COURSE SYLLABUS FOR BIOL 2421 (MAJORS MICROBIOLOGY)

COLLEGE

Dallas County Community College District, North Lake College Central Campus, 5001 North MacArthur Boulevard, Irving, Texas 75063

DEPARTMENT

Math and Science, P 330.
Telephone: 972-272 3500.
Office hours: Monday- Thursday, 8:00 am – 6:00 pm, Friday, 8:00 am – 4.30 pm.

Summer 2019

This course syllabus is intended as a set of guidelines for Microbiology. Both North Lake College and your instructor reserve the right to make modifications in content, schedule, and requirements as necessary to promote the best education possible within prevailing conditions affecting this course.

INSTRUCTOR INFORMATION

Instructor: Henry Su
Email: hsu@dcccd.edu
Office Phone No.: 927-273-3513
Office Location: C303G
Office Hours*: MTWR, 9:00 am - 9:45 am; 11.15 am – 12.00; Fridays, 9:45 am – 12:00 noon.

*Note: Office hours are subject to change).

COURSE INFORMATION

Course title: Microbiology for Majors
Course number: Biol 2421
Section number: 74111
Credit hours: 4
Class meeting times: Lectures on Mondays to Thursdays from 9:45 am to 11:15 am and Laboratory on Mondays to Thursdays at 12:00 am to 02:10 pm.

Course description:

A study of the morphology, physiology, and taxonomy of representative groups of pathogenic and non-pathogenic organisms. Emphasis is placed on relationships that influence humans: public health, infectious diseases, and immunology, biotechnology, and environmental and industrial applications. Lab experimentation with pure cultures and selected media will be used to study extensively the medical, environmental, and industrial importance of these microbes. Designed for students in science or pre-professional programs.

Course prerequisites: Biology 1406, Biology 1407, Chemistry 1411

REQUIRED OR RECOMMENDED TEXTBOOKS AND MATERIALS

Required Textbooks


Lab Manuals

Microbiology, Laboratory Workbook for BIOL2420/2421” (Summer 2019 Edition) by Henry Su.

Lab Coat

Must be worn when performing lab experiments.

COURSE OBJECTIVES

This 4-credit hour basic study of microorganism is designed for students with health-related majors or interest in health issues. Students will be introduced to the structure and properties of the different types of microbes (including bacteria, fungi, protozoa, algae and viruses) and their impact in our lives: from maintaining our planet’s environment, role in creating useful products, to causing human diseases. Major emphasis will be placed on discussions on the interaction of microorganisms with human hosts in disease involving topics such as microbial pathogenesis, role of human immune defense system and methods of microbial control.
The topics will be presented in the form of lectures & laboratory exercises. The laboratory exercises will also emphasize the basic skills in the manipulation of microorganisms in scientific studies.

SPECIFIC COURSE LEARNING OUTCOMES

Students should

1. Be able to explain how the basic types of microbes in this field of study are put together and how they carry out the basic chemical reactions to support their reproduction and other energy needs.

2. Be able to communicate how the genetic material, nucleic acids, controls the reactions of living organisms.

3. Be able to explain the functioning of the immune system and how they control invading microbes.

4. Be able to explain the strategies pathogenic microbes use to cause some common diseases.

5. Acquire basic safety skills and awareness in conducting simple laboratory experiments involving the culture of microbes. Pass the “Sterile Techniques” competency.

6. Applying scientific methods, techniques, and critical thinking skills to independently solve bacterial identification puzzle.

THECB Learning Outcomes

Upon successful completion of this course, students will:

1. Provide examples of the impact of microorganisms on agriculture environment, ecosystem, energy, and human health, including biofilms.

2. Identify unique structures, capabilities, and genetic information flow of microorganisms.

3. Compare the life cycles and structures of different types of viruses.

4. Discuss how microscopy has revealed the structure and function of microorganisms.

5. Give examples of the range of metabolic diversity exhibited by microorganisms, impact of metabolic characteristics on growth, and control of growth.
6. Describe evidence for the evolution of cells, organelles, and major metabolic pathways

7. from early prokaryotes and how phylogenetic trees reflect evolutionary relationships.

