MICROBIOLOGY BIOL-2421
Department of Life Sciences
Fall 2020

A. COURSE INFORMATION

Course number/section: BIOL-2421.W01
Class meeting time: Fully online class
Class location: Fully online class
Course Website: https://bb9.tamucc.edu

B. INSTRUCTOR INFORMATION

Instructor: Stella Doyungan, Ph.D.
Office location: Tidal Hall (TH) 232
Office hours: Mon, Tue, Wed, Thu and Fri at 10:00-11:00am

I will be in front of my computer to answer your emails and if needed we can set up a meeting through Webex. If I am not available during my office hours, I will send email through BlackBoard.

Telephone: 361-825-3686. You can leave a voicemail.
e-mail: stella.doyungan@tamucc.edu
Appointments: If students are not available during my office hours, students can make appointments, preferably through email.

All communications with me via email must be through your TAMUCC email address. Email sent after 5:00pm will be replied the next day. I will respond to your email within 24 hours if possible.

C. COURSE DESCRIPTION

Catalog Course Description
4 sem. hrs. (3:3) TCCNS Equivalent: BIOL 2421
An introduction to microorganisms including the bacteria, fungi, and viruses. Laboratory involves microbiological techniques and development of basic laboratory skills.
Prerequisites: BIOL 1406 - Biology I with a grade of “C” or above, BIOL 1407 – Biology II, CHEM 1411 - General Chemistry I, CHEM 1412 - General Chemistry II, or permission of instructor. Corequisite: Safety training given in SMTE 0092 - Biomedical Laboratory Safety Seminar is required for continued participation in this course. Offered fall and spring semesters every year.

Extended Course Description
This course is designed for those students majoring and minoring in Biology, Biomedical Sciences, Environmental Sciences, Biochemistry, and Chemistry, and for post-baccalaureate students seeking to fulfill pre-professional requirements. This course will cover history of microbiology and its contributors; the structure, function, growth and metabolism of prokaryotes in general; physical, chemical and antimicrobial drug methods of controlling
microbes; basic genetics and Central Dogma of microbes; taxonomy and characterization of eight phyla within Domain Bacteria; ecology of microbes, including their role biogeochemical cycling; and basic structures of viruses and fungi.

The laboratory involves hands-on manipulation of microbes; please see the separate lab syllabus and schedule. All lab activities use Biological Safety Level (BSL)-1 (less likely to cause disease) bacteria. The first four lab activities involve use and care of microscope, preparation of culture media, learning aseptic techniques, isolation streak of bacteria on plates, transferring bacteria from plate to broth to slant, etc.). The last four lab activities involve biochemical characterization, isolation of microorganisms from soil, and study of fungi and algae. Students, with allergy molds or specific antibiotics, with a history of seizures, who are pregnant or immunocompromised in any way should inform their lab instructor.

Microbiology is very relevant to the science curriculum, regardless of your major; not only for medical concerns, but also for the safety of drinking and recreational water, food, bioremediation, and daily occurrences. Knowledge of microbiology can get you employed, in federal and state agencies (TDSHS, FDA, CDC), local municipalities (health departments, sanitation inspections, water and waste-water treatment), clinical laboratory science in hospitals, and industry (agricultural, breweries, biotechnology).

D. PREREQUISITES AND COREQUISITES

Prerequisites: BIOL1406 (Biology I), BIOL1407 (Biology II), CHEM1411 (Gen. Chemistry I) and CHEM1412 (Gen. Chemistry II)

Corequisite: SMTE0092
Documented completion of SMTE0092 is required early in the semester for continued participation in this course.

Students should also be able to perform basic calculations (add, subtract, multiply and divide using exponents and scientific notation), understand logarithms, and basic mathematical concepts.

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES

Textbook:

Other reference:
Laboratory Manual

Computer
Computer is required for this course and the computer must have working camera, access to the internet and must have MS Word document software.

F. STUDENT LEARNING OUTCOMES AND ASSESSMENT
Assessment is a process used by instructors to help improve learning. Assessment is essential for effective learning because it provides feedback to both students and instructors. A critical step in this process is making clear the course’s student learning outcomes that describe what students are expected to learn to be successful in the course. The student learning outcomes for this course are listed below. By collecting data and sharing it with students on how well they are accomplishing these learning outcomes students can more efficiently and effectively focus their learning efforts. This information can also help instructors identify challenging areas for students and adjust their teaching approach to facilitate learning.

