North Central State College

MASTER SYLLABUS	2026-2027

A. Academic Division: Health Sciences

B. Discipline: Science

C. Course Number and Title: BIOL1550 Microbiology for Health Professionals

D. Assistant Dean: Dr. Jason Tucker, Ph.D.

E. Credit Hours: 3
Lecture: 2 hours
Laboratory: 2 hours

F. Prerequisites: None

G. Last Course/Curriculum Revision Date: Fall 2023 Origin date: 03/10/2011

H. Textbook(s) Title:

Open Education Resources (available for download or view)
BIOL 1550: Microbiology (2025) - OER Materials
- Author: Curated/Customized by J. DasGupta
- Copyright Year: 2025
- Edition: 1st
- ISBN:
- OER LINK: https://bio.libretexts.org/Courses/North_Central_State_College/BIOL_1550%3A_Microbiology_(2025)

I. Workbook(s) and/or Lab Manual: Course lab manual provided by instructor.

J. Course Description: This course is designed for allied health and nursing majors. It explores the major groups of microorganisms and the role they play in the environment and in disease. The host-parasite relationship, human immunity to disease, epidemiology, and the control of microorganisms are also addressed. Laboratory exercises provide the student with the basic techniques of microbial identification, microscopy, sterile technique, and basic infection control.

K. College-Wide Learning Outcomes

College-Wide Learning Outcomes	Assessments - - How it is met & When it is met
Communication – Written	
Communication – Speech	
Intercultural Knowledge and Competence	
Critical Thinking	
Information Literacy	
Quantitative Literacy	

L. Course Outcomes and Assessment Methods:

Upon successful completion of this course, the student shall:

Outcomes	Assessments – How it is met & When it is met
1. Identify the major historical figures and describe their contribution to the development of modern microbiology.	Lecture quizzes and exams the first third of the semester and end of the semester.
2. Identify the major characteristics of bacteria, including morphology, metabolism, and growth characteristics.	Lecture quizzes and exams the first third of the semester and end of the semester. Lab quizzes the first third of the semester.
3. Describe the major characteristics of the non-bacterial microbes including the Rickettsias, Chlamydias, Fungi, and Protozoa.	Lecture quizzes and exams the second third of the semester and end of the semester.
4. Identify the structure of viruses and describe the cycles of viral reproduction.	Lecture quizzes and exams the second third of the semester and end of the semester.
5. Describe patterns and dynamics by which disease spreads through a human population.	Lecture quizzes and exams the second third of the semester and end of the semester. Lab quiz last week of semester.
6. Identify common pathogens that cause disease in humans and describe some of the basic chemotherapeutic treatments for the disease.	Lecture quizzes and exams throughout the semester.
7. Describe the physical and chemical control methods for microorganisms.	Lecture quizzes and exams throughout the semester. Lab quizzes following Lab Exercises 10, 11, 13, and 14 (in Lab Content section).
8. Become acquainted with common staining and culture techniques used to study microorganisms in the laboratory.	Lab quizzes following Lab Exercises 4 - 8 (in Lab Content section).

M. Recommended Grading Scale:

NUMERIC	GRADE	POINTS	DEFINITION
93–100	A	4.00	Superior
90–92	A-	3.67	Superior
87–89	B+	3.33	Above Average
83–86	B	3.00	Above Average
80–82	B-	2.67	Above Average
77–79	C+	2.33	Average
73–76	C	2.00	Average
70-72	C-	1.67	Average
67–69	D+	1.33	Below Average
63-66	D	1.00	Below Average
60-62	D-	0.67	Below Average
00--59	F	0.00	Failure

N. College Procedures/Policies:

North Central State College believes that every student is a valued and equal member of the community.* Every student brings different experiences to the College, and all are important in enriching academic life and developing greater understanding and appreciation of one another. Therefore, NC State College creates an inclusive culture in which students feel comfortable sharing their experiences. Discrimination and prejudice have no place on the campus, and the College takes any complaint in this regard seriously. Students encountering aspects of the instruction that result in barriers to their sense of being included and respected should contact the instructor, assistant dean, or dean without fear of reprisal.

