

THE UNIVERSITY OF TEXAS-RIO GRANDE VALLEY
School of Mathematical and Statistical Sciences

Community Engagement: Mathematical and Statistical Modeling of Community Problems

Course: Community Engaged Scholarship & Learning CESL 3301 90L, 61358-Spring 2019

Instructor: Dr. Tamer Oraby tamer.oraby@utrgv.edu

Community Partner: 1) Esther Herrera Martinez, Operations Manager, egherrera2@lupenet.org
2) Others

COURSE DESCRIPTION

Community-engaged scholarship and learning (CESL) provides a rich and relevant context for exploration of socially and culturally relevant topics through **experiential learning, critical thinking, empirical analysis, and reflective communication**. This course is designed to enrich the experiences of students across all disciplines by embedding their learning in culturally and socially relevant issues that impact local communities. Through this course, students will have the opportunity to work with the faculty instructor and local community partners to apply mathematical and/or statistical models to synthesize new understanding on specific topics that affect the local community.

COURSE OBJECTIVES

Through community partners:

- students will develop a consciousness to address social issues
- students will recognize the community's cultural values and assets
- students will support, directly or indirectly, the community's advocacy efforts at the local, state and federal levels

Through instructor:

- students will analyze societal issues and develop a **research** question(s)
- students will define a problem statement, write a research **proposal** and **design**
- students will identify appropriate research **methods**, measures, and **data** collection
- students will apply **mathematical** and/or **statistical** models or methods of **analysis**
- students will interpret and **disseminate** their findings to the **community** in a variety of forms (poster, report, flyer, website, etc.)

Student will also identify, during the first two to three weeks of the semester, their role in this project and set appropriate and feasible objectives for the course, which will have to be approved by the instructor and the community partner.

STUDENT LEARNING OUTCOMES

In this course, students will understand the importance of community-engaged scholarship and learning through faculty-facilitated opportunities in participatory research, data collection, analysis, and communication. This experience will be supplemented through various readings, in-class discussion, and dialogue with classmates, faculty, and community partners. Students will:

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1. Identify community and organizational needs relating to the efforts of community leaders and LUPE (La Union del Pueblo Entero).
2. Research, develop, and implement a hands-on experiential learning and community engagement research project.
3. Students will present and disseminate the findings of the project to their classmates and the community.

Readings

Through this article students will begin to shape their perspective of how people from the community have knowledge acquired through life experiences and their involvement with community organizations that is of most importance to the CESL research. After reading, discussing and reflecting on this article, students will begin to develop a deeper understanding of the CESL work addressing all three learning outcomes [1, 2, and 3].

1. Guajardo, M. A., & Guajardo, F. J. (2017). La universidad de la vida: A pedagogy built to last. *International Journal of Qualitative Studies in Education*, 30(1), 6-21. doi: 10.1080/099518398.2016.1242805
2. Calderon, H., & Lopez-Morin, J. R. (2000). Interview with Americo Paredes. *Nepantla: Views from South*, 1(1), 197-228. OR
Watch it at <https://www.youtube.com/watch?v=H0kxwHRVJj4>

Learning Objectives for Core Curriculum Requirements

This course meets the standards of the Texas Higher Education Coordinating Board for core courses within the (090) Integrative/Experiential Learning option and the (080) Social and Behavioral Sciences foundational component. CESL 3301 addresses the four core objectives concerned with *Critical Thinking*, *Communication Skills*, *Empirical and Quantitative Skills*, and *Social Responsibility*.

Critical Thinking (CT)

Students will demonstrate comprehension of information from a variety of sources such as but not limited to journal articles, texts, media, data, art, archives, personal observations, interviews, experiences, etc. Students will be asked to analyze, evaluate, comprehend and interpret these data and discuss potential inferences that may lead to intricate and inclusive conclusions about their learning. For example, assigned readings may ignite in class discussion about the topic proposed by the instructor. Students will also consider ways to improve the impact that research and scholarship can have on individuals and their broader communities.