8. Apply scientific reasoning to investigate questions and utilize scientific tools such as microscopes and laboratory equipment to collect and analyze data.

9. Use critical thinking and scientific problem-solving to make informed decisions in the laboratory.

10. Communicate effectively the results of scientific investigations.

11. Describe the causes and consequences of mutations on microbial evolution and the generation of diversity as well as human impacts on adaptation.

12. Classify interactions of microorganisms on human and non-human hosts as neutral, detrimental, or beneficial.

LECTURE COURSE OUTLINE

Unit 1

1. Introduction to Microbiology and Syllabus

2. Molecule of Life

3. Cell structure: Prokaryotic and Eukaryotic cells

4. Cellular Metabolism: energy production

Unit 2

5. Genetics: Replication and Gene Expression

6. Genetic Change and Evolution

7. Biotechnology

8. Immune Defense: Specific and Non-specific immune responses

Unit 3

9. Antimicrobial Drugs and Drug resistance
10. Principles of Disease and Pathogenicity

11. Bacterial Diseases

Unit 4

12. Fungal and Algae Diseases

13. Viruses

14. Viral Diseases

(Note: Exams will be given after each Unit covered)

LABORATORY COURSE OUTLINE

Practical 1

1. Lab Introduction and General Safety Procedures Microbiology.

2. Microscopy studies of Microbes.

3. Preparation of Microbial Samples for Observation: Simple Stain and Hanging Drop.


5. Spore and Capsule Staining.

6. Cultural Medium and Contamination.

7. Pure Culture Techniques and Culture Maintenance.


10. Control of Microbes with Chemicals: Antiseptics, Disinfectants, Antimicrobial Drugs.

Practical 2

11. DNA Manipulations.


13. Fungi.
15. Microbiology of Water.
16. Microbiology of Food.
17. Studies of Physiological/Biochemical Characteristics of Bacteria.
18. Discussion of Unknown Project.
19. Performance of the Unknown Project
(Note: Schedule is subject to change by the instructor).

MEANS OF ASSESSMENT OF COURSE LEARNING OUTCOMES

1. Written Exams: Mostly Short answers* and Multiple choice.
2. In-class Practical tests: Performance of Experiments and written tests.
3. Research on Topics in Microbiology (Extra Credit).
4. Evaluation of Lab Book Record Keeping and Participation in Class (including attendance).
5. Written Report on Individual Lab Experiment (“Unknowns”).

* Note: Grades will be posted on eCampus when done. Short answer tests may take more than a week to be graded.

EVALUATION PROCEDURES

Exams and Assignments

1. Four lecture and 2 laboratory exams will be given. Exams will be on materials covered in the lectures as well as on the appropriate topics in the texts.
2. After the learning of laboratory methods, students will perform a lab “Unknowns”. Students will have to pass a “Sterile Techniques Test” given mid-semester before receiving samples with the “Unknowns” project to continue. Details of the Unknowns project will be given during the semester.
3. Extra credit worth 20 points of your grade can be earned by keeping a "journal" on diseases or medical advances in the field of Microbiology reported in the news media or current magazines (including on-line) during the semester (total of 12). Each journal
article must be accompanied by your summary of the article. Photocopies of the original articles, reference(s) for the sources of the information should also be included. These are due by June 27th, 2019.

Detailed Grade breakdown: Out of 1000 Points

Lecture exam 1 (Testing Center) =170
Lecture exam 2 (Testing Center) =180
Lecture exam 3 (Testing Center) =180
Lecture exam 4 (In-class) =180
Unknowns =50
Participation =20
Practical exam 1 =110
Practical exam 2 =110

Grading Scale

A = 900 and above, B = 800 to 899, C = 700 to 799, D = 600 to 699, F = 599 and below.

(Grades are not open for negotiations!!!)

DISCIPLINE/ COURSE/ DEPARTMENT/POLICIES

Late Paper/Test (Assignment) Policy:

All tests need to be taken by test deadline (to be announced). A 10% deduction will be automatically assessed for late Test/Paper. No Test/Paper will be accepted 1 week past the deadline.