At the end of the semester, the student will be able to:
SLO 1. List or identify persons involved in the history of microbiology from antiquity to the present.
SLO 2. Discuss the roles and significance of microorganisms within biology, including bacteria, viruses, fungi, algae and protozoa.
SLO 3. Describe the basic elements of microbiology, including structure, metabolism, and genetics of microorganisms.
SLO 4. Perform (in the laboratory component of the course) basic laboratory skills and basic microbiological techniques, including the isolation, culture, and biochemical identification of microorganisms.
SLO 5. Sort the major categories of physical methods and of antimicrobials used in control of microorganisms.
SLO 6. Calculate (laboratory and lecture) serial dilutions, and volumes of media from dehydrated stock.
SLO 7. Categorize levels of diversity within the microbial world including bacteria, viruses, fungi, algae and protozoa.
SLO 8. Examine the role of the scientific method in obtaining, critiquing, and confirming microbiological data.

G. INSTRUCTIONAL METHODS AND ACTIVITIES
This course is conducted fully online. The student will participate in the course using TAMUCC BlackBoard, a virtual learning environment and course management system.
All learning materials will be organized in modules and posted in BlackBoard. Completion of the modules and assigned readings will be the primary forms of instruction in this course. Students will complete the quizzes for each module within the time frame specified in the “Course Content/ Schedule. A meeting through WebEx will be done once a week for most of the weeks at the specified day and time as shown in the ‘Course Content/Schedule’ for questions and clarifications. Students will be assessed from their quizzes and long exams which are done in Blackboard. Some videos and animations will be included to supplement the readings.

The instructor will provide guidance and assistance to students but it is the responsibility of the student to identify his learning needs and show that learning has occurred.

Announcements will be posted in BlackBoard frequently. They will appear on the student’s BlackBoard dashboard and also will be sent to the student’s email address the student puts in BlackBoard. It is the responsibility of the student to check their email frequently, as they might contain important information about the course.

Email feature under ‘Communication Tool’ located on the left menu in BlackBoard will be used to send messages. The Bb messages feature is hidden so you cannot use that. Student must check their email regularly. When sending emails, student must put in the subject box his name and what the email is about. For example: Jose Rizal - Quiz 1.

Discussion Forum will be created in the Discussion Board for each module in BlackBoard. The Discussion Forum is under the ‘Collaboration Tools’ on the left menu. It is normal for an online course to have several questions about the course. This forum is open to everyone. Student is encouraged to post questions and give responses to the questions. For each comprehensive and accurate discussion and/or clear and correct response of a material, student will receive 1 extra credit to be added to student’s upcoming exam (up to 5 points maximum).

WebEx meeting will be held once a week as indicated in the Course Content/Schedule for most of the weeks. The meeting is not live lecture but to discuss and answer students’ questions and clarifications. Students are encouraged attend the meetings.

H. MAJOR COURSE REQUIREMENTS AND GRADING

Major Course Requirements
Lecture contributes 70% of your final grade, and laboratory contributes 30% of your final grade:

Lecture
The lecture grade comprises grades in lecture exams, final exam and quizzes.

Lecture and Final Exams. The exams cover specific assigned topics. They consist of
multiple choice, multiple mark, fill-in the blank, matching type, and true-false questions.
There are four lecture exams and a comprehensive final exam during the semester; each long exam is converted into 100 percentage points. The comprehensive final is worth 200 points. Completion of the modules will prepare the students for the quizzes and exams. Students will take the exams between the hours of 9am and 4pm using Respondus Lockdown Browser and Respondus Monitor on the dates listed in the Course Content/Schedule. They are required to download and install Respondus Lockdown Browser on their computers and they are required to have a web camera on their computers. Other instructions about exams will be given in Blackboard. Students are required to take the exams as scheduled. There is NO make-up for missed exam except under the most unusual circumstances, and this would require prior arrangement and at the discretion of the instructor. If exam will be given, it will be in a different format. There should be no use of references (textbooks, notes or electronic resources) during the exam. Depending on the exam, student may be allowed to use calculator and scratch papers.

**LockDown Browser Requirement**
This course requires the use of LockDown Browser and respondus monitor for the exams. Open the link below and watch the video to get a basic understanding of LockDown Browser. [https://www.respondus.com/products/lockdown-browser/student-movie.shtml](https://www.respondus.com/products/lockdown-browser/student-movie.shtml). You can download and install LockDown Browser from the link below. [https://download.respondus.com/lockdown/download.php?id=797913747](https://download.respondus.com/lockdown/download.php?id=797913747). During the exam, start LockDown Browser, then log into Blackboard Learn and navigate to the test. Note: You won't be able to access tests with a standard web browser. If this is tried, an error message will indicate that the test requires the use of LockDown Browser. Simply start LockDown Browser and navigate back to the exam to continue.

