UTTyler
MEDICAL BIOLOGICAL SCIENCES

BIOT 5132 **Critical Reading II** **Credit Hours: 1**

Semester: Fall **Year:** 2022
Class Day/Time: Tuesdays, 9:00-10:00am **Class Location:** BMR Center Auditorium (in person)

Instructor of Record: Dr. Buka Samten

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Office Hours: Can arrange any time by email

Course Description: This course exposes students to current research published in major scientific journals. Students will learn how to read and interpret methodologies and results published by other scientists. This course will provide the student with a thorough understanding of the strengths and limitations of scientific writing. This course is taught at a higher level than Critical Reading I and focuses on critiquing and developing opinions on scientific articles. Although this is the second of a two-course sequence, the first course (Critical Reading I) is not a pre-requisite. This course is team taught with a different instructor facilitating the discussion each week on a topical paper of choice.

Prerequisite: None **Co-requisite:** None

Goals of Course:
Critical Reading II is the second course in a two-course sequence that is designed to teach the early graduate student how to read and critically interpret scientific papers taken from the primary literature. Reading for knowledge (i.e. textbook reading) is much different than reading critically, and thus the latter must be approached much differently. When one reads for knowledge, the focus is on accepting as fact what is written and absorbing and understanding the material. For critical reading, one must learn how to question and analyze the material. The student should not blindly accept what is written but must read, absorb, analyze, question and formulate their own opinion as to the validity of the presented results and their interpretation. This is very difficult to become accustomed to and students need to learn, develop and hone this skill by exposure and repeated practice. This class will be taught by a team of professors/instructors that are involved in scientific research covering a broad range of disciplines. Although it is preferred that students taking this class have also taken Critical Reading I, this is not a pre-requisite for this course.

In this class, a different instructor will hand out a paper each week that has been selected by him/her directly from the primary literature. The instructor may also hand out additional specific relevant background information at this time. You will have one week to read the material, take notes and write down questions you may have. During the following class, we will discuss the paper with the instructor. The idea is for you to discuss the paper with the rest of the class and the instructor and decide for yourself whether it is a good paper or not. The instructor is there to guide you and ask leading and thought-provoking questions for discussion, not to provide the critique. You must be ready and able to critique the science as well as the writing. Don't be shy, everyone has his/her own opinion and yours is always valid. Your opinion does not have to match that of the instructor! This course is designed to provide a venue for you to verbalize your own scientific opinions (not political, moral or otherwise). This will (hopefully) sometimes lead to lively debate and disagreement between individuals about the purpose or validity of an experiment or study. As long as we all remember that we each have valid opinions and that we should be respectful of others' opinions, this is a good thing!

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Student Learning Outcomes (SLO or "course objectives"):

1. The student will be able to interpret, summarize, present and discuss studies from the primary literature.
2. The student will be able to identify the "big picture" of a study and how it fits into the field.
3. The student will be able to express his or her opinion on the validity of individual experiments and results.
4. The student will be able to defend his or her scientific opinions in a coherent and rational manner.

Course Assessment/Methods of Evaluation:

This is NOT a didactic-type class. In order for you to get something out of it, you need to participate and in order to do that you need to actually read each paper carefully (typically more than once) well before the class. DO NOT WAIT UNTIL THE HOUR BEFORE CLASS TO LOOK AT THE PAPER FOR THE FIRST TIME! If you do this, it will be obvious during class and it will be a very boring class as nobody will be speaking.

Grading is done on every class by the team instructor for that class. Scores for each class are out of a total 31 points and are broken down as follows:

Attendance: 1 pt/class for a total of 14 (not including intro and final).
Reading the paper: Scale of 1 to 10 for each paper (i.e. 14 papers would be a total of 140 pts maximum for this category).
Participation: Scale of 1 to 10 for each class (140 pts max).
Comprehension: Scale of 1 to 10 for each paper (140 pts max).

In the following example, for 14 classes with 14 papers discussed, the total score possible would be:

Attendance	=	14
Reading the Paper	=	140
Participation	=	140
Comprehension	=	140
Total	=	434

Each person's total score will be divided into the maximum possible, multiplied by 100 and then rounded to obtain a percentage: i.e. 410/434 = 0.9447 = 94% = A

The following scale will be used to convert to a letter grade:

C	B	A
70-79%	80-89%	90-100%

Linked Program Learning Outcomes:

The student learning outcomes listed above address the following Biotechnology Program PLOs:

- PLO1 - The student will demonstrate English communication skills in both oral and written forms.
- PLO4 - The student will demonstrate independent and critical thinking skills integrated with the ability to utilize multiple informational resources.
- PLO5 - The student will explain the principles, mechanisms, and interrelatedness of both in vivo and in vitro biochemical, molecular biological, and genetic processes.

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Textbook:
Papers will be from the primary literature and will be as assigned.

Course Content:
Each Monday after class (or sometimes Tuesday) I will email out the next week's article and any background information. You will read the article in detail and look up information/references as needed and be prepared to discuss the article and experiments in the next class. *The instructor will be present to guide the discussion and answer questions only, not to provide a review of the paper or a critique*.

