers ISBN ISBN 1-947172-23-9

Required Material:

Do not purchase a book or access code for this course. The book I am using is an Open Educational Resource and is FREE. Access to download the PDF for the book is in Canvas and I will provide links to all of the required readings. You CAN buy a hard copy of this book if you like from Amazon for \$25(used) or \$50 (new).

Suggested Resources



HCCS Biology Lab Study Pages to help with micro lab
[Click here to access Biology lab study pages online.](#)

Tutoring

HCC provides free, confidential, and convenient academic support, including writing critiques, to HCC students in an online environment and on campus. Tutoring is provided by HCC personnel in order to ensure that it is contextual and appropriate. Visit the [HCC Tutoring Services](#) website for services provided.

Libraries

The HCC Library System consists of 9 libraries and 6 Electronic Resource Centers (ERCs) that are inviting places to study and collaborate on projects. Librarians are available both at the libraries and online to show you how to locate and use the resources you need. The libraries maintain a large selection of electronic resources as well as collections of books, magazines, newspapers, and audiovisual materials. The portal to all libraries' resources and services is the HCCS library web page at <http://library.hccs.edu>.

Supplementary Instruction

Supplemental Instruction is an academic enrichment and support program that uses peer-assisted study sessions to improve student retention and success in historically difficult courses. Peer Support is provided by students who have already succeeded in completion of the specified course, and who earned a grade of A or B. Find details at <http://www.hccs.edu/resources-for/current-students/supplemental-instruction/>.

Course Overview

This course covers basic microbiology and immunology and is primarily directed at pre-nursing, pre-allied health, and non-science majors. It provides an introduction to historical concepts of the nature of microorganisms, microbial diversity, the importance of microorganisms and acellular agents in the biosphere, and their roles in human and animal diseases. Major topics include bacterial structure as well as growth, physiology, genetics, and biochemistry of microorganisms. Emphasis is on medical microbiology, infectious diseases, and public health. Uses and techniques of biotechnology will be presented.

Core Curriculum Objectives (CCOs)

BIOL 2320 satisfies the Life and Physical Sciences requirement in the HCCS core curriculum. The HCC Biology Discipline Committee has specified that the course address the following core objectives:

- **Critical Thinking:** Students will demonstrate the ability to engage in inquiry and analysis, evaluation and synthesis of information, and creative thinking by completing a written assignment such as a book report, research paper, or essay.
- **Communication Skills:** Students will demonstrate effective development, interpretation and expression of ideas through written, oral, and visual communication by completing a written assignment such as a book report, research paper, or essay.
- **Quantitative and Empirical Literacy:** Students will demonstrate the ability to draw conclusions based on the systematic analysis of topics using observation, experiment, and/or numerical skills by completing textbook reading assignments, completing assignments, and answering questions on quizzes and exams that pertain to Course Student Learning Outcomes #2, #3, and #4 below.
- **Teamwork** – Students will demonstrate the ability to consider different points of view and to work effectively with others to support a shared purpose or goal by working together in study groups on and off campus to fulfill Course Student Learning Outcomes #3 and #4 below.

Program Student Learning Outcomes (PSLOs)

Can be found at:

<https://www.hccs.edu/programs/areas-of-study/science-technology-engineering--math/biology/>

Course Student Learning Outcomes (CSLOs)

Upon completion of BIOL 2320, the student will be able to:

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.

Learning Objectives

Learning Objectives for each CSLO can be found at:

<http://learning.hccs.edu/programs/biology/faculty-information/microbiology-instructor-information-non-majors-health-science-majors/program-instructional-plan-2320/view>

Student Success

Academic standards require a minimum of 3 study hours for every contact hour; meaning for a class that meets 3 hours per week, you need to budget and set aside a minimum of 9 hours each week to study and prep for your course success. Expect to spend at least twice as many hours per week outside of class as you do in class studying the course content. Additional time will be required for written assignments. The assignments provided will help you use your study hours wisely. Successful completion of this course requires a combination of the following:

- Reading the textbook
- Attending class in person and/or online
- Timely completion of assignments
- Participating in class activities
- Successful exam performance, including the mandatory final

There is no short cut for success in this course; it requires reading and studying the material using the course objectives as a guide.