* *Inclusive of race, color, religion, gender, gender identity or expression, national origin (ancestry), military status (past, present or future), disability, age (40 years or older), status as a parent during pregnancy and immediately after the birth of a child, status as a parent of a young child, status as a foster parent, genetic information, or sexual orientation*

Important information regarding College Procedures and Policies can be found on the syllabus supplement located at https://ncstatecollege.edu/documents/President/PoliciesProcedures/PolicyManual/Final%20PDFs/14-081b.pdf

North Central State College

SYLLABUS ADDENDUM

Academic Division:	Health Sciences	**Discipline:**	Biology
Course Coordinator:	Jaydip Das Gupta Ph.D.		
Course Number:	BIOL-1550/BIOL -1550L	**Course Title:**	Microbiology for Health Professional
Semester / Session:	Fall 2026 (16 weeks)	**Start / End Date:**	8/17/2026 – 12/11/2026

Instructor Information

Name:	Jaydip Das Gupta Ph.D.	**Credentials:**	M.Sc, Ph.D.
Phone Number:	419-755-4872	**E-Mail Address:**	Jdasgupta@ncstatecollege.edu
Office Location:	HS 332	**Office Hours:**	See the course schedule

I. Topical Timeline (Subject to Change):

		BIOL 1550-911 (Monday 1pm - 2.50 pm) BIOL 1550-910 (Monday 4pm - 5.50 pm) BIOL 1550-920 (No set time)
Date	**Lecture**	**Topic**
17-Aug	1	Intro to Microbiology
24-Aug	2	Biochemistry basic
31-Aug	3	Introduction to prokaryotic cells
7th Sep		**Labor Day (No Class)**
		Lecture Exam 1 (In lab)
14-Sep	4	Introduction to Eukaryotic cells
21-Sep	5, 6	Fundamentals of Microbial growth
28-Sep	7	Microbial Metabolism
		Lecture Exam 2 (In lab)
5-Oct	8	Genetics
12-Oct		**Fall Break (No Class)**
19-Oct	9	Biotechnology
26-Oct	10	Virus and Prion
2-Nov	11	Antibiotics
		Lecture Exam 3 (In lab)
9-Nov	12, 13	Host microbe interaction
16-Nov	14, 15	Innate and Adaptive immunity
23-Nov	16	Respiratory and Digestive system infection
30-Nov	16	Rest of diseases
7-Dec		**Lecture Exam Comprehensive FINAL (In lab)**

BIOL 1550 Microbiology Lab schedule (Fall 2026) Room HS 317

BIOL 1550L-05 Lab meets on Monday 4.00 pm till 5.50 pm (Prof. Edlerbrock)
BIOL 1550L-04 Lab meets on Tuesday 3.30 pm till 5.20 pm (Dr. Das Gupta)
BIOL 1550L-03 Lab meets on Wednesday 1.00 pm till 2.50 pm (Dr. Das Gupta)
BIOL 1550L-30 Lab meets on Thursday 5.30 pm till 7.20 pm (Dr. Das Gupta)

(Schedule subject to change to accommodate all experiments and lecture exam)

