UTRGV
The University of Texas
Rio Grande Valley

Independent Research III-3223-02
Fall 2016

Class meeting time: Fridays 11-12:40 Laboratory
Class meeting location: 1.208LHSB Building

Instructor: Michelle J. Zamarron MS.BIO
Email: mich3ll3jz@tamu.edu (interim email- best way to contact me)

Office hours :
Mondays: 11-1pm (office to be determined)
Wednesdays: 11-1pm (office to be determined).

Course Description and Learning Objectives
This course is an introduction to the theory and practice of biomedical research.

By the end of this course, students will meet the following learning objectives:

1. Articulate a personal statement of research philosophy and ethical belief;
2. Be familiar with the major methods used to accumulate evidence in the sciences;
3. Understand the basic logic and practice of data analysis;
4. Be able to perform a basic critique of existing science research;
5. Develop basic competency in formal scientific writing; and,
6. Develop basic experience in both oral and written presentation of original research work.
7. Work in group discussions, in-class exercises, examinations, individual and team

Learning assessments

Students will gain experience in designing, implementing, and communicating a biomedical research project, and practical training in modern approaches for biomedical research. Your research project will be designed, implemented, and analyzed in collaboration with the faculty mentor you have or instructor, the activities will be presented as a team.

1) The student prepares a short proposal of the research project within the first 2 weeks of the semester, graded by the faculty mentor.
2) The student works throughout the semester on their project instructor with help from others in the class group when needed, but the project should be run by the elements of the team.
3) The student or the team prepares a draft manuscript in the second half of the semester to be graded by the faculty mentor.
4) The student writes a final manuscript on the research in the style of a relevant scientific journal, graded by the faculty mentor and the instructor

Evaluation/Assessment:

Description	% of final grade
Class participation	20%
In-class quizzes	20%
Rough draft of research proposal	20%
Written proposal	20 %
Presentation	20%

CLASS PARTICIPATION: 20% OF FINAL GRADE

You are expected to attend class regularly and participate actively. This class will be conducted in a Socratic format with emphasis on instructor/student interaction and understanding through questions and comments. The instructor will highlight key concepts detailed in the assigned readings; the Socratic model is employed to encourage analysis, critical thinking, preparation, and long term learning on the part of the student. All students should come to class prepared to discuss the topic scheduled on the calendar. NOTE that some class activities will require that students submit deliverables in class. For example, in advance of beginning work on their research proposal, students will need to form groups and request approval of a research topic from the instructors. When the proposed topic is due, it will be considered as part of the student's participation grade for that class meeting.

IN-CLASS QUIZZES: 20% OF FINAL GRADE

On occasion* the instructors will administer short in-class quizzes designed to check students' comprehension of major concepts. Quizzes, which could be true/false, multiple-choice or short answer, will comprise questions taken directly from the readings assigned that class meeting. Quizzes cannot be made up; missing a quiz results in a grade of F. However, at the end of the semester, the lowest quiz grade will be dropped.

ROUGH DRAFT OF RESEARCH PROPOSAL: 20% OF FINAL GRADE

Research proposals lay out the plan a researcher will follow to conduct a research study. Among other uses, proposals are vital to gain clearance to proceed with research and/or to win funding from grant agencies.

Your proposal should be 6 to 8 pages in length and include the following elements:

1. Statement of the subject of the proposal, including why it is important;
2. Overview of what is known about the subject, including a literature review;
3. Hypotheses (both null and working) which would facilitate the investigation of this topic;
4. List and definition of key concepts, constructs and variables;
5. Proposed data to be collected and why;
6. Probable population, sample size and description;
7. Probable methods of data collection;
8. Possible ethical considerations (if any); and,

9. Desired or anticipated results.

WRITTEN PROPOSAL: 20% OF FINAL GRADE

The final, full written proposal will comprise the material in the rough draft as well as any suggestions for strengthening the proposal that students receive from the instructors.

Research plan will include:
– A title
– An overview of background behind your research topic
– A hypothesis or research question
– A brief timeline of proposed study
– at least 3 in text citations

Final research report:
Due dates: December 2,

Written in the style of a journal article from the research field of study the research report must include:

A title, authors, affiliations
Abstract
Background
Hypothesis
Methods
Results (using appropriate graphs and statistics for that field of study)
Conclusions/Discussion/Future Directions
In-text citations (at least 8).

PROPOSAL PRESENTATION: 20% OF FINAL GRADE

During the final two class sessions of the semester, research groups will present their proposals to the rest of their class in accordance with generally accepted standards for scholarly conferences. More detailed information will follow under separate cover but among the expectations for this assignment are (1) groups will present within a specified time limit and (2) all group members will contribute to the presentation.

Course Calendar:

Date	**Topic**	
Week #1 **Sep,2**	**Presentation overview of the class.** **Work with these questions: In your daily life and research as a student. Instructor will give the questions the first day of class**	
Week#2 Sep,9	Course overview: Introduction. Why Research.	