Instructor and Student Responsibilities

As your Instructor, it is my responsibility to:

- Provide the grading scale and detailed grading formula explaining how student grades are to be derived
- Facilitate an effective learning environment through learner-centered instructional techniques
- Provide a description of any special projects or assignments
- Inform students of policies such as attendance, withdrawal, tardiness, and making up assignments
- Provide the course outline and class calendar that will include a description of any special projects or assignments
- Arrange to meet with individual students before and after class as required

As a student, it is your responsibility to:

- Attend class in person and/or online
- Participate actively by reviewing course material, interacting with classmates, and responding promptly in your communication with me
- Read and comprehend the textbook
- Complete the required assignments and exams
- Ask for help when there is a question or problem
- Keep copies of all paperwork, including this syllabus, handouts, and all assignments
- Attain a raw score of at least 50% on the departmental final exam
- Be aware of and comply with academic honesty policies in the HCCS Student Handbook

Assignments, Exams, and Activities

Reading Assignments using Perusall

We will be using the annotation tool, Perusall, to assist with our comprehension of the material this semester. Perusall is designed to help students get more out of their reading assignments and to also prepare them for a future professional training (nursing, PA school, etc.) or for a four-year institution. Reading comprehension and writing are the two most important skills essential to succeed in these advanced, educational programs. Students will navigate to the assigned reading for each module and will be tasked with annotating what they read. The annotations can be made in the form of questions, statements, or insights that each reader has about the material. Students can also answer other's questions. Essentially what is happening, is that the class is working together to understand each section of the textbook, which will significantly improve everyone's comprehension of the material. All of the annotations are evaluated and will earn students points in the class. Tips for making good annotations is posted in a separate page in Canvas.

Study guides

Each student will develop a study guide for the exam. The study guide will be evaluated for its thoroughness and organization. Students must write the study guide in their own words for full credit (cutting and pasting text from the book is not allowed and will be considered plagiarism, possibly resulting in a grade of 0). The study guide will be due before the exam so the student can take advantage of it to study.

Exams

This course is comprised of four major exams and one mandatory departmental exam. The unit exams are worth 60% of your grade and the final exam is worth 10%. I do not drop exams. Because this is a WS course, it has been mandated that the exams are given online through Canvas on a scheduled class day and will require the use of the LockDown Browser and a webcam. Each exams will be ~50-60 questions with a combination of multiple-choice, T/F, matching, short answer, and critical thinking/application questions. You will have the scheduled class time to take the exam. The exam will open when class starts, and promptly close when our normal class time ends. If you log in to take the exam late, you will only have the remaining time to finish.

Quizzes

A quiz will be given at the start of every class period, except for the days after exams. The quiz will cover the information discussed in the previous class. Before students go to Webex for the class meeting, they will first log in to Canvas to take the quiz. The quiz will open promptly at 11AM and will be timed for 5-7 minutes. After that time the quiz will close and students will then go to WebEx to join the class. Because of the quiz, class will begin at 2:10PM to give everyone enough time to complete the quiz and join the class session. **If you access the quiz late, you will only have the remaining time to take the quiz. If you miss class and miss the quiz, there is no make up quiz. If you are late and miss the quiz, there is no make up quiz.** I will be dropping one quiz over the course of the semester, which will either be your lowest grade or a missed quiz.

Final Exam

All students will be required to take a comprehensive departmental final exam consisting of 50 multiple-choice questions. The exam will be online and take place during finals week, time and day TBD.

Grading Formula

Assessment	% of grade
Exams (4 total)	60%
Class quizzes	5%
Reading assignments (Perusall)	20%
Study guide assignments	5%
Department final exam	10%
Total	100%

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
F = 59 and below	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)	IP 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.

Incomplete Policy:

In this course, the purposes of the “I” (incomplete) grade is for students who are caught up and passing at the student withdrawal deadline, and then have a medical or other problem that prevents them from completing the course. If you are not passing at the student withdrawal deadline, you should drop yourself from the course, or you will likely earn an “F.” An incomplete “I” grade will be given only if all of the following conditions are met:

- 🌐 You have earned at least 85% of the available points by the date that the “I” grade is requested.
- 🌐 You can provide documentation showing why you should earn an incomplete, such as a doctor's note, etc.
- 🌐 You must be passing with a grade of “C” or better.
- 🌐 You must request the incomplete in writing BEFORE 4/30/2021
- 🌐 In all cases, the instructor reserves the right to decline a student’s request to receive a grade of Incomplete.

