SYLLABUS - ENVIRONMENTAL MICROBIOLOGY, BIOL 5336-001:
Spring 2020, Tue & Thur 5:30PM - 6:50 PM

Instructor: Riqing Yu, Ph.D. (ryu@uttyler.edu)
Assistant Professor, Department of Biology
HPR 105; Tel: (903) 566-7257

Office Hour: Mon-Wed 4:30-5:30 pm

Lecture: Tue & Thu 5:30 PM - 6:50 PM; Classroom: BEP 140

Textbooks: There is no official book for this course. However, I will refer to several microbiology books such as:

Course Description: Environmental Microbiology is a graduate course, aiming to expand students’ knowledge of the prokaryotic and eukaryotic microbes, phylogenetic evolution and microbiome, and microbial interactions with environments and human. Students will be expected to understand and appreciate unique nature of microorganisms and their importance to life in both beneficial and harmful aspects, and be able to use them in theoretic exploration and in the laboratory experiments.

Objectives: The goal of the course is to gain a molecular, biological, and ecological understanding of microbial processes and methods relating to microbe-environment interactions.

This course will lead you to learn the fundamental scientific concepts and basic skills of applied and environmental microbiology. Specifically, we will assess the ways in which human activities and environments impact microbial systems and vice versa. Special consideration will be given to gene and microbiome characterization, analyses of microbial metabolisms, microbe-mediated cycling of nutrients and pollutants, functioning species occurring in a variety of natural and engineered systems.

Prerequisites: Prior exposure to General Biology, Genetics, and Biochemistry will be beneficial, but is not required.

Canvas: All course PPT slides, announcements, assignments and grades will be posted online using Canvas (http://www.uttyler.edu/canvas/index.php). Updates to this syllabus will be posted; please check periodically. Homework assignments will be forwarded to students via Canvas, and completed assignments should be printed out and handed in the class. Please refer to the “assignments” section on Canvas for detailed instructions on how
to view and submit homework assignments. Letter grades which are combined from all grades will not be assigned until the end of the semester.

**Academic Integrity:** Students are reminded of their pledge to uphold the University of Texas at Tyler Honor Code. Please refer to [http://www.uttyler.edu/educpsych/files/HonorCode.pdf](http://www.uttyler.edu/educpsych/files/HonorCode.pdf) for guidelines covering academic fraud as they may apply to the course assignments and exams.

**Grading:** Each assignment will be 100 points-based. Final grades will be calculated below.

<table>
<thead>
<tr>
<th>BIOL 5380-002</th>
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<tbody>
<tr>
<td>Term paper</td>
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<tr>
<td>Paper presentation (2 times)</td>
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<td>Project: sequence analysis and phylogeny</td>
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<td>Class discussion and participation</td>
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**Final grade scale**

| A: 90-100% | B: 80-89% | C: 60-79% | F: <60% |

**Course Schedule**

<table>
<thead>
<tr>
<th>Class</th>
<th>Date</th>
<th>Topic</th>
<th>Reading</th>
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<tbody>
<tr>
<td>I</td>
<td>1</td>
<td>Tue Jan 14</td>
<td>Introduction and Evolution of Microorganisms</td>
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<tr>
<td>2</td>
<td>Thu Jan 16</td>
<td>Microbial Metabolism</td>
<td>Ch 3, Brock</td>
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<tr>
<td>3</td>
<td>Thu Jan 23</td>
<td>Microbial Genomics</td>
<td>Ch 6, Brock</td>
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<tr>
<td>4</td>
<td>Thu Jan 30</td>
<td>Microbial Evolution and Systematics</td>
<td>Ch 12, Brock</td>
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<tr>
<td>5</td>
<td>Thu Feb 06</td>
<td>Gene and Phylogenetic Analysis (Methods)</td>
<td>Need 3 h; No presentation.</td>
</tr>
<tr>
<td>6</td>
<td>Thu Feb 13</td>
<td>Metabolic Diversity of Microbes (1)</td>
<td>Ch 13, Brock</td>
</tr>
<tr>
<td>7</td>
<td>Thu Feb 20</td>
<td>Metabolic Diversity of Microbes (2)</td>
<td>Ch 13, Brock</td>
</tr>
<tr>
<td>8</td>
<td>Thu Feb 27</td>
<td>Functional Diversity of Bacteria (1)</td>
<td>Ch 14, Brock</td>
</tr>
<tr>
<td>9</td>
<td>Thu Mar 05</td>
<td>Functional Diversity of Bacteria (2)</td>
<td>Ch 14, Brock</td>
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<tr>
<td>10</td>
<td>Thu Mar 12</td>
<td>Spring break</td>
<td></td>
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<tr>
<td>11</td>
<td>Thu Mar 19</td>
<td>Diversity of Archaea</td>
<td>Ch 16, Brock</td>
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<tr>
<td>12</td>
<td>Thu Mar 26</td>
<td>Methods in Microbial Ecology</td>
<td>Ch 18, Brock</td>
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<tr>
<td>13</td>
<td>Thu Apr 02</td>
<td>Environ Transmitted Pathogens and Sampling Methods</td>
<td>Ch 22-30-8, Pepper</td>
</tr>
<tr>
<td>14</td>
<td>Thu Apr 09</td>
<td>Microbiology of the Built Environment</td>
<td>Ch 21, Brock</td>
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<tr>
<td>15</td>
<td>Thu Apr 16</td>
<td>Microbial Interactions with Plants, Animals and Human</td>
<td>Ch 22, Brock</td>
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<tr>
<td>16</td>
<td>Thu Apr 23</td>
<td>TBD and Project report due</td>
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'Schedule is subject to change.