Communication Skills (CS)

Students will demonstrate their ability to communicate with fellow students (peers), faculty and community members through their participation in varied community interactions, large and small group discussions and sharing opportunities with the community members using a variety of resources which may include essays, art, social media, digital story-telling, posters, and other

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interpretive media. We will discuss how to best communicate in a respectful and professional way to community partners, and present findings in writing, orally and visually to peers and other stakeholders.

Empirical and Quantitative Skills (EQ)

Students will draw from personal experiences or initial observations to initially develop hypotheses relevant to the topic. Through experiences facilitated in this course, students will collect both quantitative and qualitative data, and begin a preliminary analysis of those data to best create inferences and arguments that are supported by empirical reasoning. Students will be asked to articulate these whether these conjectures may or may not require revision of initial ideas or hypotheses. For example, students can compare research questions, methodologies, and data sets to determine the more relevant approach to research on this topic.

Social Responsibility (SR)

Through their reflective assignments, students will explore the process and their role in community engagement which requires collaboration between students, faculty, university, and their larger communities for the mutually beneficial exchange of knowledge and resources in a context of partnership and reciprocity.

**COURSE REQUIREMENTS AND GRADING POLICY
BRIEF ASSIGNMENT DESCRIPTIONS & SLOs:**

Assignment #1: (CT, SR)

Reflective Journal (10%) Students will keep a reflective journal of the time and tasks in which they engage with the community. The purpose is to document knowledge developed through the experiences in the activities with community members.

Assignment #2: (CT, CS, EQ, SR)

Community Engagement (20%) Each student must participate the equivalent of 30 hours in active community engagement. During this time, students will engage with community leaders in discussions on how LUPE's work has impacted the community (5 hours) and identify appropriate qualitative and/or quantitative measures (5 hours), data collection (10 hours), analysis (5 hours) and reporting/dissemination of results (5 hours).

Assignment #3: (CT, CS, EQ, SR)

Class Work (20%) During this time, groups will work on their project and receive mentorship from the instructor on their community engagement, proposal, design, review of literature, mathematical and/or statistical models and methods, data collection, data analysis, report, poster and presentation. The instructor will work with groups and provide instruction and guidance based on their needs and the needs of the project.

Assignment #4: (CT, CS, SR)

Project Proposal (10%) In groups of three or four, students will develop and present their proposed research design to the community at the end of the first four weeks. The proposal will

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demonstrate the project’s relevance and potential to impact the students, research, the university and the community and provide how mathematical and/or statistical models will be applied to study the issues being addressed by the community partner.

Assignment #5: (EQ, SR)

Review of Literature (10%) In groups of three or four, students will conduct a brief review of literature on the societal issues being addressed and on how mathematical and/or statistical models can be applied to their project design.

Assignment #6: (CT, CS, EQ, SR)

Final Research Report (10%) Due at the end of the course is a final report, not to exceed six pages typed double space, to provide a description and rationale of the project, mathematical and/or statistical models developed and implemented, findings on the impact of the organization on the community. This report will also summarize the empirical data collected and provide some conjecture as to whether the interpretation of the data supported original ideas or hypotheses. In the conclusion of the report (1 page), students will reflect on their experiences in community-engaged research and learning throughout the duration of the course. Students may use their Reflective Journal to organize their ideas.

Assignment #7: (CT, CS, EQ, SR)

Research Poster & Oral Presentation: (10%)

Each group will present their findings in a well-designed poster to the class, receive feedback from their classmates, and then to the community.

Assignment #8: (CT, CS, SR)

Final Product: (10%)

Each group will create a deliverable product as a result of their CESL project.

