BIOL 2420 Microbiology for Non-Science Majors (4 credit hours, 3 lec., 4 lab.)

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 on 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

Prerequisite:
Biology 1406 or SCIT 1407 or BIOL 2401. One of the following must be met: 1) Developmental Reading 0093 AND Developmental Writing 0093; 2) English as a Second Language (ESOL) 0044 AND 0054; or 3) have met Texas Success Initiative (TSI) in Reading and Writing standards and DCCCD Writing score prerequisite. Student cannot take both BIOL 2420 and BIOL 2421 to satisfy the core science credit.

Students are expected to have a basic knowledge of cell anatomy, cell function, and biochemistry. Some of the information in the textbook will be considered review and will, therefore, not be covered at length. However, students will be responsible for all of the information included in all of the chapters covered over the semester. This course requires that each student possess a spoken, reading, and written knowledge of the American English language at the college level. Translators are not permitted during tests or quizzes.

Learning Objectives:
Upon completion of this course, the student should have: 1) be able to use microbiology concepts and terminology in describing important problems in microbial physiology; 2) display proficiency in performing laboratory techniques, such as culture, isolation, staining, and quantification and identification of microorganisms; 3) be able to describe the basis of infectious disease mechanisms, epidemiology, chemotherapy, and immunology; and 4) be able to identify key characteristics of select pathogenic microorganisms.

Required Materials:
- lab coat (available in campus bookstore)
- lab goggles (available in campus bookstore)
- 8 Long Scantrons 882E green
- #2 Pencils with erasers
- a black ultra-fine-point Sharpie (for lab)
- a pad of 3inch Post-it notes (for lab)
- a three ring binder with ruled notebook paper
- a small bound journal (for lab)

Attendance:
Students are expected to be punctual and to remain for the duration of all lectures and laboratories. Some tested material will only be presented in class. Attendance will be taken daily. If you miss class, it is your responsibility to update yourself on anything you might have missed. A student shall be excused from attending classes or other required activities for the observance of a religious holy day. (Inform the instructor within the first week of class that you will require a religious exemption for missing class.) Consult the Brookhaven College Catalog.
Laboratory attendance is crucial to achieving competence in microbiology. **Therefore, if you miss six laboratory sessions you will automatically receive a course grade of F.** Students are responsible for signing themselves in and out of lab, thereby documenting their attendance. Missing the laboratory session includes instances where a student arrives after the required exercises for the day have been completed by the class. Please note: when the required exercises have been completed, students are often given lab time to work on projects or prepare for laboratory exams.

If you are absent or late for a class or lab where points are awarded, you will not be able to make-up that work, barring extraordinary circumstances. All late work allowed will incur a minimum 10% penalty. **All work is due at the beginning of class on the due date and is considered late if turned in after the beginning of class.**

**Laboratory Safety:**
Students will be routinely handling pathogenic organisms during lab. You should consult your physician as to whether you can safely participate in a microbiology lab class if you are pregnant, immunocompromised, or have any other health issues. Students will be taught to perform all microbiological procedures safely and we expect that students will do their utmost to perform all procedures in the approved manner. If a student does not follow all microbiological procedures in a safe manner, that student will be asked to leave and be dropped from the course.

**Withdrawal Policy**
If you are unable to complete this course, it is your responsibility to withdraw formally. The withdrawal request must be received in the Registrar’s Office by the drop date published on eConnect to receive a grade of “W”. (Friday, July 13, 2012) Failure to do so will result in your receiving a performance grade, usually an “F.” If you drop a class or withdraw from the college before the official drop/withdraw deadline, you will receive a “W” (Withdraw) in each class dropped.

**How Your Grade is Determined:**

**Lecture Points:**
- 4 Lecture Exams @ 50 points each------------------------200 points
- 1 Research Project @ 50 points------------------------50 points
- 1 Research Project/Final Exam @ 100 points------------100 points
- In-Class Assignments/Homework ------------------------50 points

**TOTAL LECTURE POINTS POSSIBLE-----------------------350 points**

**Laboratory Points:**
- 3 Practical Exams @ 30 pts. each----------------------90 points
- Unknown Determination (Paper)--------------------100 points
- 22 Pre-lab Quizzes (online)--------------------------110 points

**TOTAL LABORATORY POINTS POSSIBLE----------300 points**

**TOTAL POINTS FOR THE COURSE (lecture + lab) 700 points**

(Final course grades will be posted to eConnect.)

