ORTH LAKE COLLEGE
5001 N. MacArthur Blvd.
Irving, Texas 75038-3899
DALLAS COUNTY COMMUNITY COLLEGE DISTRICT

COURSE SYLLABUS
BIOL 2420_71450
Fall 2019

DIVISION OFFICE:
Math/Natural Science
P330
972-273-3500

This course syllabus is intended as a set of guidelines for (Course). 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:
Maria Serra, M.S.
mserra@dcccd.edu
972-273-3235
C352
Office Hours: T/R: 11:00 – 12:00 pm
Please allow 12 hrs (24 hrs. on weekends) for an email response, email messages are checked several times during the day on most days, however, an immediate response may not always be possible. Always include: 1.- your name, 2.- class and section number, and 3.- a subject on your email message, this will allow me to respond immediately if the message warrants an urgent quick response.

SCIENCE LEARNING CENTER: L139
Free tutoring. Free internet access (for science use ONLY).
Access to older version, sometimes current versions, text books (Provided your teacher has given us one to use)
Great place to study
Interactive CD ROMS (North Lake College ID required)
Video Tapes (North Lake College ID required). DVD’s (North Lake College ID required)
The Science Learning Center provides student services in the following subjects (majors and non majors): Biology, Botany, Microbiology, Anatomy and Physiology, Chemistry, Geology, Botany, Physics and Ecology.
The center is located in L139 and offers various resources all of which are free to the students. The SLC features tutors, software, videos, CDROM’s, internet, models, places to study quietly, places for group work, and other materials to assist in science classes. In order to access resources of the SLC a North Lake College ID Card is required. The subject specific schedule of tutors is updated every semester and is located at www.northlakebiology.com/SLC_tutor_schedule.htm
When students attend SLC we ask that they sign in and out. This data helps us keep the center stocked, running, and most of all, free of charge!. A quiet study room is now available
Hours of operation – M-R 9 to 7, F 9-3 and Sa 9-3
Contact information: Center Phone: 972-273-
Course Information

Course title: BIOL – Microbiology for Non-Science Majors
Course number: 2420
Section number: 71450  Credit hours: 4
Class meeting time:  Lab 74440: F 12:00 – 4:00 pm  room C326
Lecture: ON LINE

Important dates: Census day: 9/9/19
Drop date: 11/14/19

Course description: An overview of the morphology, physiology, and taxonomy of representative groups of pathogenic and non-pathogenic organisms. 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

Required Textbooks and Materials


Suggested Laboratory : Microbiology Laboratory Manual, Fall 2019, Dr. H. Su
*Earlier editions are acceptable. Students can put their names on their own supplies, and a storage bin will be provided.
Lab safety materials students must have by the second day of lab: gloves, lab coat. (we have a limited supply of old lab coats from previous semesters, students are welcome to borrow on a first come first serve basis). Safety goggles will be provided.

Other recommended supplies: Sharpee pen, large “Ziploc bag” to store lab manual.

** For safety reasons, students must conform to the following protocols:
1. Shoes must cover toes, no sandals allowed.
2. Student’s clothing should cover thighs.
3. Dangling jewelry should be removed.
4. Hair must be tied back, away from face always.
5. Nails must be kept reasonably short, handling bacterial cultures requires manual dexterity, and attention to maintaining an aseptic environment, both are compromised by long fingernails.

** Students who do not follow these minimum safety requirements will not be allowed in lab.

PROGRAM LEVEL OBJECTIVES FOR BIOL 2420
BIOL 2420 develops the following objectives from the Texas Higher Education Coordinating Board:

- Communication Skills: Written
- Communication Skills: Visual
- Critical Thinking Skills
- Empirical and Quantitative Skills

COURSE LEVEL STUDENT LEARNING OUTCOMES (SLO’s) FOR BIOL 2420
BIOL 2420 supports the following learning outcomes from the Texas Higher Education Coordinating Board:

COURSE-LEVEL STUDENT LEARNING OUTCOMES FOR BIOL 2402
BIOL 2420 supports the following learning outcomes from the Texas Higher Education Coordinating Board:

- Write in a style appropriate to audience and purpose, using the appropriate scientific terms. SLO 3 Unknowns Report.
- Use of visual communication: charts, diagrams, and pictures to interpret and communicate microbiology principles pertaining to correctly identifying organism. SLO 3 Unknowns Report.
- Critical Thinking: Use creative thinking, inquire, and analysis to answer written application questions in lecture tests, or complete the ‘Environmental Unknown’ exercise. SLO 2
• Empirical and Quantitative Skills: Use manipulation and analysis of numerical data to calculate CFU’s during a lab exercise. SLO 2

Course Objectives
On completion of this course the student will have:
1.- Knowledge of basic microbiology concepts and terminology, including microbial genetics.
2.- Hands on laboratory experience of microbiological techniques: culture, isolation, staining, quantification and identification of microorganisms. Knowledge to apply the scientific methods, critical thinking skills in solving microbe identification problems
3.- An understanding of infectious disease, epidemiology, chemotherapy, and immunology.
4.- A comprehensive knowledge of pathogenic microorganisms and microbial disease.
See the Specific Course Learning Outcomes, Exemplary Educational Objectives and the Core Curriculum Intellectual Competencies at the end of the syllabus.

Course Outline: Lecture

MODULE 1
1.- Humans and the Microbial World:
   Microbial world overview
   Historical perspective of microbiology as a science
   Importance of microbiology in our world
2.- The Molecules of Life
   Review of basic chemistry concepts
   An introduction to biological macromolecules

MODULE 2
3.- Cell Structure
   Prokaryotic structure
   Contrast comparison of eukaryotic vs. prokaryotic structures
   Prokaryotic cell structures and selective toxicity
4.- Dynamics of Prokaryotic Growth:
   Bacterial growth in nature and in laboratory conditions . Pure Cultures
   Environmental and nutritional factors that influence bacterial growth

MODULE 3
5.- Control of Microbial Growth:
6.- Metabolism: Fueling Cell Growth
   Principles of Metabolism
Enzymes
Central metabolic pathways:
  Respiration and fermentation
  Catabolism of lipids and proteins
  Anabolism of carbohydrates, lipids, and proteins

MODULE 4
7.- The Blueprint of Life, from DNA to Protein
8.- Bacterial Genetics
9.- Biotechnology and Recombinant DNA
   Fundamental tools used in biotechnology
   Applications of genetic engineering
   Applications of probe technology: Southern blotting
   Applications of DNA sequencing
   Applications of PCR
   Techniques used in genetic engineering

MODULE 5
13.- Infectious Agents: Viruses of Bacteria, Animal Viruses, and Prions:
   General characteristics of viruses
   Virus interactions with host cells
   Specialized Transduction
   Structure and classification of animal viruses
   Interactions of animal viruses with their hosts
   Viruses and human tumors
   Viral genetic alterations and Methods used to study viruses
   Other infectious agents
   Viral diseases: Influenza, herpes, HBV, HCV, HAV, HIV, and HPV
14.- The Innate Immune Response
15.- The Adaptive Immune Response

MODULE 6
16.- Host Microbe Interactions
19.- Epidemiology
20.- Antimicrobial Medications
   Condensed survey of gram positive and gram negative pathogens
22.- Respiratory System Infections:
   Bacterial infections of the URS: strep throat, diphtheria, earache, and sinus infections. Bacterial infections of the LRS: pneumonia, tuberculosis.
23.- Skin Infections:
   Bacterial, skin diseases: hair follicle infections, SS syndrome, impetigo.
24.- Wound Infections:
Common bacterial wound infections: Staphylococcal, Group A Streptococcal, Pseudomonas.

25. **Digestive System Infections:**
   Bacterial diseases of the lower digestive system: shigellosis, *E. coli* gastroenteritis, salmonellosis.

26. **Genitourinary Infections:** STD’s: gonorrhea, Chlamydia, syphilis.

27. **Nervous System Infections:** meningitis.

28. **Blood and Lymphatic Infections:** gram negative septicemia.