Week# Sep,16	Philosophy of science and ethical research.	
Week#3 Sep.23	The scientific method., Establishing your framework, research Methods and hypothesis. .	
Week#4 Sep,30	Research design: Controls	
Week#5 Oct,7	Experimental Process :Biosafety; Bioethics;	
Week#6 Oct,14	Reading a scientific paper.	
Week#7 Oct,21	Writing a research Paper.	
Week#8 Oct,28	Journal Club.	.
Week#9 Nov,4	Writing a research proposal PPT	
Week # 10 Nov,11	Start working Draft proposal	
Week#11 Nov,18	Draft proposal.	
Week #12 Nov,25	Thanksgiving Hollyday	
Week #13 Dec,2	Presentation.	
Week#14 Dec,9	Presentation	
week #15	Final presentation	

Some topics suggested: Or if students have specific topic of interest

Viral Induced or Associated Cancers.

New Emerging Infectious Diseases (Zika, Ebola, Dengue etc).

Development of multi drug resistance in bacteria (*Mycobacterium tuberculosis* -TB, *Staphylococcus aureus*, *Campylobacter jejuni etc*…)

Sleep

Time in non academic activities

time spent in academic studies.

Antibacterial cleaning products (Triclosan) and rise of Triclosan resisistant populations of bacteria.

Evolution of drug resistance in microorganisms

Diabetes prevalence

Hypertension

Hand Sanitizers

Arthropod vectors and human disease

Decline in Honey Bee populations

Prophylactic Antibiotics “Growth Promoters” in Animals for Food

Effects of drought on food costs

Conventional farming practices vs Organic farming practices

Nutrient content in fruits and vegetables grown conventional vs organic

Elements to use for research

CDC

Academic researchers at UTRGV

Local Medical and Agriculture research station scientists

Exam habits.

Use of resources for study and prepare exams

Literature peer reviewed journals only

Scientific journals and Medical journals

Online resources for experimental design – may be topic specific or general

Sample size and data analysis online resources

STUDENTS WITH DISABILITIES:.

If you have a documented disability (physical, psychological, learning, or other disability which affects your academic performance) and would like to receive academic accommodations, please inform your instructor and contact Student Accessibility Services to schedule an appointment to initiate services. It is recommended that you schedule an appointment with Student Accessibility Services before classes start. However, accommodations can be provided at any time. Brownsville Campus: Student Accessibility Services is located in Cortez Hall Room 129 and can be contacted by phone at (956) 882-7374 (Voice) or via email at ability@utrgv.edu. Edinburg Campus: Student Accessibility Services is located in 108 University Center and can be contacted by phone at (956) 665-7005 (Voice), (956) 665-3840 (Fax), or via email at ability@utrgv.edu.

MANDATORY COURSE EVALUATION PERIOD:.

Students are required to complete an ONLINE evaluation of this course, accessed through your UTRGV account (https://my.utrgv.edu/home); you will be contacted through email with further instructions. Students who complete their evaluations will have priority access to their grades. Online evaluations will be available:

ATTENDANCE:

Students are expected to attend all scheduled classes and may be dropped from the course for excessive absences. UTRGV's attendance policy excuses students from attending class if they are participating in officially sponsored university activities, such as athletics; for observance of religious holy days; or for military service. Students should contact the instructor in advance of the excused absence and arrange to make up missed work or examinations.

SCHOLASTIC INTEGRITY:.

As members of a community dedicated to Honesty, Integrity and Respect, students are reminded that those who engage in scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and expulsion from the University. Scholastic dishonesty includes but is not limited to: cheating, plagiarism, and collusion; 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. Since scholastic dishonesty harms the individual, all students and the integrity of the University, policies on scholastic dishonesty will be strictly enforced (Board of Regents Rules and Regulations and UTRGV Academic Integrity Guidelines). All scholastic dishonesty incidents will be reported to the Dean of Students.

SEXUAL HARASSMENT, DISCRIMINATION, and VIOLENCE

In accordance with UT System regulations, your instructor is a "responsible employee" for reporting purposes under Title IX regulations and so must report any instance, occurring during a student's time in college, of sexual assault, stalking, dating violence, domestic violence, or sexual harassment about which she/he becomes aware during this course through writing, discussion, or personal disclosure. More information can be found at www.utrgv.edu/equity, including confidential resources available on campus. The faculty and staff of UTRGV actively strive to provide a learning, working, and living environment that promotes personal integrity, civility, and mutual respect in an environment free from sexual misconduct and discrimination.

COURSE DROPS.

According to UTRGV policy, students may drop any class without penalty earning a grade of DR until the official drop date. Following that date, students must be assigned a letter grade and can no longer drop the class. Students considering dropping the class should be aware of the "3-peat rule" and the "6-drop" rule so they can recognize how dropped classes may affect their academic success. The 6-drop rule refers to Texas law that dictates that undergraduate students may not drop more than six courses during their undergraduate career. Courses dropped at other Texas public higher education institutions will count toward the six-course drop limit. The 3-peat rule refers to additional fees charged to students who take the same class for the third time.