**Quizzes.** There will be a quiz for each module. These quizzes will assess students’ completion of the module. In addition, quizzes will help the students prepare for the exam. These quizzes will be posted and completed in BlackBoard. They will open and close at particular dates so take note of their opening and closing dates. There will be NO make-up for missed quizzes. The quizzes are worth 100 percentage points.

**Grading in Lecture**

<table>
<thead>
<tr>
<th>Exam</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam 1</td>
<td>100</td>
</tr>
<tr>
<td>Exam 2</td>
<td>100</td>
</tr>
<tr>
<td>Exam 3</td>
<td>100</td>
</tr>
<tr>
<td>Exam 4</td>
<td>100</td>
</tr>
<tr>
<td>Final exam</td>
<td>200</td>
</tr>
<tr>
<td>Quizzes</td>
<td>100</td>
</tr>
<tr>
<td>Total points</td>
<td>700</td>
</tr>
</tbody>
</table>

**I WILL NOT ROUND DECIMALS OF LECTURE GRADES TO THE NEAREST WHOLE NUMBER.**
Laboratory
The laboratory grade comprises grades in worksheets, quizzes and laboratory exams. There is a separate laboratory schedule.

I WILL NOT ROUND DECIMALS OF LABORATORY GRADES TO THE NEAREST WHOLE NUMBER.

Final grading: The final number and letter grade will be based on the grade you earn in the lecture and laboratory. Lecture grade is 70% and laboratory grade is 30%.

\[
\text{Final Grade} = \text{lecture grade (0.70)} + \text{labatory grade (0.30)}
\]

Example: Final grade = 70 (0.70) + 90 (0.30) = 49.0 + 27 = 76

Final letter grade designation
90 -100 = A
80 - 89 = B
70 - 79 = C
60 - 69 = D
59 and less = F

I WILL ROUND DECIMALS OF FINAL NUMBER GRADE TO THE NEAREST WHOLE NUMBER TO DESIGNATE LETTER GRADE.