**Presentation assignment:** You will have chance to present one environmental microbiology-related research paper, including introduction, hypothesis, material and methods, results, discussion or conclusions.
By choosing any environmental microbiology-related topic you are interested in, you could search the proper papers by Pubmed (http://www.ncbi.nlm.nih.gov/pubmed) or other database source online. Once browsing the abstracts of papers, you will further determine 1 paper you really want to present (you may use another review paper on the same topic for your PPT introduction). Then you could download the paper either directly from Pubmed if it is available, or you could find the full papers on the e-journals in UTTyler library (https://sfx-01uotat.hosted.exlibrisgroup.com/uttyler/journalsearch).

Final presentation grades will be evaluated by the instructor and all your classmates with a full grade of 100 points. The evaluation criteria include a reasonable and clear introduction and hypothesis, understandable methods, supportable results and conclusions with efficient communication (see the posted presentation evaluation criterion).

UNIVERSITY POLICIES AND ADDITIONAL INFORMATION THAT MUST APPEAR IN EACH COURSE SYLLABUS

UT Tyler Honor Code
Every member of the UT Tyler community joins together to embrace: Honor and integrity that will not allow me to lie, cheat, or steal, nor to accept the actions of those who do.

Students Rights and Responsibilities
To know and understand the policies that affect your rights and responsibilities as a student at UT Tyler, please follow this link: http://www.uttyler.edu/wellness/rightsresponsibilities.php

Campus Carry
We respect the right and privacy of students 21 and over who are duly licensed to carry concealed weapons in this class. License holders are expected to behave responsibly and keep a handgun secure and concealed. More information is available at http://www.uttyler.edu/about/campus-carry/index.php

UT Tyler a Tobacco-Free University
All forms of tobacco will not be permitted on the UT Tyler main campus, branch campuses, and any property owned by UT Tyler. This applies to all members of the University community, including students, faculty, staff, University affiliates, contractors, and visitors.

Forms of tobacco not permitted include cigarettes, cigars, pipes, water pipes (hookah), bidis, kretaks, electronic cigarettes, smokeless tobacco, snuff, chewing tobacco, and all other tobacco products.

There are several cessation programs available to students looking to quit smoking, including counseling, quitlines, and group support. For more information on cessation programs please visit www.uttyler.edu/tobacco-free.
Grade Replacement/Forgiveness and Census Date Policies
Students repeating a course for grade forgiveness (grade replacement) must file a Grade Replacement Contract with the Enrollment Services Center (ADM 230) on or before the Census Date of the semester in which the course will be repeated. (For Fall, the Census Date is Sept. 12.) Grade Replacement Contracts are available in the Enrollment Services Center or at http://www.uttyler.edu/registrar. Each semester’s Census Date can be found on the Contract itself, on the Academic Calendar, or in the information pamphlets published each semester by the Office of the Registrar.

Failure to file a Grade Replacement Contract will result in both the original and repeated grade being used to calculate your overall grade point average. Undergraduates are eligible to exercise grade replacement for only three course repeats during their career at UT Tyler; graduates are eligible for two grade replacements. Full policy details are printed on each Grade Replacement Contract.