The articles will be straightforward and perhaps simplistic, but even simple scientific articles require careful reading. You will see from the first paper that there are always different levels of interpretation and that what may at first appear to be a good article may, in fact, have underlying problems. (Hint, hint! Read carefully and take notes to help in the discussion of the paper in class!). If you took CR I and remember how to prepare a flow chart of the paper, this will help you. This is not necessary, however.

The first few papers may be difficult for you, but do not worry you WILL get faster and better at it!

Finally, the more you participate in class discussions, the better the course will be. It is up to you.

Class Schedule for Fall 2022:

8/23	Samten/Introduction
8/30	Qian
9/6	Yi
9/13	Idell
9/20	Konduru
9/27	Lu
10/4	Neuenschwander
10/11	Komatsu
10/18	Tucker
10/25	Mulik
11/1	Tang
11/8	Kurdowska
11/15	Ji
11/29	Vankayalapati
12/6	No class (**Finals Week**)

Other Class Policies

Attendance:
Regular or punctual attendance is expected. If a student misses a class or lab, the student is responsible for obtaining any information distributed during those times. Make-ups are possible only under certain instances (labs cannot be made up). Arrangements for any make-ups and/or missed labs should be discussed directly with the instructor for that day's class.

Participation:
As described above, participation is a major component of this course.

Academic Honesty:
Any student who commits an act of scholastic dishonesty is subject to discipline. Scholastic dishonesty includes, but is 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.

Cheating
Dishonesty of any kind involving examinations, assignments, alteration of records, wrongful possession of examinations, and unpermitted submission of duplicate papers for multiple classes or unauthorized use of keys to examinations is considered cheating. Cheating includes but is not limited to:

- Using or attempting to use unauthorized materials to aid in achieving a better grade on a component of a class.
- Falsifying or inventing any information, including citations, on an assigned exercise.
- Helping or attempting to help another in an act of cheating or plagiarism.

Plagiarism
Plagiarism is presenting the words or ideas of another person as if they were your own. Materials, even ideas, borrowed from others necessitate full and complete acknowledgment of the original authors. Offering the work of another as one's own is plagiarism and is unacceptable in the academic community. A lack of adequate recognition constitutes plagiarism, whether it utilizes a few sentences, whole paragraphs, articles, books, audio-visual materials, or even the writing of a fellow student. In addition, the presentation of material gathered, assembled or formatted by others as one's own is also plagiarism. Because the university takes such misconduct very seriously, the student is urged to carefully read university policies on Misconduct in Research and Other Scholarly Activity 05.00. Examples of plagiarism are:

- Submitting an assignment as if it were one's own work when, in fact, it is at least partly the work of another.
- Submitting a work that has been purchased or otherwise obtained from an Internet source or another source.
- Incorporating the words or ideas of an author into one's paper without giving the author due credit.

Adding/Dropping:
The official deadline for adding and dropping courses is as published in the academic calendar (Registrar Withdrawal webpage). However, students are strongly encouraged to meet with their graduate advisor or the Program Coordinator prior to adding/dropping courses. Movement into and out of classes after the 4th class day requires approval of the Program Director. Each student is responsible for their own enrollment status with the university.

Disability Accommodations:
UT Tyler HSC abides by Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act, which mandate reasonable accommodations be provided for students with documented disabilities. If you have a disability and may require some type of instructional and/or examination accommodations, please contact me early in the semester so that I can provide or facilitate provision of accommodations you may need. If you have not already done so, you will need to register with the Student Services Office (located on the main campus). You may call 903-566-7079 for more information.

The University of Texas at TYLER HEALTH SCIENCE CENTER

Program:	Master of Science in Biotechnology
Degree:	MS
Department:	Cellular and Molecular Biology
School:	Medical Biological Sciences
Course:	**BIOT5132 – Critical Reading II**

Area	Marketable Skill*
SKILLS	**Reading Comprehension** — Understanding written sentences and paragraphs in work-related documents.
	Critical Thinking — Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions, or approaches to problems.
	Active Listening — Giving full attention to what other people are saying, taking time to understand the points being made, asking questions as appropriate, and not interrupting at inappropriate times.
ABILITIES	**Written Comprehension** — The ability to read and understand information and ideas presented in writing.
	Oral Comprehension — The ability to listen to and understand information and ideas presented through spoken words and sentences.
	Inductive Reasoning — The ability to combine pieces of information to form general rules or conclusions (includes finding a relationship among seemingly unrelated events).
	Oral Expression — The ability to communicate information and ideas in speaking so others will understand.
WORK ACTIVITIES	**Analyzing Data or Information** — Identifying the underlying principles, reasons, or facts of information by breaking down information or data into separate parts.
	Updating and Using Relevant Knowledge — Keeping up-to-date technically and applying new knowledge to your job.

*All marketable skills listed for this course and program were drawn from the Knowledge, Skills, and Abilities identified by the US Department of Labor and Statistics for “Biological Technicians” and “Molecular and Cellular Biologists” as published on O*Net Online (www.onetonline.org)