CALENDAR OF ACTIVITIES & ASSIGNMENTS

<p>Project Development Week 1 Week 2 Week 3 Week 4</p>	<ul style="list-style-type: none"> • Community Engagement - discuss with community members the societal issues to be addressed in the project • Reflective Journaling • Class Work – discuss CESL project rationale, research methods and expectations • Project Proposal – must be approved by instructor and community member • Review of Literature – identify prior research on the identified societal issues and mathematical and/or statistical models utilized • Research Design – a graphic that describes the research project <p style="text-align: right;">Proposal and Research Design Presentation (Feb. 8)</p>
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<p>Data Collection Week 5 Week 6 Week 7 Week 8</p>	<ul style="list-style-type: none"> • Community Engagement – collect data in the community and with the community • Reflective Journaling • Review of Literature – increase knowledge about mathematical and/or statistical models to be implemented • Class Work – learn how to utilize a software tool like SPSS, R, MATLAB and/or Mathematica <p style="text-align: right;">Mathematical and/or Statistical Models Presentation (Mar. 8)</p>
<p>Data Analysis Week 9 Week 10 Week 11 Week 12</p>	<ul style="list-style-type: none"> • Class Work – utilize SPSS, R, MATLAB, Mathematica or other software to model and interpret results • Community Engagement – share preliminary results with community members and discuss final product to be submitted to the community • Reflective Journaling <p style="text-align: right;">Present Preliminary Findings (Apr. 12)</p>
<p>Presentation & Dissemination Week 13 Week 14 Week 15</p>	<ul style="list-style-type: none"> • Class Work – Create poster and present findings to classmates and receive feedback • Community Engagement – Present findings to the community and receive feedback and review final product • Reflective Journaling <p style="text-align: right;">Poster and Final Product Presentation (May. 2)</p>

UTRGV Policy Statements

STUDENTS WITH DISABILITIES:

Students with a documented disability (physical, psychological, learning, or other disability which affects academic performance) who would like to receive academic accommodations should contact **Student Accessibility Services (SAS)** as soon as possible to schedule an appointment to initiate services. Accommodations can be arranged through SAS at any time, but are not retroactive. Students who suffer a broken bone, severe injury or undergo surgery during the semester are eligible for temporary services.

Pregnancy, Pregnancy-related, and Parenting Accommodations

Title IX of the Education Amendments of 1972 prohibits sex discrimination, which includes discrimination based on pregnancy, marital status, or parental status. Students seeking accommodations related to pregnancy, pregnancy-related condition, or parenting (reasonably immediate postpartum period) are encouraged to contact Student Accessibility Services for additional information and to request accommodations.

Student Accessibility Services:

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**

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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 (<http://my.utrgv.edu>); 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 on or about:

Module 1	February 13 – 19
Module 2	April 10 – 16
Full Spring Semester	April 10 – May 1

ATTENDANCE:

Students are expected to attend all scheduled classes and may be dropped from the course for more than **three** 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 (including self-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 that is free from sexual misconduct and discrimination. If students, faculty, or staff would like confidential assistance, or have questions, they can contact OVAVP (Office for Victim Advocacy & Violence Prevention) at 665-8287, 882-8282, or OVAVP@utrgv.edu.

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.

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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.

STUDENT SERVICES:

Students who demonstrate financial need have a variety of options when it comes to paying for college costs, such as scholarships, grants, loans and work-study. Students should visit the Students Services Center (U Central) for additional information. U Central is located in BMAIN 1.100 (Brownsville) or ESSBL 1.145 (Edinburg) or can be reached by email (ucentral@utrgv.edu) or telephone: (888) 882-4026. In addition to financial aid, U Central can assist students with registration and admissions.

Students seeking academic help in their studies can use university resources in addition to an instructor's office hours. University Resources include the Learning Center, Writing Center, Advising Center and Career Center. The centers provide services such as tutoring, writing help, critical thinking, study skills, degree planning, and student employment. Locations are:

- Learning center: BSTUN 2.10 (Brownsville) or ELCTR 100 (Edinburg)
- Writing center: BLIBR 3.206 (Brownsville) or ESTAC 3.119 (Edinburg)
- Advising center: BMAIN 1.400 (Brownsville) or ESWKH 101 (Edinburg)
- Career center: BCRTZ 129 (Brownsville) or ESSBL 2.101 (Edinburg)