

EDUC 4301: Mathematical Problem Solving in EC6, Spring 2020
(M 2:00-4:45 BEP 218)

Instructor Information

John Lamb, Ph.D., Professor of Mathematics Education

Office: BEP 248

Office Hours: Mondays 1:00-2:00, Tuesdays 1:00-2:00, and Wednesdays 10:00-11:00 or by appointment

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Indication of best way to contact the instructor: Phone and Email

Last Day to Withdraw from Courses: March 30, 2020

Course Catalog Description

Topics in teaching mathematical content in EC6 classrooms through mathematical problem-solving techniques such as problem- and project-based instruction. Prerequisite: MATH 1350

Student Learning Outcomes & Assessments

Course Topics and/or Student Learning Outcomes The student is expected to...	Assessment (including performance-based)	Standards Alignment
Research, identify, examine, and discuss the historical principles and strategies of problem solving in the mathematics classroom.	Exams	Mathematics Generalist EC-6 Standards: Standard VI INTASC Standards: 4 and 5 TEKS: 111.1 – 111.26
Solve and analyze non-routine problems addressing mathematical content at or below the intermediate grade level.	Exams	Mathematics Generalist EC-6 Standards: Standard VI INTASC Standards: 4 TEKS: 111.1 – 111.26
Research and implement best practices in authentic project-based learning.	Investigative Reports	Mathematics Generalist EC-6 Standards: Standard VI INTASC Standards: 4 and 5 TEKS: 111.1 – 111.26
Demonstrate content knowledge based on 6 th grade mathematics standards.	6 th Grade Exam	TEKS: 111.26

Evaluation and Grading

Online Investigative Reports

30%

6th Grade Equivalency Test

10%

Exams

60%

TOTAL

100%

A = 90-100% C = 70-79% B = 80-89% D = 60-69% F = 0-59%

NOTE: I expect that for every hour spent in class, two hours should be spent outside of class reading and working on assignments.

Teaching Strategies

1. *Investigative Reports:* Two investigative reporting assignments will be completed by students during the semester. These assignments will require students to create and solve real-world problems connected to Tyler and the surrounding area.

2. *6th Grade Equivalency Test:* Each student will complete two 6th Grade Equivalency Tests in Mathematics during the semester. The tests will have 40-50 questions and students will have 60 minutes to complete each test. One test will be during

the first week of the semester, and the second test will be during the last week of the semester. If a student scores 90% or higher on the first attempt, they do not have to take the second attempt.

3. *Exams*: The student will be required to complete three in-class exams plus one final exam requiring students to solve non-routine problems covering mathematical content from the intermediate classrooms and answer questions pertaining to educational significance of problem solving in the mathematics classroom. The exams will include various types of assessment items. The exams will be cumulative throughout the semester, and no calculators will be allowed during the exams. The final exam will be cumulative and required for all students having less than an A average following the last in-class exam.

Required Text, Materials/Supplies, and Related Readings

Lechner, G. (2010). *Creative problem solving in school mathematics* (2nd Ed). New York: MOEMS (ISBN# 1-882144-10-4).

"A student of this institution is not under any obligation to purchase a textbook from a university-affiliated bookstore. The same textbook may also be available from an independent retailer, including an online retailer."

Internet Resources

TEA <http://www.tea.state.tx.us/>

National Technology Standards

<http://cnets.iste.org/index2.html>

National Council of Teachers of Mathematics

<http://www.nctm.org>

National Library of Virtual Manipulatives

<http://nlvm.usu.edu/en/nav/vlibrary.html>

Shodor Interactivate <http://www.shodor.org/interactivate>

WisWeb: <http://www.fi.uu.nl/wisweb/en/>

Database search for educational journals

<http://library.utt Tyler.edu/>

Creative Publications www.creativepublications.com

EAI Education www.eaieducation.com

Texas instruments <http://education.ti.com/>

AIMS www.AIMSedu.org

Eye on Education www.eyoneducation.com

Casio <http://www.casio.com/education/>

NASCO www.eNASCO.com

Tentative Course Outline: (The Instructor reserves the right to adapt this outline as needed during the semester.)