Student Responsibilities:

1. Successful performance in all tests, quizzes and lab practicals. Test coverage includes lecture materials as well as information in the assigned chapters.

2. Punctual and full attendance of all classes. Rewrite your notes and reorganize them with understanding with the help of your text after each class. Read ahead of each class.

3. Completion of all reading assignments before each class period. Don’t wait for the last moment to study for the exam. It is not possible to learn this material in a short time. If you have difficult understanding concepts get help (e.g. from me &/or tutors) as soon as possible.
4. Active participation in class exercises. This is especially true for lab exercises that are designed to be “hands-on”.

5. The successful identification of an unknown sample of bacteria and completion of a report on the assignment.

6. Take responsibility for your education.

Classroom Etiquette:

You are expected to focus on learning in this college class. Disruptive behavior (behavior or activity that affect the learning/teaching of the class, such as uncalled-for talking, teasing or harassment of other students) will not be tolerated. Disrespectful or Disruptive students will be dismissed from the class. Use of **cell-phones** or **pagers** are prohibited in the class. Turn the ringers off.

INSTITUTIONAL POLICIES

Refer to North Lake College Institutional Policies at:

ACADEMIC DISHONESTY

The Student Code of Conduct prohibits academic dishonesty and prescribes penalties for violations. According to this code, which is printed in the college catalog, "academic dishonesty", includes (but is not limited to) cheating, fabrication, facilitating academic dishonesty, plagiarism, and collusion".

1) The Vice-President of Academic & Student Affairs may initiate disciplinary proceedings against a student accused of academic dishonesty.

2) Academic dishonesty includes, but is not limited to, cheating on a test, plagiarism and collusion.

3) Cheating on a test includes:

   a) Copying from another student’s test paper;

   b) Using, during a test, materials not authorized by the person giving the test;

   c) Collaborating with another student during a test without permission to do so;

   d) Knowingly using, buying, selling, stealing, transporting, or soliciting in whole or part the contents of an un-administered test.
e) Substituting for another student, or permitting another student to substitute for you to take a test; and

f) Bribing another person to obtain an unadministered test or information about an unadministered test.

4) “Plagiarism” means the appropriation of another’s work (ideas and/or words) and the unacknowledged incorporation of that work in one’s written work offered for credit. Quotes not identified as quotes constitute a form of plagiarism even if the borrowed ideas are documented.

5) “Collusion” means an unauthorized collaboration with another person in preparing written work offered for credit. Academic dishonesty may result in the following sanctions, including, but not limited to:

1. A grade of zero or a lowered grade on the assignment or course.

2. A reprimand.

3. Suspension from the college.

NOTIFICATION OF ABSENCE DUE TO RELIGIOUS HOLY DAY(S)

Students who will be absent from class for the observance of a religious holiday must notify the instructor in advance. Please refer to the Student Obligations section of the college catalog for more explanation. You are required to complete any assignments or take any examinations missed as a result of the absence within the time frame specified by your instructor.

REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT (A430)

North Lake College provides academic accommodations to students with disabilities, as defined under ADA law. It is the student's choice and responsibility to initiate any request for accommodations. If you are a student with a disability who requires such ADA accommodations, please contact North Lake College's Disability Services Office in person (A430) or by phone at 972-273-3165.

http://www.northlakecollege.edu/resources/disability.html

FAMILY EDUCATIONAL RIGHTS AND PRIVACY ACT OF 1974 (FERPA)

In compliance with the Family Educational Rights and Privacy Act of 1974 (FERPA), the College may release information classified as “directory information” to the general public without the written consent of the student. Directory information includes: (1) student
name, (2) student address, (3) telephone numbers, (4) date and place of birth, (5) weight and height of members of athletic teams, (6) participation in officially recognized activities and sports, (7) dates of attendance, (8) educational institution most recently attended, and (9) other similar information, including major field of study and degrees and awards received. Students may protect their directory information at any time during the academic year. If no request is filed, directory information is released upon written inquiry. No telephone inquiries are acknowledged. No transcript or academic record is released without written consent from the student, except as specified by law.