HCC Grading Scale can be found on this site under Academic Information:
<http://www.hccs.edu/resources-for/current-students/student-handbook/>

Course Calendar

Dates	Major topics	Monday	Wednesday
1/18, 1/20	Introduction & history	NO CLASS - MLK day!	Introduction to the course; What are microorganisms?
1/25, 1/27	Prokaryotic microbes	[Quiz 1] Microbiology & the history of science	[Quiz 2] Prokaryotic cells
2/1, 2/3	Eukaryotic microbes	[Quiz 3] Prokaryotic diversity	[Quiz 4] Eukaryotic cells
2/8, 2/10	Acellular microbes; Microbiology tools	[Quiz 5] & Eukaryotic diversity (protozoans)	[Quiz 6] Acellular microbes
2/15, 2/17		NO CLASS - President's day!	Exam 1: Meet the microbes
2/22, 2/24	Microbial genetics	Microbes & history of genetics	[Quiz 7] Review of DNA & genomes
3/1, 3/3	Microbial genetics	[Quiz 8] Transcription & translation	[Quiz 9] Mutation
3/8, 3/10	Applications of microbial genetics	[Quiz 10] Genetic diversity in prokaryotes, inc. viral replication*	[Quiz 11] Biotechnology: Cloning
3/15, 3/17	SPRING BREAK	SPRING BREAK - NO CLASS	SPRING BREAK - NO CLASS
3/22, 3/24	Metabolism & growth parameters	[Quiz 12] Applications of genomics & review	Exam 2: Microbial Genetics
3/29, 3/31	Chemical control methods	Microbial metabolism & growth	[Quiz 13] Microbial metabolism & growth
4/5, 4/7	Antibiotic resistance	[Quiz 14] Physical and chemical methods of control	[Quiz 15] Chemical methods of control: Antibiotics
4/12, 4/14	Antibiotic resistance	[Quiz 16] Antibiotic resistance	Exam 3: Controlling microbial growth
4/19, 4/21	Immune defenses	Characteristics of infectious disease	[Quiz 17] Innate immunity
4/26, 4/28	Immune defenses	[Quiz 18] Innate & Adaptive immunity	[Quiz 19] Adaptive immunity
5/3, 5/5	Immune defenses	[Quiz 20] Adaptive immunity	Exam 4: Microbial disease & Immunity
5/10, 5/12	FINALS WEEK	NO CLASS	Dept. Final @ 2PM

Syllabus Modifications

The instructor reserves the right to modify the syllabus at any time during the semester and will promptly notify students in writing, typically by e-mail, of any such changes.

Instructor's Practices and Procedures

Missed Assignments

Missed quizzes: There are no makeups for the quizzes. I will drop two of your lowest scores, which will include a missed quiz. If you miss more than two quizzes, the third missed quiz will be a 0.

Missed exams: There are no make up exams unless you provide adequate documentation in regards to one of the following reasons:

- 1) Sudden illness or injury to yourself or to a family member for which you are the primary caregiver. You will need to provide me documentation from a doctor, etc.
- 2) Court date or other legal issue that must be resolved the day/time of the exam. I will also ask that you provide documentation. If the document has specifics in it that are private I will NOT require that you share those details, the header of the letter with the date is sufficient.

Please let me know via email as soon as you realize that you may not make the exam. You only have 1 week to take the makeup exam, and I will not let you take the makeup exam without required documentation of your absence. Also, for makeup exams, I will be virtually proctoring you through Webex.

If you acquire exam accommodations, please contact me the first week of the semester. I will need an accommodation form from Ability Services and will do my best to help make arrangements for you to take the exam according to your needs.

Late reading assignments: Late reading assignments will be accepted up to two days after the deadline; however, there will be point deductions for late work. There are no makeups for missed reading assignments unless it is due to one of the reasons documented above.

Academic Integrity

Scholastic Dishonesty will result in a referral to the Dean of Student Services. See the link below for details. Cheating on exams will result in a grade of 0 and I will be forced to report this activity on Maxient, which will go on your record.

Here's the link to the HCC information about academic integrity (Scholastic Dishonesty and Violation of Academic Scholastic Dishonesty and Grievance):

<http://www.hccs.edu/about-hcc/procedures/student-rights-policies--procedures/student-procedures/>

Attendance Procedures

This class is online; however, it is synchronous and therefore being taught as if it was an in-person class. If you miss class YOU ARE responsible for the missed material. If you miss a class quiz due to attendance, there is no makeup quiz. If you “arrive” late to class and miss the quiz, there is no makeup quiz. I do understand that things happen and you may miss a class or two or be late now and then, which is why I have built in two dropped quizzes. Please don't plan on missing class the day of a scheduled exam. I will only accept a few reasons for missing an exam (see above), and the makeup exam will be virtual “in-person.” Coming to class and interacting with me and your classmates is the best way to master the material. Please reach out to me if you have any issues participating on class days.