**Course Outline: Laboratory**
1. Microbiology laboratory safety
2. Microscopy
3. Staining Bacteria
4. Culture Media and Sources of Contamination
5. Growth of Bacterial Cultures
6. Controlling Microbes
7. DNA digestion
8. Antigen-antibody interactions
9. Fungi and Protozoa
10. Water Microbiology
11. Food Microbiology
12. Biochemical Tests
13. Unknown Identification

**Evaluation Procedures: Specific Learning and Evaluation Activities**

5 of 6 Lecture Exams:
There will be 6 lecture exams throughout the semester, the lowest grade will be dropped. The exams will be taken in the Testing Center at North Lake College, or any DCCCD facility. Students will have ample time to go to the Testing Center and take the exam prior to the due date. Each lecture exam will consist of two parts:
Part I: 80% of the test will consist of 80% of multiple choice and true/false questions.
Part II: 20% of the test will consist of short answer, application, and matching questions.
*Students taking their tests at a facility other than North Lake should inform the instructor via email during the first week of lab. Students will be allowed one test extension per semester. The extension will be for 3 extra days. Any subsequent extensions (regardless of reasons) will be penalized 2 pts./test.**

**The use of notes,**
cell phones, smart watches, and other outside material is strictly prohibited during tests.

On-Line Quizzes
Lecture quizzes will be assigned for each lecture module. The quizzes are posted on eCampus and can be taken by students at any time before the due date period. Each quiz will have a maximum of 30 questions, and will consist of multiple choice, true and false, and matching questions. These quizzes will be worth 10% of the lecture grade. On-Line Quizzes for each chapter should be completed by the due date. Refer to the “Lecture Schedule” for the due dates. Quizzes have no time limit (within deadline dates). It is recommended that students take the on-line quiz before taking the lecture test. Quizzes will be open and available up until the end of the day on the posted due date. None of the quizzes will be dropped, even if the Lecture Test corresponding to the quizzes is dropped, students are still responsible for the online quizzes for the chapters corresponding to the dropped lecture test.

“Food For Thought” Discussions
Discussions topics on the week’s chapter readings will be posted at the beginning of each week, students will participate in the discussions by giving the correct answer to a question not previously answer by another student. Students should include the source where the answer was found (if applicable). Each student is required to answer at least two questions per lecture MODULE. Until the due date, answers to questions will be reviewed and students will have an opportunity to correct their answers or answer a different question. None of the Discussion questions will be dropped, even if the Lecture Test corresponding to the Discussion questions is dropped, students are still responsible for the Discussion Questions for the chapters corresponding to the dropped lecture test.

Laboratory Practicals Exams:
There will be two laboratory practical exams throughout the semester. Practical Exams will consist of stations where props (microscopes, culture plates, test media, etc.) will be use to answer questions. Students will answer the questions after studying the props provided at each station. Please note that Practical 1 will also include hands on techniques such as staining, plating and aseptic techniques. Laboratory practical exams cannot be made up. ** The use of notes, cell phones, smart watches, and other outside material is strictly prohibited during tests

10 of 11 Lab Reports:
Most lab exercises are completed in groups of two students, by the conclusion of each lab exercise, each group will turn in a report outlining and analyzing the work done during the lab period. Lab reports are completed only by those students who attended the lab and worked on the lab exercise.

**Laboratory Unknown Project:**
Towards the end of the semester, students will be assigned an unknown bacterium. Students will have a minimum of 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 notes or a journal, which will be used to complete a written report. More detailed information on this assignment is found under the ‘Laboratory’ tab, “Unknown Documents” file.