**FINAL GRADE DETERMINATION:**

- A = 630 – 700 points
- B = 560 – 629 points
- C = 490 – 559 points
- D = 420 – 489 points
- F = < 420 points

**Lecture Exams:**
Exams are a combination of essay and multiple choice questions. The essay question is given in advance. Exam 3 will be only multiple choice. **Any test taken late will incur a minimum penalty of 10% of the maximum score.**
Infectious Disease Research Project:
Students will choose a topic from a list provided or they may submit a topic of their choice to the instructor for approval. Detailed instructions for this project will be available on eCampus under Assignments. In general, students will do library research on their topic. Students will complete a summary sheet for the topic using reliable, professional sources. The sources will be cited in APA format. The summaries will be shared with the entire class and will form 60% of the material covered on the final exam.

Final Exam:
The exam will be over the Infectious Disease Research Project topics and selected concepts from the entire semester. It will be multiple choice. It will be held in lecture, on the last day of the semester.

In Class Assignments and Homework:
Your instructor will choose a mix of assignments to enhance your understanding of microbiology. These will include previously announced and unannounced activities. If you are not present for a class activity, you cannot make up those points. Most of the activities will be on the textbook’s web site Mastering Microbiology http://www.masteringmicrobiology.com/. You are required to have access to this site in order to work the problems assigned. The Course ID for this section is MMBASON72713. These activities will be worth from 1 to 10 points each.

Lab Practical Exams:
These are exams over material specific to the microbiology lab. There will be 30 multiple choice questions. The exam is given during your scheduled lab time.

Unknown Determination Project:
You will be given a culture of an unknown organism and identify the organism through standard techniques available to you in the lab. You will write a formal paper on the project that will include your lab journal entries, a flow chart, and a descriptive chart. Specific details for this assignment are available on eCampus.

Daily Lab Quizzes:
Daily lab quizzes are available on eCampus and are to be taken prior to lab. Lab quizzes cover material that you will use in the upcoming lab. If you have not taken the lab quiz prior to the lab, you will earn a score of zero, with no opportunity to make up the work. Lab quizzes on eCampus are timed, and you will be allowed one attempt at the quiz. If you take an online lab quiz but do not show up for the lab corresponding to that quiz, you will receive a grade of zero on the quiz. If you are late or leave early, you will have points docked from your quiz score.

Additional Information:
- Students must read lecture chapters and laboratory exercises ahead of time to do well in this class.
- In addition to completing assignments on the Mastering Microbiology web site, you should use the other resources on the site to improve your understanding and performance in the course.
- **Open Labs:** The laboratory will be open outside of regular lab times. Open lab hours will be posted on eCampus and in the Microbiology lab (X2020). Microbiology students can use the open lab times to subculture microorganisms, work on their unknowns, use reference materials, or practice/study for practical exams. Open labs are not for make-up or missed lab exercises.
- You are responsible for all information from laboratory exercises, including the results of the exercises. **When our method of performing an exercise differs from the book, you are responsible for knowing the modified way that we performed the exercise.** Results of lab exercises are part of lab practical exams.
- Check eCampus regularly, as that is where I will post grades, announcements, staff information, course information, course documents, and assignments! Lab quizzes are only available on eCampus and some assignments also require you to have regular access to eCampus.
- Cell phones must be silenced during lecture and laboratory. They are also not allowed in the testing center. You may not have physical possession of an electronic device during in-class / lab testing. If you need to leave your phone on for an emergency, please notify the instructor in advance. You will be asked to leave class if the instructor notes use of any unapproved electronic device.
device. If your phone rings during class, you will be asked to leave for the day. **Photographing or recording any test or quiz will result in a grade of "F" for the course.**