I. COURSE CONTENT/SCHEDULE

<table>
<thead>
<tr>
<th>WEEK</th>
<th>TOPIC</th>
<th>READINGS</th>
<th>ACTIVITIES</th>
<th>DUE DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug 19-23</td>
<td>Orientation</td>
<td>Syllabus</td>
<td>• Orientation meeting through WebEx on Aug 20 at 11:00-12:00n</td>
<td>Aug 29</td>
</tr>
</tbody>
</table>
|          | Module 1      | Chap 1- Introduction to Microorganisms | • Complete Module 1  
|          |               |                           | • Complete Quiz 1                                                          |                   |
| Aug 24-30| Module 2      | Chap 3 - Microscopy, and Microbial structures | • Complete Module 2  
|          |               |                           | • Complete Quiz 2  
|          |               |                           | • WebEx meeting on Aug. 27 at 11:00-12:00n                                  | Aug 29            |
| Aug 31-Sep 6| Module 3 | Chap 4 - Microbial growth I | • Begin Module 3                                                          |                   |
| Sep 7-13 | Module 3 cont’d | Chap 4 - Microbial growth II | • Complete Module 3  
|          |               |                           | • Complete Quiz 3  
<p>|          |               |                           | • WebEx meeting on Sep. 10 at 11:00-12:00n                                  | Sep 12            |</p>
<table>
<thead>
<tr>
<th>WEEK</th>
<th>TOPIC</th>
<th>READINGS</th>
<th>ACTIVITIES</th>
<th>DUE DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sep 14-20</td>
<td>Exam 1</td>
<td>Chaps 1, 3 and 4, Chap 5 - Microbial control</td>
<td><strong>Exam 1 on Sep 18 about Modules 1, 2 and 3</strong>&lt;br&gt;• Complete Module 4&lt;br&gt;• Complete Quiz 4</td>
<td>Sep 18 at 4pm</td>
</tr>
<tr>
<td></td>
<td>Module 4</td>
<td></td>
<td></td>
<td>Sep 19</td>
</tr>
<tr>
<td>Sep 21-27</td>
<td>Module 5</td>
<td>Chap 6 - Microbial Metabolism</td>
<td>• Complete Module 5&lt;br&gt;• Complete Quiz 5&lt;br&gt;• WebEx meeting on Sep 24 at 11:00-12:00n</td>
<td>Sep 26</td>
</tr>
<tr>
<td>Sep 28-Oct 4</td>
<td>Module 6</td>
<td>Chap 7 - DNA to protein</td>
<td>• Complete Module 6&lt;br&gt;• Complete Quiz 6&lt;br&gt;• WebEx meeting on Oct 1 at 11:00-12:00n</td>
<td>Oct 3</td>
</tr>
<tr>
<td>Oct 5-11</td>
<td>Exam 2</td>
<td>Chaps, 5, 6 and 7, Chap 8 - Bacterial genetics</td>
<td><strong>Exam 2 on Oct 9 about Modules 4, 5 and 6</strong>&lt;br&gt;• Complete Module 7&lt;br&gt;• Complete Quiz 7</td>
<td>Oct 9 at 4pm</td>
</tr>
<tr>
<td>Oct 12-18</td>
<td>Module 7</td>
<td></td>
<td>• Complete Module 8&lt;br&gt;• Complete Quiz 8&lt;br&gt;• WebEx meeting on Oct 15 at 11:00-12:00n</td>
<td>Oct 10</td>
</tr>
<tr>
<td>Oct 19-25</td>
<td>Module 8</td>
<td>Chap 9 - rDNA technology</td>
<td>• Complete Module 9&lt;br&gt;• Complete Quiz 9&lt;br&gt;• WebEx meeting on Oct 22 at 11:00-12:00n</td>
<td>Oct 24</td>
</tr>
<tr>
<td>Oct 26-Nov 1</td>
<td>Module 9</td>
<td>Chap 20 - Antimicrobial medications</td>
<td>• Complete Module 10&lt;br&gt;• Complete Quiz 10&lt;br&gt;• WebEx meeting on Nov 5 at 11:00-12:00n</td>
<td>Oct 23 at 4pm</td>
</tr>
<tr>
<td>Nov 2-8</td>
<td>Module 10</td>
<td>Chap 11 - Bacteria I</td>
<td><strong>Exam 3 on Oct 23 about Modules 7, 8 and 9</strong>&lt;br&gt;• Begin Module 10</td>
<td>Nov 7</td>
</tr>
<tr>
<td>Nov 9-15</td>
<td>Module 11</td>
<td>Chap 12 - Eukaryotes</td>
<td>• Complete Module 11&lt;br&gt;• Complete Quiz 11&lt;br&gt;• WebEx meeting on Nov 12 at 11:00-12:00n</td>
<td>Nov 14</td>
</tr>
<tr>
<td>WEEK</td>
<td>TOPIC</td>
<td>READINGS</td>
<td>ACTIVITIES</td>
<td>DUE DATE</td>
</tr>
<tr>
<td>----------</td>
<td>-------------</td>
<td>-----------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>----------</td>
</tr>
</tbody>
</table>
| Nov 16-22 | Module 12   | Chap 13 - Viruses, vriodls and prions | • Complete Module 12  
• Complete Quiz 12  
• WebEx meeting on Nov 19 at 9:00-10:00am | Nov 21   |
| Nov 23    | Exam 4      | Chaps 11, 12 and 13                | Exam 4 on Nov 23 about Modules 10, 11 and 12                                | Nov 23 at 4pm |
| Dec 3     | FINAL EXAM  | All chapters discussed             | Final Exam on Dec 3 about Modules 1-12                                      | Dec 3 at 4pm |

Midterm Grading - October 14-28, 2020

Note: Changes in this course schedule may be necessary and will be announced to the class by the Instructor. The assignments and exams shown are directly related to the Student Learning Outcomes described in Section F.

J. COURSE POLICIES

COVID-19
Face Coverings—Face coverings (cloth face covering, surgical mask, etc.) must be properly worn in all non-private spaces including classrooms, teaching laboratories, common spaces such as lobbies and hallways, public study spaces, libraries, academic resource and support offices, and outdoor spaces where 6 feet of physical distancing is difficult to reliably maintain. Extra masks will be made available if needed.

Attendance/Tardiness
Students are expected to complete the modules and quizzes by their due dates. They should take the exams as scheduled.

Late Work and Make-up Exams
No late quizzes are accepted. There is NO make-up for missed exam except if reasons are valid, and this would require prior arrangement and at the discretion of the instructor. If make-up exam will be given, it will be in a different format.