EXTRA CREDIT: Extra credit questions will be included in all exams. Bonus points will not exceed 3% of the final grade. PLEASE NOTE: Poor attendance will preclude students from taking advantage of extra credit assignments and bonus points. *Note: this instructor does not offer extra credit to individual students.*

**Exams : 60%**
- 5 of 6 Lecture Exams : 9.0% each 45.0%
- Discussion Questions: 1% each 6.0%
- On-Line Quizzes 9.0%

**Lab 40%**
- Unknowns: 8%
- 2 Lab Practicals: 12.0% each 24%
- 10 of 11 Lab Reports: 8%

**TOTAL** 100%

**Grading Scale**
- A= 100 – 90 % Lecture tests will be available in the Testing Center at the scheduled times.
- B = 89 - 80 %
- C = 79 - 70 %
- D = 69 - 60 %
- F < 59%

Laboratory Practical Exams cannot be made up.
There will be no lecture makeup exams for unexcused absences. Make up exams may consist of a few assay questions, or an oral examination. Each student can request one lecture exam extension/semester. Extensions will not exceed 3 days. Additional extensions will be penalized 2 pts/test.

TESTING CENTER INFORMATION AND POLICIES

(L240) or call 972-273-3160.

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

Sunday: CLOSED

*Contact Testing Center for hours of operation during the holidays.

Testing Policy for Mathematics & Science Division: Students taking tests 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, you are through testing.
If you need special accommodations, you must submit a request to the Disability Services Office in person (A430) or by phone at 972-273-3165.
Visit http://www.northlakecollege.edu/services-and-resources/advice-and-assistance/Pages/disability-services.aspx for more information.

TESTING CENTER INFORMATION AND POLICIES (continuation)

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 (exp: HIST 1301)
- Exam number (1st, 2nd, 3rd, etc.)
Exam deadline (Get this information from your instructor. The testing staff can not “look up” this information on computers.)

You should also bring the following supplies.

- Pencil and eraser
- Scantron answer sheet (If required)
- A Test Request Form must be completed at 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.

- You may not bring personal items into the Test Center. This includes bags, cell phones and pagers. Coin-reimbursable (quarter) lockers are available for student use. **Please do not share lockers.**
- 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.
- Only battery operated 4 function, non programmable scientific or TI83/TI 84 calculator are allowed (if permitted by instructor).

**Academic Dishonesty:** The Dallas County Community District has established procedures and guidelines to protect the security and integrity of all exams. All incidents of academic dishonesty are documented and reported to the instructor, the Director of Testing and the Dean of Student-Enrollment. **The use of notes, cell phones, smart watches, or any other outside material is strictly prohibited during tests.** For more information on what constitutes “Academic Dishonesty” please consult page 15 of this syllabus, and the ‘Student Handbook’.

**DISCIPLINE/COURSE/DEPARTMENT POLICIES**

**WHAT IS EXPECTED OF STUDENTS:**

**Students must read** chapters and exercises ahead of time.
** Lecture chapters should be read ahead of lecture and reviewed after lecture. Research shows that information reviewed within 24 hours, and a second time within 72 hours of being presented is retained easier. This is a fast-paced course; don’t fall behind.

** Students may be quizzed orally, during lecture, over the material covered in the previous lecture.

** Work on the questions at the back of the chapters, the study guide, and the quizzes offered in the texts’ website.

** Seek help. Take advantage of the instructor’s office hours, feel free to come by and ask questions or seek help.

** Attendance:**
As you are preparing for a career in the Health Care profession, it is imperative that you practice the professional attributes of punctuality and attendance. The administration and faculty of this program have expectations of your own professional behavior, as well.

It will be impossible to satisfactorily complete this course if you have excessive absences.

If you must be absent inform the instructor ahead of time. If the absence is due to illness or other unforeseen circumstances inform the instructor as soon as possible via e-mail or a phone call. Communication is key.

PLEASE NOTE: Poor attendance, missing more than 2 labs, will preclude students from taking advantage of extra credit assignments.

** Tardiness:**
Students are expected to arrive on time for class. Entering class after it is in session is disruptive to other students. Absence due to tardiness is included in classroom absence totals. Each occasion of tardiness is calculated to the next 1/2 hour. e.g. 10 minutes late = 30 minutes and 2 - 30 minute tardiness = 1 absent.

Laboratory tardiness is unsafe, and disruptive. Laboratory doors will be locked 10 minutes after the start of class and will reopen when is safe for students to enter again.