The Census Date (Sept. 12th) is the deadline for many forms and enrollment actions of which students need to be aware. These include:

- Submitting Grade Replacement Contracts, Transient Forms, requests to withhold directory information, approvals for taking courses as Audit, Pass/Fail or Credit/No Credit.
- Receiving 100% refunds for partial withdrawals. (There is no refund for these after the Census Date)
- Schedule adjustments (section changes, adding a new class, dropping without a “W” grade)
- Being reinstated or re-enrolled in classes after being dropped for non-payment
- Completing the process for tuition exemptions or waivers through Financial Aid

State-Mandated Course Drop Policy
Texas law prohibits a student who began college for the first time in Fall 2007 or thereafter from dropping more than six courses during their entire undergraduate career. This includes courses dropped at another 2-year or 4-year Texas public college or university. For purposes of this rule, a dropped course is any course that is dropped after the census date (See Academic Calendar for the specific date).

Exceptions to the 6-drop rule may be found in the catalog. Petitions for exemptions must be submitted to the Enrollment Services Center and must be accompanied by documentation of the extenuating circumstance. Please contact the Enrollment Services Center if you have any questions.

Disability/Accessibility Services
In accordance with Section 504 of the Rehabilitation Act, Americans with Disabilities Act (ADA) and the ADA Amendments Act (ADAAA) the University of Texas at Tyler offers accommodations to students with learning, physical and/or psychological disabilities. If you have a disability, including a non-visible diagnosis such as a learning disorder, chronic
illness, TBI, PTSD, ADHD, or you have a history of modifications or accommodations in a previous educational environment, you are encouraged to visit https://hood.accessiblelearning.com/UTTyler and fill out the New Student application. The Student Accessibility and Resources (SAR) office will contact you when your application has been submitted and an appointment with Cynthia Lowery, Assistant Director of Student Services/ADA Coordinator. For more information, including filling out an application for services, please visit the SAR webpage at http://www.uttyler.edu/disabilityservices, the SAR office located in the University Center, # 3150 or call 903.566.7079.

**Student Absence due to Religious Observance**
Students who anticipate being absent from class due to a religious observance are requested to inform the instructor of such absences by the second class meeting of the semester.

**Student Absence for University-Sponsored Events and Activities**
If you intend to be absent for a university-sponsored event or activity, you (or the event sponsor) must notify the instructor at least two weeks prior to the date of the planned absence. At that time the instructor will set a date and time when make-up assignments will be completed.

**Social Security and FERPA Statement**
It is the policy of The University of Texas at Tyler to protect the confidential nature of social security numbers. The University has changed its computer programming so that all students have an identification number. The electronic transmission of grades (e.g., via e-mail) risks violation of the Family Educational Rights and Privacy Act; grades will not be transmitted electronically.

**Emergency Exits and Evacuation**
Everyone is required to exit the building when a fire alarm goes off. Follow your instructor’s directions regarding the appropriate exit. If you require assistance during an evacuation, inform your instructor in the first week of class. Do not re-enter the building unless given permission by University Police, Fire department, or Fire Prevention Services.

**Student Standards of Academic Conduct**
Disciplinary proceedings may be initiated against any student who engages in scholastic dishonesty, including, but not limited to, cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts.

i. “Cheating” includes, but is not limited to:
- copying from another student’s test paper;
- using, during a test, materials not authorized by the person giving the test;
- failure to comply with instructions given by the person administering the test;
- possession during a test of materials which are not authorized by the person giving the test, such as class notes or specifically designed “crib notes”. The presence of
textbooks constitutes a violation if they have been specifically prohibited by the person administering the test;

- using, buying, stealing, transporting, or soliciting in whole or part the contents of an unadministered test, test key, homework solution, or computer program;
- collaborating with or seeking aid from another student during a test or other assignment without authority;
- discussing the contents of an examination with another student who will take the examination;
- divulging the contents of an examination, for the purpose of preserving questions for use by another, when the instructors has designated that the examination is not to be removed from the examination room or not to be returned or to be kept by the student;
- substituting for another person, or permitting another person to substitute for oneself to take a course, a test, or any course-related assignment;
- paying or offering money or other valuable thing to, or coercing another person to obtain an unadministered test, test key, homework solution, or computer program or information about an unadministered test, test key, home solution or computer program;
- falsifying research data, laboratory reports, and/or other academic work offered for credit;
- taking, keeping, misplacing, or damaging the property of The University of Texas at Tyler, or of another, if the student knows or reasonably should know that an unfair academic advantage would be gained by such conduct; and
- misrepresenting facts, including providing false grades or resumes, for the purpose of obtaining an academic or financial benefit or injuring another student academically or financially.

ii. “Plagiarism” includes, but is not limited to, the appropriation, buying, receiving as a gift, or obtaining by any means another’s work and the submission of it as one’s own academic work offered for credit.

iii. “Collusion” includes, but is not limited to, the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any section of the rules on scholastic dishonesty.

iv. All written work that is submitted will be subject to review by plagiarism software.