COURSE SYLLABUS Fall 2018

BIOL 2420

Section: 73501

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Office Hours: Appointments by request

Free Tutoring SCIENCE LEARNING CENTER
P331 (972) 273-3500

Course Information

Course title: BIOL – Microbiology for Non-Science Majors
Course number: 2420
Section number: 73501
Credit hours: 4
Class meeting time: Lecture: Mon & Wed, 5:45-7:05 pm; Lab: Mon, & Wed 7:15-9:05pm

Withdrawal Date: April 17th 2019

COURSE DESCRIPTION: An overview of the morphology, physiology, and taxonomy of representative groups of pathogenic and non-pathogenic microorganisms. Emphasis is placed on applications to humans and techniques used in growing pure cultures of microorganisms on selected media. A brief preview on public health issues is also presented. This course is designed for non-science majors and allied health students
Coordinating Board Academic Approval Number 2605035103

Course prerequisites: Biology 1406 or SCIT 1407 or BIOL 2401.

REQUIRED OR RECOMMENDED TEXTBOOKS AND MATERIALS

Recommended for Lecture: Microbiology, A Human Perspective 7th, 8th or 9th edition, Nester et.al
Required for Laboratory: Microbiology Laboratory Manual, Fall 2018, Dr. H. Su
Laboratory supplies: Lab coat MUST be worn at all times in the laboratory.
STUDENTS WILL NOT BE ALLOWED TO WORK IN THE LAB WITHOUT A LABCOAT.
COURSE OBJECTIVES
This 4 credit hour basic study of microorganism is designed for students with interest in health-related majors. The objective of the course is to introduce the structure and properties of the different types of microbes (including bacteria, fungi, protozoa, algae and viruses) and their impact on our lives which includes role of microbes in maintaining environment of our planet, creating useful products as well as role in human diseases. Major emphasis will be placed on discussions on the interaction of microbes 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 required to manipulate growth, isolation and detection of micro-organisms for scientific studies as well as in medical professions.

Specific Learning Outcomes:
1. Knowledge of basic microbiology concepts and terminology.
2. An understanding of infectious disease, epidemiology, chemotherapy and immunology.
3. A comprehensive knowledge of pathogenic microorganisms and microbial disease.
4. Skills to effectively and safely perform microbiological techniques: culture, isolation, staining, quantification and identification of microorganisms.
5. Knowledge to apply the scientific methods, critical thinking skills in solving microbe identification problems
6. Skills for effective oral and written communication of the concepts learned.

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<td><strong>1. Microbiology laboratory safety</strong></td>
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<td>6. Control of Microbial Growth <em>(Textbook Chapter 5- Control of Microbial Growth)</em></td>
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<td>Chapter 6-Metabolism: Fueling Cell Growth</td>
<td>7. DNA digestion <em>(Textbook Chapter 9- Biotechnology and Recombinant DNA)</em></td>
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<td><strong>Unit 3:</strong></td>
<td>8. Antigen-antibody interactions <em>(Textbook Chapter 18- Applications of Immune Responses)</em></td>
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<td>Chapter 7-The Blueprint of Life, from DNA to Protein</td>
<td>9. Fungi and Protozoa <em>(Textbook Chapter 12- Eukaryotic Members of the World)</em></td>
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<td>Chapter 8-Bacterial Genetics</td>
<td>10. Water Microbiology</td>
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<td>Chapter 13-Viruses, Viroids and Prions</td>
<td>11. Food Microbiology</td>
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<td>12. Biochemical Tests <em>(Textbook Chapter 10- Identification of Prokaryotes)</em></td>
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<td>Chapter 14-The Innate Immune Response</td>
<td>13. Individual Project: <strong>Identification of Unknown bacterial sample</strong></td>
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<td>Chapter 15-The Adaptive Immune Response</td>
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<td><strong>Unit 6:</strong></td>
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<td>Chapter 20-Antimicrobial Medications</td>
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EVALUATION PROCEDURES: Specific Learning and Evaluation Activities

I. Lecture Quizzes and Group Assignments
   Quizzes and Group assignments may be assigned for a learning module or a subsection for a group or peer-to-peer learning

II. Lecture Exams:
   The course will have 5 Lecture exams and a comprehensive final exam. Each exam will be worth 100 points. **Four out of the first five exams will count.** Each lecture exam will consist of two parts:
   - Part I will consist of multiple choice and/or true/false questions for a total of 70-80 %.
   - Part II will consist of short answer questions (20-30 %)

**Final Exam (6th exam):** 50% of the sixth exam will be comprehensive and 50% will be over Unit 6. This will be a multiple choice test.