** Classroom policies:**
A CELL PHONE RINGING, OR VIBRATING DURING CLASS, LAB, LAB OR LECTURE TEST IS DISTRACTING TO OTHER STUDENTS. THE INSTRUCTOR WILL PENALIZE ANY STUDENT WHOSE CELL PHONE RINGS OR VIBRATES DURING A TEST

Students not conforming to the cell phone policy will be asked to leave the class.

** THERE IS NO EATING OR DRINKING IN LABORATORY.
** THERE WILL BE NO TALKING DURING TESTS OR PRACTICAL EXAMS. READ “ACADEMIC DISHONESTY” PARAGRAPH ON “INSTITUTIONAL POLICIES” PART OF SYLLABUS.

** STUDENTS ARE RESPONSIBLE FOR KEEPING INFORMED OF ANNOUNCEMENTS MADE DURING CLASS IN THEIR ABSENCE.

** STUDENTS ARE RESPONSIBLE FOR KEEPING INFORMED OF TESTING CENTER HOURS OF OPERATIONS.

Email communications are sent weekly to the whole class. All email communication that I send to the class is also displayed in the ‘Announcements’ tab of eCampus. Check the tab often to make sure you are not missing any communication, or reminder. Emails sometimes are overlooked or lost.

If you request a letter of recommendation, allow 2 weeks for the letter to be crafted. The instructor reserves the right to decline writing a letter of recommendation.

Students are preparing for a professional career; therefore, they will be expected to make an effort to communicate in a manner consistent with their future goals. Any written communication with the instructor will be conducted using proper English grammar, spelling, and punctuation.

**Email Etiquette**
When emailing your instructor, please provide your name, course number, and course section on the ‘Subject’ line.
As you write your emails, please remember that you are preparing for a professional career; therefore, you will be expected to make an effort to communicate in a manner consistent with your future goals; any written communication should be conducted using proper English grammar, spelling, and punctuation.
Instructor checks emails at least twice a day during weekdays, expect a response within 12 hours of sending an email. On the weekends, emails may be checked less frequently, and it may take 24 hours to get a response.

**Children in Class and Unaccompanied Children Policy:**
The institution strives to protect an environment most conducive to teaching and learning for all enrolled students. Children who are taking part in organized scheduled activities or who are enrolled in specific classes are welcomed. Minor children, however, should not be brought to the college. This practice is disruptive to the learning process. In the case of an emergency where the student-parent has no alternative but to bring the child to the campus, classroom faculty or the
administrative heads of other units have full discretion as to whether a child may be allowed to quietly stay in the location. These individuals (classroom faculty or administrative heads) may require the student-parent to remove the children from the setting if the presence of the child is deemed to be disruptive to the learning process. For reasons of security and child welfare, the institution will not permit unattended children be left anywhere on the premises. Parents who have problems with childcare should visit the advisement/counseling center to receive referrals to childcare services in the area.

**Study Tips**

- **Don’t procrastinate.** Start today (not next week) to read and study.
- **Show up** for class and be actively listening (not daydreaming). Some material will be from sources other than the text. You will not know the material if you have missed class.
- Lecture chapters should be read ahead of lecture, and reviewed after lecture. Research shows that information reviewed within 24 hours, and, a second time, within 72 hours of being presented is retained easier. This is a fast paced course; don’t fall behind!
- **Read** your textbook; don’t waste your $100! We will cover 1-2 chapters per week. First, **go over headings, diagrams and charts.** Then **before reading the chapter** read over the questions you are to answer. **Then read & answer the questions.** Finally **read the summary** at the end.
- Students may be quizzed orally, during lecture, over the material covered in the previous lecture.
- **Seek help.** Take advantage of the instructor’s office hours, feel free to come by and ask questions or seek help.
- Take courses or seminars to **improve your study skills.** Do you know how you best learn? Different approaches to studying? Ask me for some ideas.
- Each day before lecture begins, **read the lecture notes from the day before.** This will cut study time during preparation before tests.
- **Work with a study partner,** preferably someone who is serious about learning and using time productively. Quiz each other on vocabulary, concepts, and identifications.
- **Practice being the “expert”** with your family and friends. Tell them about what you learned in class. Explaining a concept to someone else helps you remember it longer.
1. Class notes and announcements will be posted on the web on ECAMPUS at "ecampus.dcccd.edu".
2. You are expected to access "ECAMPUS" on a regular basis to be 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.