FF=Face-To-Face Meeting Format

O=Online Meeting Format

Day	Topic	Due
1	Historical Perspective of Problem Solving (PS) Work Problems	
2	6 th Grade Equivalency Test /Work Problems	6 th Grade Test (In-Class Exam)
3	Work Problems	
4	Work Problems	
5	1st Exam	1st Exam (In-Class Exam)
6	Work Problems	Investigative Report #1 Due
7	Work Problems	
8	Work Problems	
9	2nd Exam	2nd Exam (In-Class Exam)
10	Work Problems	
11	Work Problems	
12	Work Problems	Investigative Report #2 Due
13	3rd Exam	3rd Exam (In-Class Exam) 6 th Grade Test (2 nd Attempt Online)
14	Final Exam	Final Exam

Course Policies

Online participation is imperative to the success in this online course. Students are expected to regularly review the course management system, check email, and contribute to course assignments.

All assignments are due on or before the dates provided in the **Topical Outline**. Each written assignment must be typewritten and submitted in Canvas. General guidelines for written assignments are:

1. On Time
2. Word-Processed, Double-Spaced, Times New Roman 12 Font
3. Free of typographical errors

No email attachments of assignments will be accepted. Submission deadlines are final, and links will be removed after deadline has expired. NO LATE assignments will be accepted unless a valid pre-approved or medical reason has been discussed with the professor. If an assignment is not completed on time due to a documented illness, funeral, or other

university related activity, then a make-up date can be scheduled with the professor. All late assignments or non-submitted assignments will receive a score of zero points.

If an assignment is plagiarized, then the student will receive a zero for the assignment. Academic dishonesty is not tolerated. The professor reserves the right to assign a failing grade for the course and report student behavior to university officials if offenses are egregious or occur more than once.

UNIVERSITY POLICIES

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.

For a full list of university policies including information related to the topics listed below, click [here](#).

- Students Rights and Responsibilities
- Campus Carry
- Tobacco-Free University
- Grade Replacement/Forgiveness and Census Date Policies
- State-Mandated Course Drop Policy
- Disability Services
- Student Absence due to Religious Observance
- Student Absence for University-Sponsored Events and Activities
- Social Security and FERPA Statement
- Emergency Exits and Evacuation
- Student Standards of Academic Conduct

UT Tyler Resources for Students:

- UT Tyler Writing Center (903.565.5995), writingcenter@uttyler.edu, <http://www.uttyler.edu/writingcenter/>
- UT Tyler Tutoring Center (903.565.5964), tutoring@uttyler.edu, <https://www.uttyler.edu/tutoring/>
- The Mathematics Learning Center, RBN 4021, This is the open access computer lab for math students, with tutors on duty to assist students who are enrolled in early-career courses.
- UT Tyler Counseling Center (903.566.7254) <https://www.uttyler.edu/counseling/>

[University Guidelines, Links and Policies](#)

COLLEGE OF EDUCATION AND PSYCHOLOGY (CEP) VISION AND MISSION

Vision: The College of Education and Psychology is nationally recognized and respected for its academic programs and opportunities. It is a center of academic excellence, scholarly inquiry, and public service. The College prepares leaders to meet the critical challenges of the 21st Century through productive contributions to local and global communities and toward individual and cultural equity.

Mission: The mission of the College of Education and Psychology is to provide a positive environment that fosters the acquisition of knowledge and skills. The mission is individually and collectively realized through a community of scholars that contributes to knowledge through scholarly inquiry; organizes knowledge for application, understanding and communication; and provides leadership and service. We affirm and promote global perspectives that value individual and cultural diversity to enhance learning, service, and scholarship.

UT TYLER'S SCHOOL OF EDUCATION STANDARDS FOR EDUCATOR PREPARATION PROGRAMS

[Texas Education Standards:](#) The School of Education are committed to teaching and implementing the Texas Educator Standards at the highest level. The School of Education faculty use the Texas Education Standards, along with the Interstate New Teacher Assessment and Support Consortium (InTASC) standards used by educator preparation programs throughout the United States.

The list of [Texas Education Standards](#) can be accessed [here](#).

Access the [Code of Ethics and Standard Practices for Texas Educators](#).