Date	Topic
Aug 17	Introduction: Safety and Laboratory Guidelines Basic Growth Media Preparation (review) Common Aseptic Transfers and Inoculation Methods
Aug 24	Ubiquity of Microorganisms Colony Morphology Exercise Introduction to the Light Microscope
Aug 31	Gram staining of known organism
Sept 8	**Exam 1 (in-person),** Gram staining of unknown organism (Grading)
Sept 14	Endospore and Acid-fast staining method
Sept 21	Endospore and Acid-fast staining (Grading) Serial dilution introduction
Sept 28	Serial dilution experiment
Oct 5	**Exam 2 (in-person),** Serial dilution result analysis Differential test introduction Phenol Red Broth
Oct 12	**Fall break (No class)**
Oct 19	Starch Hydrolysis Urea Hydrolysis SIM Medium
Oct 26	Analysis of differential Test MacConkey Agar Eosin Methylene Blue Agar Blood agar test Anaerobic Jar
Nov 2	Evaluation of Disinfectants/Antiseptics Antimicrobial Susceptibility Test (Kirby-Bauer test)
Nov 9	**Exam 3 (in-person),** Differentiation of Gram Positive Cocci Mannitol Salt Agar Catalase Test

Nov 16 Result analysis of Gram positive Cocci experiment
Hand washing experiment

Nov 23 Quantitative Indirect ELISA experiment

Nov 30 Extra day and makeup experiment

Dec 7 **FINAL EXAM (in-person)**

There will be a few lab quizzes in class, the dates will be announced later based on the progress.

Upon successful completion of this course, the course outcome will be as follows:

Lecture Outcomes	Assessments – How it is met & When it is met
1. Identify four different macromolecules which make up a living cell.	Lecture, lab quizzes and exams throughout the semester.
2. Identify the major historical figures and describe their contribution to the development of modern microbiology.	Lecture, lab quizzes and exams throughout the semester.
3. Classify microorganisms and how they have adapted to and shaped our environment.	Lecture, lab quizzes and exams throughout the semester.
4. Compare and contrast how we visualize microorganisms using different types of microscopes.	Lecture, lab quizzes and exams throughout the semester.
5. Examine morphological and physiological characteristics of prokaryotes microorganisms and infectious particles.	Lecture, lab quizzes and exams throughout the semester.
6. Compare and contrast prokaryotic and eukaryotic microorganisms.	Lecture, lab quizzes and exams throughout the semester.
7. Explain the difference between bacteria and viruses, compare and contrast the life cycle of bacteria and viruses.	Lecture, lab quizzes and exams throughout the semester.
8. Describe the various methods of controlling the growth of microorganisms and the possible impact of improper use of antimicrobial agents.	Lecture, lab quizzes and exams throughout the semester.
9. Explain different steps of the microbial growth curve.	Lecture, lab quizzes and exams throughout the semester.
10. Explain how microbes acquire and process nutrients and convert them into energy and raw materials for cell growth and repair.	Lecture, lab quizzes and exams throughout the semester.
11. Explain the mechanisms of molecular genetics as it relates to microbial function.	Lecture, lab quizzes and exams throughout the semester.
12. Explain some of latest biotechnological trends and how we use it to identify unknown microorganisms with reference to PCR, microarray etc.	Lecture, lab quizzes and exams throughout the semester.
13. Explain the mode of action of different types of antibiotics and impact of antibiotic resistance in microorganisms.	Lecture, lab quizzes and exams throughout the semester.
14. Describe the microbial mechanisms of pathogenicity.	Lecture, lab quizzes and exams throughout the semester.

15. Compare and contrast innate (nonspecific) host defenses and adaptive (specific) host defenses of the human body to protect against infectious diseases.	Lecture, lab quizzes and exams throughout the semester.
16. Describe, discuss and classify select diseases caused by prokaryotic, eukaryotic organisms and infectious particles.	Lecture, lab quizzes and exams throughout the semester.

II. Course Assignments:

1. Quizzes
2. Tests
3. Skills Testing
4. Independent Studies
5. Homework

III. Grading and Testing Guidelines:

The overall class grade will be determined as follows:

Lecture and lab attendance: 5%
Lecture quizzes and exam: 65%
Lab quizzes: 30%

Total grade: 100%

Note: Both lecture and lab attendances are mandatory. After three consecutive absences, I have the authority to report to the Dean/Assistant Dean and administrative withdraw from the course*

IV. Examination Policy:

Lecture Quizzes: There will be lot of quizzes given throughout the semester. There will be about 10 questions. Quizzes CANNOT be taken after the due date/time. If you miss a quiz, you will be graded zero for that quiz. The quiz may be online or in-person which will be determined later during the semester.