III. Laboratory Safety Quiz:
   Students will be required to pass a microbial safety lab quiz at the beginning of the semester. The quiz will consist of short-answer questions. (20 Points)

IV. Sterility Technique Check off:
   Students will be required to get the sterility techniques checked off by the laboratory instructors. Students will get multiple chances to pass the check off and will be allowed to work in the laboratory on the individual project until they pass.

V. Laboratory Practical Exams:
   Two Laboratory Practical exams (100 Points each) will consist of questions set up as stations throughout the laboratory. Some stations will require the student to perform techniques such as staining, isolating microbes other stations will require the student to identify staining techniques, microbial characteristics, or types of microorganisms, proper use of microscope.

VI. Laboratory Project of Identification of a single species of bacteria in a given sample or “Unknown” sample: (80 Points)
   Towards the end of the semester, students will be assigned an unknown bacterium. Students will have three weeks to perform the staining procedures and biochemical tests necessary to identify the genus and species of the unknown microorganism. Students will keep written records of their work in the form of a journal. A written report summarizing the procedures used to identify the organism will be turned in with the journal at the end of the three weeks. This project will be worth 80 points of the laboratory grade.

**Lecture: 70%**
- 5 of 6 Lecture Exams: 100 points each = 500 points (Final exam cannot be dropped)
- Lecture Quizzes and Assignments = 100 points

**Lab 30%**
- Unknowns: = 80 points
- 2 Lab Practical Exams: 100 points each = 200 points
- 1 Lab Quiz: = 20 points

**Grading Scale**
- A = 100 – 90 %
- B = 89 - 80 %
- C = 79 - 70 %
- D = 69 - 60 %
- F < 59%
There will be no makeup exams for unexcused absences.

This course syllabus is intended as a set of guidelines for BIOL 2420. Both North Lake College and the 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.

**DISCIPLINE/ COURSE/ DEPARTMENT/POLICIES**

All students are expected to abide by the college [Student Code of Conduct](#).

Students are expected to fully participate in lecture class and laboratory activities. Cell phones should be turned off or set to silent during class unless an exercise requires the use of device. No inappropriate use of electronic devices will be permitted in class. Whether the use of electronics is proper or not will be determined by the instructor.

**NO EATING OR DRINKING IN LABORATORY/LIBRARY**

**No Children in Class and Unaccompanied Children on campus**
The institution strives to protect an environment most conducive to teaching and learning for all enrolled students. Minor children may not be brought to the laboratory, classrooms, or the Testing Centers.

**COUNSELING SERVICES**

Counseling services for personal issues are provided to all students currently enrolled at North Lake College. These services are provided by licensed professionals who are bound by confidentiality (within ethical parameters) and are at no charge. 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 A 311.

**eCAMPUS/Blackboard**

1. Class notes and announcements are posted on the web on ECAMPUS at [ecampus.dccd.edu](http://ecampus.dccd.edu)
2. You are expected to access "eCAMPUS" on a regular basis to stay up to date with the class information.
3. Make sure you enter your email address. Let me know if you need help with "eCAMPUS".
4. All students can apply for a free email address/internet access at the Computing Center.

**TESTING CENTER and Mathematics & Science Division Policies on Testing**

- Students taking exams in math and science will NOT be allowed to leave the testing center or the classroom during a test and return to complete the test. If you leave, test is considered complete. If you require special accommodation, you must submit a request to the Disability Services Office in person (A430) or by phone at 972-273-3165. Click on [Disability Services](#) for more information.
- Students may not bring personal items into the Testing Center (examples-bags, cell phones etc
- Please show courteous and cooperative behavior at the Testing Center.
- **Do not bring children to the testing center.** The police department will be notified of unattended children.
- **Do not** take any testing materials with you when you leave the Testing Center including the test, answers, charts, scratch paper. These items will be attached to your test.