INSTITUTIONAL POLICIES

"Institutional Policies relating to this course can be accessed from the following link www.northlakecollege.edu/syllabipolicies"

The link includes information on:

- Student success: Academic Advising, Degree Planning, and Tutoring
- Students with Disabilities
- Cheating, Plagiarism, and Collusion
- Student Survey of Instruction
- Religious and Ethnic Holiday Observances
- Harassment, Discrimination, and Sexual Misconduct
- Students Receiving Financial Aid: Attendance and Participation, Withdrawing from classes.
- Class Drop and Repeat Options: Withdrawal Policy, Six Drop Rule, Repeating a Course and Third Drop Rule.
- In Case of Campus Emergency
- Concealed Carry: Weapons
- Syllabus Change Disclaimer
- Other College Specific Information

Disclaimer: The instructor reserves the right to amend this syllabus as necessary.

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.

Means of Assessment of Course Learning Outcomes:

SCL #1. - a. Lecture tests: students will be assessed through questions in a multiple choice format and an assay format.
   b. Laboratory practical exams which will include theoretical questions.
   c. An oral power point presentation which will require students to research, and present a topic.
SCL #2. and #3 - a. Laboratory practical exams which will include theoretical questions.
   b. Unknown microorganism project. Students will use their knowledge of laboratory techniques and tests to identify a bacterium.
SCL #4. - a. Students will be given a written quiz that will test their theoretical knowledge of aseptic techniques and laboratory safety.
   b. Specific laboratory exercises which address aseptic techniques: “Culture Media and Contamination”, “Hand Washing Exercise”. The outcome of the exercises are discussed in class and students are questions over their performance.

Specific Learning Activities: See Evaluation Procedures

Exemplary Educational Objectives: N/A

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.
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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  
Learning Activities, Outcomes, and Assessment

<table>
<thead>
<tr>
<th>SLO Learning Activity</th>
<th>Learning Outcomes</th>
<th>Assessment</th>
<th>EEO’s &amp; CCIC’s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide a brief description of the learning activity.</td>
<td>Briefly list the specific learning outcomes/ objectives for the activity.</td>
<td>How will the activity be assessed?</td>
<td>Which EEO’s and CCIC’s are addressed by the learning activity?</td>
</tr>
<tr>
<td>1. All students at the BIOL 2420 course level will demonstrate sterile lab techniques performed on a lab exam.</td>
<td>SLO #1_70% proficiency</td>
<td>Students will accurately pipette a set volume of liquid while instructor assesses sterile techniques used by student during the procedure</td>
<td>CCIC’s: 1, 2, 4 EEO, 1, and 2</td>
</tr>
</tbody>
</table>
## COURSE SYLLABUS

**BIOL 2420_71450**  
**Fall 2019**

<table>
<thead>
<tr>
<th>SLO#</th>
<th>Description</th>
<th>Assessment</th>
<th>CCIC’s:</th>
<th>EEO’s:</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>All students will demonstrate proper set up, focus, cleaning, and immersion oil techniques of a light microscope, as assessed by demonstration on an exam.</td>
<td>Students will be given three prepared slides and be expected to focus slides, and view specimens on slides well enough to answer questions.</td>
<td>1-4</td>
<td>1, 2, 4</td>
</tr>
<tr>
<td>3.</td>
<td>Students will identify an unknown bacteria using skills and techniques learned. The correct identification will assess their proficiency in the use of these skills and techniques</td>
<td>Students will use microbiological techniques and biochemical tests to identify the unknown organism. A written report will record the steps followed during the exercise.</td>
<td>1 – 6</td>
<td>1-5</td>
</tr>
</tbody>
</table>

**Disclaimer:** The instructor reserves the right to amend this syllabus as necessary.