- Computer use during class is restricted to class notes only.
- Lab safety standards will be detailed as we introduce lab procedures. All students are expected to meet those standards at all times in the lab. Note: There is absolutely **NO EATING OR DRINKING in the laboratory!**
- Students must earn a passing grade in the lab portion of the course in order to receive an overall passing grade for the course.
- Practical examinations, and lecture tests may not be made up, barring extraordinary circumstances.
- Students are responsible for keeping informed of announcements made during class when absent.
- Students are responsible for keeping informed of testing center hours of operation. You are not allowed a restroom break while testing in the Testing Center. If you must use the restroom, your test will be taken from you and you will not be allowed to finish. Those with medical conditions require a physician’s note to have a restroom break.
- **All assessments must be contested within one week of posting of scores on** eCampus. **Any grade not contested by that time will stand as is.**
- **Assigned text readings:** You are responsible for reading the scheduled chapters and lab exercises. I will highlight specific items during lecture but you are responsible for reading the text. The text is no substitute for lectures, and the lectures do not exclude you from reading the text. Some concepts will be discussed in lecture but will not appear in the text. Students are responsible for all material presented during lecture.
- **Note:** You will need long Scantrons for lecture exams, the final exam, and the 3 laboratory practical exams. Scantrons may be purchased in the campus bookstore, Bldg. S, second floor. There is a vending machine in the S building that sells Scantrons but, it is unreliable, purchase Scantrons at the bookstore. Scantrons will not be provided for you at the Testing Center. Please bring a valid Student ID or Driver’s License with you to the Testing Center, or they will not let you take the Exam! In addition, you must arrive at the testing center at least an hour before they close, or they will not let you take the exam! No cell phones or other electronic devices will be allowed. The Testing Center is located in Bldg. S, first floor, Brookhaven Campus. (*See hours posted on the Testing Center on-line at www.dcccd.edu.)*

**Intellectual Competencies**
The objective of the study of a natural sciences component of a core curriculum is to enable the student to understand, construct, and evaluate relationships in the natural sciences, and to enable the student to understand the basis for building and testing theories.

**Biology 2420 requires the following identified competencies:**
1. reading – the ability to analyze and interpret a variety of printed materials (books, documents, and articles) above the 12th grade level
2. writing – the ability to produce clear, correct and coherent prose adapted to purpose, occasion and audience (above the 12th grade level)
3. speaking – ability to communicate orally in clear, coherent, and persuasive language appropriate to purpose, occasion, and audience above 12th grade
4. listening – analyze and interpret various forms of spoken communication, possess sufficient literacy skills of writing, reading above 12th grade
5. critical thinking – think and analyze at a critical level
6. computer literacy – understand our technological society, use computer based technology in communication

**Biology 2420 includes the following identified, exemplary educational objectives:**
1. to understand and apply method and appropriate technology to the study of the natural sciences
2. to recognize scientific and quantitative methods and the differences between these approaches and the other methods of inquiry and to communicate findings, analyses, and interpretation both orally and in writing
3. to identify and recognize the differences among competing scientific theories
4. to demonstrate knowledge of the major issues and problems facing modern science, including issues that touch upon ethics, values, and public policies
5. to demonstrate knowledge of the interdependence of science and technology and their influence on, contribution to, modern culture.

Stop Before You Drop
For students who enrolled in college level courses for the first time beginning 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/6drop

Repeating this course:
Effective fall semester 2005, the Dallas County Community College District (DCCCD) will charge additional tuition to students registering the third or subsequent time for a course. All third and subsequent attempts of the majority of credit and Continuing Education/Workforce Training courses will result in additional tuition to be charged. Developmental Studies and some other courses will not be charged a higher tuition rate. Third attempts include courses taken at any DCCCD college campus since the Fall of 2002 semester.

Financial Aid Statement:
If you are receiving financial aid grants or loans, you must begin attendance in all classes. Do not drop or stop attending any class without consulting the Financial Aid Office! Changes in your enrollment level and failing grades may require that you repay financial aid funds.

Academic Dishonesty:
Academic dishonesty is a violation of the Code of Student Conduct. Scholastic dishonesty includes, but is not limited to, cheating on a test, plagiarism, and collusion. As a college student, you are considered to be a responsible adult. Your enrollment indicates acceptance of the DCCCD Code of Student Conduct published in the DCCCD Catalog. http://www.brookhavencollege.edu/studentsvcs/spar/handbook/handbook_online.aspx http://www.tasb.org/policy/pol/private/057501/pol.cfm?DisplayPage=FLB%28LOCAL%29.pdf
Incidents of academic dishonesty will be met with a course grade of “F”. Additionally, a letter describing the incident will be attached to your permanent student file. Consult the Brookhaven College Catalog for more details. Any irregularities reported by the Testing Center will result in a zero for that exam. You may not have any class materials or electronic devices during testing.