Lab Quizzes: There will be few lab exams. The dates will be announced based on the pace of the lab experiments.

Lecture exam: There will be four (4) exams as mentioned. Each exam points will be announced later since this is a new format. The questions will be a combination of multiple choice, matching, fill in the blanks or any combination. **Exams will be in-person** during the lab. The time frame of the exam will be mentioned later. Exams CANNOT be taken after the due date/time. If you miss an exam, I have the authority to put zero for that missing exam. It is YOUR responsibility to take the exam on time!

The reasons why a student will be excused from taking an examination:

a. Hospitalization (with documented verification)
b. Death in the immediate family (with documented verification)
c. Personal illness or illness in immediate family - (doctor's excuse required).
d. Missing exam/quiz for vacation/fun will absolutely not be excused by any means. I have the full authority to grade zero.

***** If you miss any quiz/exam, you have to contact Assistant Dean Dr. Jason Tucker (JTucker@ncstatecollege.edu) or our Dean Leesa Cox (LCox@ncstatecollege.edu) for**

authorization. Without either of their permission, I have absolutely no authority to grant access to the missing exam.

V. Class Attendance/Assignments and Make-Up Policy:

The lecture will be via Zoom and attendance is mandatory. The laboratory will be in-person. The Zoom links for the lectures will be under the Zoom folder. The attendance will be recorded every time. After three consecutive absences, the instructor has the full authority to withdraw the student and report to the Dean. The instructor needs to be notified as soon as possible if a student needs to miss lecture/lab or will be unable to turn in an assignment on time. Excuses/Extensions (for illness, family emergencies, etc.) can be made on a case-by-case basis, but are granted very rarely and are not guaranteed.

Every student should have their camera on during the entire Zoom lecture session. I have the authority to mark you absent for camera off during the session.

VI. Classroom Expectations:

All communications & conduct in this course is subject to the NC State Student Code of Conduct
General Professionalism Expectations
In general, as a future professional in your field, **you will be expected to conduct yourself as a professional in this course in ALL communications** - assignments, discussion forums, Canvas Inbox, emails etc.
This expectation includes *but is not limited to*:

- **Being respectful of classmates' opinions, work and comments**
  Good test = Is this something I would/should say to a co-worker in person?
- **Being respectful in communications with the instructor**
  Good test = Is this something I would/should say to my boss in the workplace?
- **Being respectful of diversity**
  Good test = Is this a comment/joke that is at some other groups, ethnicity, political etc. expense?
  Note: Offensive "jokes", slurs or hate speech will NOT be tolerated
    - **This will immediately escalate to a second level offense if it occurs.**
- **Using Non-Profane, Appropriate Language**
  Good test = Is this language you would use in the workplace or in front of your grandmother?
- **Using proper. NON-"Text speak" Language to make Yourself Easily Understood**
  Good test = Could my older boss understand what I have written?

Consequences for Failure to Meet These Expectations
Failure to meet these standards will result in the following consequences in this course:
1st Level=
Written warning from the instructor documenting issue
(No points deductions)
2nd Level=
Mandatory meeting with the instructor and or Department Chair or Division Dean
(Related assignment/Participation subject to Point Deductions)
3rd Level=
College Disciplinary procedures filed with the NC State Judicial Committee as a violation of the NCSC Student Code of Conduct (Links to an external site.).
(Course Grade subject to F)
NOTE: For an extreme single incident of disruptive unprofessional behavior I reserve the right to go directly to initiating college disciplinary procedures
NCSC Disciplinary hearings can result in a variety of consequences, including and up to suspension or being expelled from the college.
Resources:

- University Etiquette 101: How to Deal with Your Professors (Links to an external site.)
- Email Etiquette for Students