Student Conduct

I expect everyone in the class to help me build and maintain a respectful, safe, and open learning environment. We all come from different backgrounds and walks of life, and that is what makes college such a great experience! Students are expected to treat each other with respect and be open to differing opinions. Students who are disrespectful (name calling, overt rudeness, verbally or physically abusive, sending inappropriate emails or messages) to anyone in the class will be asked to leave and will have a report filed on Maxient.

Instructor's Course-Specific Information (As Needed)

The course is designed with the most flexibility in mind for the online learning environment. The professor will post short, narrated videos over the course material that will be posted for students to watch in advance of class, or whenever it is convenient for them. The posted materials will be available all semester so students can review at any time and will be useful if the student needs to miss class. In addition, students will use the tool Perusall to read and collectively annotate the textbook material. The class will meet virtually, twice a week with the professor. During this time the professor will answer any questions, discuss difficult material and also lecture over the material as needed. Class time will also involve virtual, group assignments so students will have an opportunity to apply the material and work together. The reading assignments, study guide assignment and the collaborative assignments during the virtual class time are all designed to build a community of learners, which has been demonstrated to be critical to a successful, online learning experience.

nextLearning MOIs: THIS COURSE IS A WS COURSE

What does this mean?? The “Online on a Schedule (WS)” are virtual courses that students can take at the scheduled class time. Students never come to campus, but log into their class on the scheduled dates and times using our learning management system (Canvas). The students participate in the course as if they were going to a physical classroom on campus

[Biology Program Information](#)

The Biology area of study here at HCC covers the smallest and simplest organisms (microbiology) to the largest and most complex organisms (human anatomy and physiology, zoology, botany).

AWARD TYPES: Associate in Science

AREA OF STUDY: Science, Technology, Engineering & Math

Please visit link: <https://www.hccs.edu/programs/areas-of-study/science-technology-engineering--math/biology/>

HCC Policies

Here's the link to the HCC Student Handbook <http://www.hccs.edu/resources-for/current-students/student-handbook/> In it you will find information about the following:

- Academic Information
- Academic Support
- Attendance, Repeating Courses, and Withdrawal
- Career Planning and Job Search
- Childcare
- disAbility Support Services
- Electronic Devices
- Equal Educational Opportunity
- Financial Aid TV (FATV)
- General Student Complaints
- Grade of FX
- Incomplete Grades
- International Student Services
- Health Awareness
- Libraries/Bookstore
- Police Services & Campus Safety
- Student Life at HCC
- Student Rights and Responsibilities
- Student Services
- Testing
- Transfer Planning
- Veteran Services

EGLS³

The EGLS³(Evaluation for Greater Learning Student Survey System) will be available for most courses near the end of the term until finals start. This brief survey will give invaluable information to your faculty about their teaching. Results are anonymous and will be available to faculty and division chairs after the end of the term. EGLS³ surveys

are only available for the Fall and Spring semesters. EGLS3 surveys are not offered during the Summer semester due to logistical constraints.

<http://www.hccs.edu/resources-for/current-students/egls3-evaluate-your-professors/>

Campus Carry Link

Here's the link to the HCC information about Campus Carry:

<http://www.hccs.edu/departments/police/campus-carry/>

HCC Email Policy

When communicating via email, HCC requires students to communicate only through the HCC email system to protect your privacy. If you have not activated your HCC student email account, you can go [to HCC Eagle ID](#) and activate it now. You may also use Canvas Inbox to communicate.

Housing and Food Assistance for Students

Any student who faces challenges securing their foods or housing and believes this may affect their performance in the course is urged to contact the Dean of Students at their college for support. Furthermore, please notify the professor if you are comfortable in doing so.

This will enable HCC to provide any resources that HCC may possess.

Office of Institutional Equity

Use the link below to access the HCC Office of Institutional Equity, Inclusion, and Engagement(<http://www.hccs.edu/departments/institutional-equity/>)

disAbility Services

HCC strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including long and short term conditions, 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/support-services/disability-services/>

Title IX

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
<http://www.hccs.edu/departments/institutional-equity/title-ix-know-your-rights/>

Office of the Dean of Students

Contact the office of the Dean of Students to seek assistance in determining the correct complaint procedure to follow or to identify the appropriate academic dean or supervisor for informal resolution of complaints.

<https://www.hccs.edu/about-hcc/procedures/student-rights-policies--procedures/student-complaints/speak-with-the-dean-of-students/>

Department Chair Contact Information

Dr. DaeJan Grigsby

Email: daejan.grigsby@hccs.edu

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