Plagiarism:
This is a writing-intensive course. It is expected that students will always present their own work. As defined by the Writing Program Administrators (wpacouncil.org), “plagiarism occurs when a writer deliberately uses someone else’s language, ideas, or other original (not common-knowledge) material without acknowledging its source.” Instances of plagiarism will earn a zero for the assignment and a grade of F in the course.

ADA:
Instructors will make all reasonable accommodations for students presenting correct documentation of a disability. This documentation may be obtained through the Office of Disabilities Accommodation in the S Building on the Brookhaven campus.
# BIOL 2420 Tentative Lecture Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Lecture Chapter(s)/Topics/Readings</th>
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<tbody>
<tr>
<td>Jun 6/7</td>
<td>Orientation; Ch. 1: A Brief History of Microbiology</td>
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<td></td>
<td>Ch. 3: (prokaryotic biology)</td>
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<td></td>
<td>Research Project Intro</td>
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<tr>
<td>Jun 11-14</td>
<td>Ch. 3: (prokaryotic biology)</td>
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<td>Ch. 4: Microscopy, Staining, and Classification</td>
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<td></td>
<td>Ch. 13: Characterizing and Classifying Viruses, Viroids, &amp; Prions</td>
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******Lecture Exam #1 (Ch. 1, part 3, 4, 13) in the Testing Center Fri, Jun 15 – Mon, Jun 18

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<tr>
<th>Date</th>
<th>Lecture Chapter(s)/Topics/Readings</th>
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<tbody>
<tr>
<td>Jun 19-21</td>
<td>Lab Practical #1 Tue, Jun 19</td>
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<td>Ch. 5 Microbial Metabolism</td>
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<td>Ch. 6: Microbial Nutrition and Growth</td>
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<tr>
<td>Jun 26-28</td>
<td>Ch. 7: Microbial Genetics</td>
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<td>Ch. 8: Recombinant DNA Technology (selected topics)</td>
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<tr>
<td>Jul 2,3,5</td>
<td>Lab Practical #2 Mon, Jul 2</td>
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<td>Ch. 9: Controlling Microbial Growth in the Environment</td>
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<td></td>
<td>Ch. 10: Controlling Microbial Growth in the Body: Antimicrobial Drugs</td>
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******Lecture Exam #2 (Ch. 5, 6, 7, 8) will be in the Testing Center Tue, Jul 3 – Sat, Jul 7

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<tr>
<th>Date</th>
<th>Lecture Chapter(s)/Topics/Readings</th>
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<tbody>
<tr>
<td>Jul 10-12</td>
<td>Ch. 14: Infection, Infectious Diseases, and Epidemiology</td>
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<td>Ch. 15: Innate Immunity</td>
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<td>Ch. 16: Specific Defense: Adaptive Immunity</td>
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<td>Research Project Summary Due Thurs, Jul 12</td>
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******Lecture Exam #3 (Ch. 9, 10, 14) will be online Wed, Jul 11 – Sat, Jul14

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<tr>
<th>Date</th>
<th>Lecture Chapter(s)/Topics/Readings</th>
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<tbody>
<tr>
<td>Jul 17-19</td>
<td>Ch. 16: Specific Defense: Adaptive Immunity</td>
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<td>Ch. 17: Immunization and Immune Testing (selected topics)</td>
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<td>Ch. 18: Hypersensitivities, Autoimmune Diseases, and Immune Deficiencies</td>
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<td>Unknown Determination Paper Due Thurs, Jul 19</td>
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******Lecture Exam #4 (Ch. 15, 16, 17, 18) will be in the Testing Center Fri, Jul 20 - Mon, Jul 23

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<th>Date</th>
<th>Lecture Chapter(s)/Topics/Readings</th>
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<tbody>
<tr>
<td>Jul 24-26</td>
<td>Lab Practical #3 Wed, Jul 25</td>
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<td>Research Project Presentations Tue, Jul 24</td>
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<td>Film Wed, Jul 25</td>
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<td>Final Exam in lecture Thurs, Jul 26</td>
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***The instructor reserves the right to amend this syllabus and schedule as necessary.***