ADMINISTRATIVE WITHDRAWAL

Students with valid extenuating circumstances may be eligible for an administrative withdrawal by the Dean of the Division in which the course or courses are taught. An administrative withdrawal will not be awarded to students who simply fail to withdraw prior to the last day to receive a “W.” The request for an administrative withdrawal must be made in writing to the Dean of the Division with any supporting documentation attached. This must occur before the last official day of the semester.

DROP POLICY

If you are unable to complete this course, you must officially withdraw by: Check e-Connect for dates. Withdrawing is a formal procedure which you must initiate; your instructor cannot do it for you. All Dallas County Community Colleges charge a higher tuition rate to students registering the third time for a course. This rule applies to the majority of credit and Continuing Education / Workforce Training courses. Developmental Studies and some other courses are not charged a higher tuition rate. Third attempts include courses taken at any DCCCD college since the fall 2002 semester. For further information, go online to: http://www.DCCCD.edu/thirdcourseattempt.

Drop dateline is June 25th, 2019.

STOP BEFORE YOU DROP

For students who enrolled in college level courses for the first time in the fall of 2007, Texas Education Code 51.907 limits the number of courses a student may drop. You may drop no more than 6 courses during your entire undergraduate career unless the drop qualifies as an exception. Your campus counseling/advising center will give you more information on the allowable exceptions. Remember that once you have accumulated 6 non-exempt drops, you cannot drop any other courses with a “W”. Therefore, please exercise caution when dropping courses in any Texas public institution of higher learning, including all seven of the Dallas County Community Colleges. For more information, you may access: https://www1.dcccd.edu/coursedrops.
STUDENT AND EMPLOYEE RIGHTS AND RESPONSIBILITIES

Dallas County Community College District is committed to creating an educational and work environment free from use or distribution of illicit drugs or abuse of alcohol. The college district prohibits the unlawful possession, use or distribution of illicit drugs and alcohol by students and employees on its property or as part of any of its activities. Information and confidential referrals concerning counseling and treatment programs for drug and alcohol abuse may be obtained from any counseling and/or advisement center, health center or location Human Resources office. More information about the Drug Free Schools and Communities Act is included in the 2016-2017 Student and Employee Rights and Responsibilities brochure. Also included is information about bacterial meningitis vaccination requirements, DCCCD's Student Code of Conduct and notice on hazing, Title IX and campus sexual assault, and student rights under the Family Educational Rights and Privacy Act (FERPA).

FINANCIAL AID ATTENDANCE AND PARTICIPATION REQUIREMENTS

FACE-TO-FACE ON-CAMPUS CLASSES

You must attend and participate in your on-campus in order to receive federal financial aid. Your instructor is required by law to validate your attendance in your on-campus in order for you to receive financial aid. You must participate in an academic related activity pertaining to the course such as but not limited to the following examples:

- initiating contact with your instructor to ask a question about the academic subject studied in the course;
- submitting an academic assignment;
- taking an exam;
- completing an interactive tutorial;
- participating in computer-assisted instruction;
- attending a study group that is assigned by the instructor;
- or participating in an online discussion about academic matters relating to the course.

ONLINE CLASSES

In an online class, simply logging in is not sufficient by itself to demonstrate academic attendance. You must demonstrate that you are participating in your online class and are engaged in an academically related. Your instructor is required by law to validate/certify your attendance in your online course(s) in order for you to receive financial aid. To meet the attendance requirement, you must
• attend and participate in your online course(s) prior to the course certification date and continue beyond the course withdrawal date.
• participate in an academic related activity pertaining to the course such as but not limited to the following examples:
  o initiating contact with your instructor to ask a question about the academic subject studied in the course; submitting an academic assignment;
  o taking an exam;
  o completing an interactive tutorial;
  o participating in computer-assisted instruction;
  o attending a study group that is assigned by the instructor;
  o or participating in an online discussion about academic matters relating to the course.

Students who are receiving any form of financial aid should check with the Financial Aid Office prior to withdrawing from classes. Withdrawals may affect your eligibility to receive further aid and could cause you to be in a position of repayment for the current semester. Students who fail to attend or participate are also subject to this policy.