Extra Credit
Student is encouraged to post questions and give responses to the questions in the Discussion forums. For each comprehensive and accurate discussion and/or clear and correct response of a material, student will receive 1 extra credit to be added to student’s upcoming exam (up to 5 points maximum).
Cell Phone Use
Not applicable

Laptop Use
Laptops are required for this class to complete the class activities.

Food in Class
Not applicable

Missed Exam
Make up exam can be given to students for valid reasons, and this would require prior arrangement and at the discretion of the instructor. If make-up exam will be given, it will be in a different format.

Participation
Participation is important for your success in this course. To participate you have to complete all assigned reading assignments and quizzes on or before their due dates. You have to post questions and answer questions in the Discussion Forum.

K. COLLEGE AND UNIVERSITY POLICIES

- **Academic Integrity (University)**
  University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, **academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in a failing grade.**

- **Classroom/Professional Behavior**
  Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

- **Statement of Civility**
  Texas A&M University-Corpus Christi has a diverse student population that represents
the population of the state. Our goal is to provide you with a high-quality educational experience that is free from repression. You are responsible for following the rules of the University, city, state and federal government. We expect that you will behave in a manner that is dignified, respectful and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated.

- **Deadline for Dropping a Course with a Grade of W (University)**
  I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. **Please consult with your academic advisor, the Financial Aid Office, and me, before you decide to drop this course.** Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation **WILL NOT automatically result in your being dropped from the class.** Please consult the Academic Calendar ([http://www.tamucc.edu/academics/calendar/](http://www.tamucc.edu/academics/calendar/)) for the last day to drop a course.

- **Grade Appeals (College of Science and Engineering)**
  As stated in University Procedure 13.02.99.C0.03, Student Grade Appeal Procedures, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is required to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Procedure 13.02.99.C0.03, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at [http://academicaffairs.tamucc.edu/rules_procedures/assets/13.02.99.e0.03_student_grade_appeals.pdf](http://academicaffairs.tamucc.edu/rules_procedures/assets/13.02.99.e0.03_student_grade_appeals.pdf). For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school, the Office of the College of Science and Engineering Dean, or the Office of the Provost.

- **Disability Services**
  The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call (361) 825-5816 or visit Disability Services in Corpus Christi Hall 116.

  If you are a returning veteran and are experiencing cognitive and/or physical access
issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.  
http://disabilityservices.tamucc.edu/

- **Civil Rights Complaints**  
Texas A&M University-Corpus Christi is committed to fostering a culture of caring and respect that is free from discrimination, relationship violence and sexual misconduct, and ensuring that all affected students have access to services. For information on reporting Civil Rights complaints, options and support resources (including pregnancy support accommodations) or university policies and procedures, please contact the University Title IX Coordinator, Sam Ramirez (Samuel.ramirez@tamucc.edu) or Deputy Title IX Coordinator, Rosie Ruiz (Rosie.Ruiz@tamucc.edu) x5826, or visit website at Title IX/Sexual Assault/Pregnancy.

**Limits to Confidentiality.** Essays, journals, and other materials submitted for this class are generally considered confidential pursuant to the University's student record policies. However, students should be aware that University employees, including instructors, are not able to maintain confidentiality when it conflicts with their responsibility to report alleged or suspected civil rights discrimination that is observed by or made known to an employee in the course and scope of their employment. As the instructor, I must report allegations of civil rights discrimination, including sexual assault, relationship violence, stalking, or sexual harassment to the Title IX Coordinator if you share it with me.

These reports will trigger contact with you from the Civil Rights/Title IX Compliance office who will inform you of your options and resources regarding the incident that you have shared. If you would like to talk about these incidents in a confidential setting, you are encouraged to make an appointment with counselors in the University Counseling Center.

- **Statement of Academic Continuity**  
In the event of an unforeseen adverse event, such as a major hurricane and classes could not be held on the campus of Texas A&M University–Corpus Christi; this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow continuation of the course. Ideally, University facilities (i.e., emails, web sites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students need to make certain that the course instructor has a primary and a secondary means of contacting each student.

L. **OTHER INFORMATION**

- **Academic Advising**  
The College of Science & Engineering requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the
department chair. Meetings are by appointment only; advisors do not take walk-ins. Please call or stop by the Advising Center to check availability and schedule an appointment. The College’s Academic Advising Center is located in Center for Instruction 350 or can be reached at (361) 825-3928.

M. GENERAL DISCLAIMER
I reserve the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. I will announce such changes in a timely manner during regularly scheduled lecture periods.