**Questions? Please visit the Testing Center (A425) or call 972-273-3160.**

**Testing Center Hours:**

- **Monday – Thursday:** 8:30 a.m. – 8:00 p.m. (No exams will be issued after 7:00 pm. Other cut-off times may be in effect for specific exams by the instructor's direction. All exams collected at 8:00 pm)
- **Friday - Saturday:** 8:30 a.m. – 3:30 p.m. (No exams will be issued after 2:30 p.m. All exams collected at 3:30 pm)

Other cut-off times may be in effect for specific exams by the instructor's direction.

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

- Instructor’s name
- Subject and course number (example: HIST 1301)
• Exam number (1st, 2nd, 3rd, etc.)
• 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.
• A Test Request Form must be completed before entering the Testing center.
• Only battery operated 4 function, non-programmable scientific or TI83/TI 84 calculator are allowed (if permitted by instructor).
• Money for coin-return lockers (quarter). Please do not share lockers.

Important: Government- or school-issued photo identification is required & enforced.

INSTITUTIONAL POLICIES
www.northlakecollege.edu/syllabipolicies

The above link will provide information about institutional policies regarding the following:

• Student Success
  o Academic Advising and Degree Planning
  o Tutoring
  o Students With Disabilities
  o Cheating, Plagiarism and Collusion
  o Student Survey of Instruction
  o Religious and Ethnic Holiday Observance
  o Harassment, Discrimination and Sexual Misconduct
• Students Receiving Financial Aid
  o Attendance and Participation
  o Withdrawing From Classes
• Class Drop and Repeat Options
  o Withdrawal Policy
  o Six Drop Rule
  o Repeating a Course and Third Drop Rule
• In Case of a Campus Emergency
• Concealed Carry
  o Weapons
• Syllabus Change Disclaimer

Other College-Specific Information

Specific Course Learning Outcomes

1.- The student will acquire and use the appropriate scientific language to communicate microbiology principles and information.
2.- The student will be able to solve dilution problems, and calculate microbial population.
3.- The student will become familiar with the use of laboratory instruments and tools such as microscopes, incubators, pipettes, stains, etc.
4.- The student will have acquired the knowledge and the habit of using aseptic techniques when working with infectious agents.

Core Curriculum Intellectual Competencies

This course reinforces ____6____ of the 6 Core Curriculum Intellectual Competencies defined by the Texas Higher Education Coordinating Board. The CCI’s identified by the DCCCD which are reinforced by __BIOL 2420__ are as follows:
1. **READING**: Reading at the college level means the ability to analyze and interpret a variety of printed materials -- books, articles, and documents.

2. **WRITING**: Competency in writing is the ability to produce clear, correct, and coherent prose adapted to purpose, occasion, and audience.

3. **SPEAKING**: Competence in speaking is the ability to communicate orally in clear, coherent and persuasive language appropriate to purpose, occasion and audience.

4. **LISTENING**: Listening at the college level means the ability to analyze and interpret various forms of spoken communication.

5. **CRITICAL THINKING**: Critical thinking embraces methods of applying both qualitative and quantitative skills analytically and creatively to subject matter in order to evaluate arguments and to construct alternative strategies.

6. **COMPUTER LITERACY**: Computer literacy at the college level means the ability to use computer-based technology in communicating, solving problems, and acquiring information.

**LEARNING ACTIVITIES, OUTCOMES, AND ASSESSMENT**

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<th>Assessment</th>
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<td>1. Proper use of microscope and identification of micro-organisms</td>
<td>a. The student will be able to use of microscope and identify different micro-organisms on slides.</td>
<td>The student will successfully use and clean microscopes without any help or reminders from the instructor, identify and categorize micro-organisms in the first lab practical.</td>
<td>EEO: 1, 4, 5  CCIC: 1, 2, 5, 6</td>
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<tr>
<td>2. Sterile techniques</td>
<td>a. Successfully transfer micro-organisms without contamination.</td>
<td>The student will perform isolation of a single bacterial colony under sterile conditions in the first lab practical.</td>
<td>EEO: 1, 3, 4, 5  CCIC: 1, 2, 3, 4, 5</td>
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<td>3. Students will identify the species of bacteria from a sample given to them as unknown.</td>
<td>a. The student will be able to practice the techniques of isolating, maintaining and identifying bacterial culture they learned throughout the class.</td>
<td>The student will identify the unknown bacterial sample by performing various techniques they learned throughout the class as a graded project.</td>
<td>EEO: 1, 2  CCIC: 1, 2, 5</td>
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