To apply for financial aid in the DCCCD, students must complete FAFSA (Free Application for Federal Student Aid) on the web at: http://www.fafsa.ed.gov

COUNSELING SERVICES (A311)

Counseling services for personal issues are provided to all students currently enrolled at North Lake College at NO CHARGE. These services are provided by licensed professionals who are bound by confidentiality (within ethical parameters). With the assistance of a counselor, students are able to identify, understand, resolve issues and develop appropriate skills. To make an appointment call 972-273-3333 or visit A311.

For additional information, go to: Student resources: counseling.

THE ACADEMIC SKILLS CENTER (ASC)

The ASC is designed to provide the following assistance to students:

• An ESOL lab with computer access.
• Free tutoring for students enrolled in Foreign Language courses.
• The iRead Lab offers individual and small group tutoring, as well as workshops, to help current students improve their reading, study, and test taking skills.
• The Writing Center to help students clarify writing tasks, understand instructors’ requirements, develop and organize papers, explore revision options, detect grammar
and punctuation errors, properly use and document sources, and improve their writing skills.

- The **Online Writing Lab (OWL)** allows students to submit papers to our writing tutors electronically and get feedback within 24-72 hours. The OWL can be accessed through eCampus.
  - After logging on to eCampus, click on the Community Tab at the top.
  - Type “Owl” in the search field and click “Go.”
  - Next, click on the double drop-down arrows next to “NLC-OWL2,” and then click on “Enroll.”
  - Once enrolled, students can receive services from the OWL.

- The **Blazer Internet Lounge** with 12 computers, additional open seating, and WiFi Internet access.

For more information or to schedule a tutoring appointment, come by A-332 or call 972-273-3089.

### THE SCIENCE LEARNING CENTER P333

The Science Center provides student services in the following subjects (majors and nonmajors): Biology, Botany, Microbiology, Anatomy and Physiology, Chemistry, Organic Chemistry, Geology, Physics, Nutrition and Ecology. The center provides face to face tutoring as well as online tutoring for all subjects listed.

The center is located in P-333 and offers various resources all of which are free to the students. The SC features tutors, computers, internet, models, microscopes, places to study quietly, places for group work, and other materials to assist in science classes. In order to access resources of the SC a North Lake College ID Card is required.

When students attend SC we ask that they sign in and out. These data help us keep the center stocked, running, and most of all, free of charge!

**Hours of Operation:**

- Spring/Fall semester: Monday to Thursday from 9 am to 7 pm; Friday and Saturday, from 9 am to 3 pm.
- Maymester and Wintermester: Monday to Thursday from 2 pm to 6 pm.
- Summer I & II: Monday to Thursday from 2 pm to 7 pm.

**Contact Information:**

Location: P333
Phone: 972-273-3273  
Manager: Amanda Mello  
Coordinator: George Eluvathingal  
NLC website: Under “Services and Resources> Academic Support> Tutoring> Science Tutoring”.

TESTING CENTER (A 425)*

Monday-Thursday:  8:30 a.m. – 8:00 p.m.  
No tests will be issued after 7:00 p.m. Other cut-off times may be in effect for specific exams by the instructor’s direction. All exams collected at 8:00 p.m.

Friday-Saturday:  8:30 a.m.-3:30 p.m.  
No tests will be issued after 2:30 p.m. Other cut-off times may be in effect for specific exams by the instructor’s direction. All exams collected at 3:30 p.m.

Sunday – CLOSED

*Check for updated hours and this may change during the semester.

If you instructor requires you to complete an exam in the Testing Center, be sure to have the following information when you request you test:

1. Instructor’s name  
2. Subject, course number, and section number (exp: Speech 1311.7011)  
3. Exam number (1st, 2nd, 3rd, etc.)  
4. Exam deadline (Get this information from your instructor. The testing staff cannot look up this information on computers).

You should also bring the following supplies:

1. Pencil  
2. Scantron answer sheet  
3. A Test Request Form must be completed before entering the Testing Center.  
5. Government or school issued photo identification is required & enforced.

