



**Division of Earth, Life & Natural Sciences  
Biology Department**

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

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**BIOL 2320: Microbiology for Health Science Majors**

**In person | Lecture | CRN# 11617**

**Summer 2020 | 5 Weeks**

**Online**

**3 Credit Hours**

**Instructor Contact Information**

Instructor:	Dr. N. Hebel, DDS	Office Phone:	713-718-5844
Office:	Spring Branch, Suite 900P	Office Hours:	Virtual (TBA)
HCC Email:	<a href="mailto:nazanin.hebel@hccs.edu">nazanin.hebel@hccs.edu</a>	Office Location:	Spring Branch

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**

**Via Email: [nazanin.hebel@hccs.edu](mailto:nazanin.hebel@hccs.edu) (Please use your HCC Student Email account or CANVAS Inbox to message me).**

**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**

Welcome to Microbiology — I'm delighted that you have chosen this course! I am very passionate about the world of Microbiology, and I can hardly wait to pass that knowledge and passion on. I will present the information in the most exciting way I know, so that you can grasp the concepts and apply them now and hopefully throughout your life. This course is not an easy one, but you can make it easier if you study from day one of the semester than wait for the 11th hour.

As you read and wrestle with new ideas and facts that may challenge you, I am available to support you. The fastest way to reach me is by my HCC email. The best way to really discuss issues is in person and I'm available to tackle the questions. My goal is for you to walk out of the course with a better understanding of yourself and of human behavior. So please visit me or contact me by email whenever you have a question.

## **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



**OpenStax (free download)**

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

**Study Guide with optional Review Questions for Bonus Points:**

<https://app.tophat.com/e/233249>

## Other Instructional Resources

### 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**

### **Written Assignment**

**Online CANVAS quizzes & assignments (10%)**

### **Exams**

**5 (lowest one dropped) Lecture exams (80%)- All exams will be on CANVAS using Respondus Lockdown Browser AND Webcam Monitor (a Webcam is REQUIRED for this course).**

### **In-Class Activities**

**In-class or Online activities (extra credit) may be used periodically (at the discretion of the instructor) ... 10 bonus points maximum**

### **Final Exam**

**Departmental Comprehensive Final exam (Mandatory!!!) – (10%)**

### **Grading Formula**

<b>Grade</b>	<b>Total Points</b>
A (4 points per semester hour)	90 – 100%
B (3 points per semester hour)	80 – 89%
C (2 points per semester hour)	70 – 79%
D (1 point per semester hour)	60 – 69%
F (0 point per semester hour)	0 – 59%



**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.
- ✓ 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

### **TENTATIVE INSTRUCTIONAL OUTLINE:**

**This is a suggested study schedule. For exam dates, check the calendar!**

The Instructor reserves the right to change the instructional outline if needed. Students will be informed in a timely manner of any changes. The **Chapters** mentioned here, refer to the chapters in **my Study Guide (Top Hat)**. The OpenStax chapters are arranged in different sequences.

Units	Chapters	Assignments & Exams
1	Introduction/Syllabus Chapter 1 Chapter 2 Chapter 3	Quiz for Chapter 1 Quiz for Chapter 2 Quiz for Chapter 3  <b>LECTURE EXAM 1 (CH 1, 2, 3)</b>
2	Chapter 4 Chapter 5 Chapter 6	Quiz for Chapter 4 Quiz for Chapter 5 Quiz for Chapter 6  <b>LECTURE EXAM 2 (Ch 4, 5, 6)</b>
3	Chapters 7 and 8 Chapter 9 Chapter 10	Quiz for Chapter 7 Quiz for Chapter 8 Practice Quiz for Chapter 9 Practice Quiz for Chapter 10  <b>LECTURE EXAM 3 (Ch 7, 9, 10)</b>
4	Chapters 11 and 12 Chapter 13	Practice Quiz for Chapter 11 Practice Quiz for Chapter 12 Practice Quiz for Chapter 13  <b>LECTURE EXAM 4 (Ch 11, 12, 13)</b>
5	Chapter 14 Chapter 15 Chapter 16	Practice Quiz for Chapter 14 Practice Quiz for Chapter 15 Practice Quiz for Chapter 16  <b>LECTURE EXAM 5 (Ch 14, 15, 16)</b>  AND  <b>MANDATORY FINAL COMPREHENSIVE EXAM</b> Review will be provided

## **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**

Makeup Exam:

1. Is only allowed for emergencies.
  2. Requires documentation of the emergency (signed and/or notarized).
  3. Has to be taken in person (my office) during my office hours.
  3. May be accompanied by a late-work penalty.
  4. Is not a retake. That is, make-up exams are allowed only for missed exams.
- The Instructor DOES NOT have to announce/tell you of upcoming assignments in person. This is a college course and you have to keep yourself informed by keeping up with your canvas. All assignments and quizzes will be posted with dates and the dates will be updated as the semester goes on. It is your responsibility to keep up.

### **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 student who violates the standards of academic integrity.

Scholastic Dishonesty will result in a referral to the Dean of Student Services. See the link below for details.

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

You are expected to attend all lecture classes and labs regularly. 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.

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.

\* Although this is an online course, your attendance in the virtual classroom is mandatory. This is to avoid administrative withdrawal from the class. You will be withdrawn from the course if you have NEVER logged in to the Eagle Online course at least once before the census date.

## Student Conduct

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.

## Instructor's Course-Specific Information (As Needed)

When you access the Canvas course, please always check the **Professor Announcements** forum link – the most up-to-date info will be posted there, and you are responsible for it. We will communicate through the Professor Announcements on the Canvas course system, and by using the "Inbox" email feature found there. Email inquiries will be checked and answered once daily or maximum within 48 hours of the email; however,

**I do not check email on Saturdays or Sundays – any emails generated on the weekend have no guarantee that they will be checked before Monday.**

It might be normal that I only answer emails once daily – so, please be patient. If your email has a question that pertains to the entire class, the reply will be sent as an announcement through canvas for the whole class to benefit from the answer.

**NOTE: In every email sent to me, please include your CRN number!!!**

All exams/quizzes will be graded, and scores given within a week of the exam date. Instructor will provide students with opportunity to review and discuss their exams.

## Helpful Tips

**Success in this course depends solely on the individual student!**

The following are strongly recommended for each student:

- Read and understand all elements of the Syllabus, and Student handbooks.
- Give your professor both day / evening phone numbers and e-mail address.
- Read and comprehend the required chapters in the textbook prior to the exams.
- Successfully complete all requirements of this course as outlined in this document.

- Contact your professor if you have any questions regarding any element of the course you do not understand.
- HINT: Work hard from the beginning of the semester rather than playing a "catch-up game" during the second half of the semester.
- Student web sites of the publisher are excellent sources to review course content.
- Plan to attend review sessions to clarify your concerns about the course content.

## **Electronic Devices**

### **HCC Policy on recording devices:**

"Use of recording devices, including camera phones and tape recorders, is prohibited in classrooms, laboratories, faculty offices, and other locations where instruction, tutoring, or testing occurs. Students with disabilities who need to use a recording device as a reasonable accommodation should contact the Office for Students with Disabilities for information regarding reasonable accommodations."

### **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.

## **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

### **EGLS<sup>3</sup>**

The EGLS<sup>3</sup>(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. EGLS<sup>3</sup> 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](mailto: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](mailto:daejan.grigsby@hccs.edu)

Phone: 713-718-7775