You may not bring personal items into the Testing Center. This includes bags, cell phones, and pagers.

Please show courteous and cooperative behavior while using the services provided by the Testing Center.
DO NOT bring children to the Testing Center. You must make arrangements for the care of your children prior to your exam date. The police department will be notified of any unattended children.

DO NOT take any testing materials with you when you leave the Testing Center. This includes the test, answers, charts, scratch paper. These items will be attached to your test.

Questions? Please visit the Testing Center (A 425) or call 972-273-3160.

DCCCD OIE FACULTY SYLLABI STATEMENT

The Office of Institutional Equity, in coordination with DCCCD colleges, has the primary responsibility for reviewing, updating and implementing compliance policies and procedures. The Institutional Equity and Compliance Officer and the Office of Institutional Equity will ensure compliance with College District policies, federal and state laws related to sexual assault, Title IX, Title II (Americans with Disabilities Act) and the Military Veterans Full Employment Act to support diversity and inclusion.

REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT (A430)

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http://www.northlakecollege.edu/resources/disability.html

STUDENTS WITH DISABILITIES

If you are a student with a disability and/or special needs, or if you think you may have a disability, please contact the college Disability Services Office (DSO). Please note that all communication with DSO is confidential. If you are eligible for accommodations, please provide or request that the DSO send your accommodation letter to me as soon as possible (students are encouraged to contact DSO at the beginning of the semester). For more information regarding the College Disability Services Office, please visit the Student Services website: dcccd.edu/DSO Offices or contact DCCCD Office of Institutional Equity at (214) 378-1633.

College Disability Services Offices

Brookhaven: 972-860-4673

Cedar Valley: 972-860-8119
A NOTE ON HARASSMENT, DISCRIMINATION AND SEXUAL MISCONDUCT

We are committed to assure all community members learn and work in a welcoming and inclusive environment. Title VII, Title IX and DCCCD policy prohibit harassment, discrimination and sexual misconduct. If you encounter harassment, sexual misconduct (sexual harassment, sexual assault, stalking, relationship violence, stalking), retaliation or discrimination based on race, color, religion, age, national origin, disability, sex, sexual orientation, gender identity, and/or gender expression, please contact your College Title IX Coordinator or the Office of Institutional Equity. We treat this information with the greatest degree of confidentiality possible while also ensuring student welfare and college safety.

We are concerned about the well-being and development of our students, and are available to discuss any concerns. There are both confidential and non-confidential resources and reporting options available to you. If students wish to keep the information confidential, please contact the college Counseling or Student Health Services. As required by DCCCD policy, incidents of discrimination and/or sexual misconduct shared with faculty will be reported to the College Title IX Coordinator or District Title IX Coordinator. The Title IX Coordinator will contact the student and determine if further investigation is needed. For more information about policies, resources or reporting options, please contact your college Title IX Coordinator or visit www.dcccd.edu/titleIX.

College Title IX Coordinators

Brookhaven: Terri Edrich, Email: TitleIX-BHC@dcccd.edu Phone: 972-860-4825

Cedar Valley: Grenna Rollings, Email: TitleIX-CVC@dcccd.edu Phone: 972-860-8181

Eastfield: Rachel Wolf, Email: TitleIX-EFC@dcccd.edu Phone: 972-860-7358

El Centro: Shanee’ Moore, Email: TitleIX-ECC@dcccd.edu Phone: 214-860-2138
Mountain View: Regina Garner, Email: TitleIX-MVC@dcccd.edu Phone: 214-860-8561

North Lake: Rosemary Meredith (acting), Email: TitleIX-NLC@dcccd.edu Phone: 972-860-3992

Richland: Bill Dial, Email: TitleIX-RLC@dcccd.edu Phone: 972-238-6386

Dallas Colleges Online: Le’Kendra Higgs, Email: TitleIX-LEC@dcccd.edu Phone: 972-669-6672

District Title IX Coordinator: Office of Institutional Equity: LaShawn Grant Email: TitleIX-District@dcccd.edu Phone: 214-378-1633.