

**EDUC 4301: Mathematical Problem Solving in EC6, Spring 2023**  
**VIRTUAL**  
**Wednesday 5:00-6:25pm**

**Instructor Information**

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 Office: BEP 247D  
 Office Hours: Mondays 10:00am-12:00pm and 4:00pm-5:00pm or by appointment  
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**Last Day to Withdraw from Courses:** March 23, 2023

**The office hours and online synchronous class sessions will be held through Zoom. The link and more information will be provided in Canvas.**

**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**

| <b>Course Topics and/or Student Learning Outcomes</b>  | <b>Assessment (including performance-based)</b> | <b>Standards Alignment</b>  |
|--|---|---|
| <b>The student is expected to...</b>   |   |   |
| 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<br>INTASC Standards: 4 and 5<br>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<br>INTASC Standards: 4<br>TEKS: 111.1 – 111.26       |
| Research and implement best practices in authentic project-based learning.   | Investigative Reports                           | Mathematics Generalist EC-6 Standards: Standard VI<br>INTASC Standards: 4 and 5<br>TEKS: 111.1 – 111.26 |
| Demonstrate content knowledge based on 6 <sup>th</sup> grade mathematics standards.  | 6 <sup>th</sup> Grade Exam                      | TEKS: 111.26  |

**Evaluation and Grading**

|  |             |
|--|-------------|
| Class and Online Assignments and Participation | 30%         |
| 6 <sup>th</sup> Grade Equivalency Test         | 10%         |
| Exams  | 60%         |
| <b>TOTAL</b>                                   | <b>100%</b> |

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

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

**Teaching Strategies**

1. *Online Assignments and Participation:* Students will have assignments that will be due online. Students will complete one investigative report (i.e., Place Based Learning Task) during the term that will be submitted online. Students will be required to submit video solutions of specific problems each week during the term.

2. *6<sup>th</sup> Grade Equivalency Test:* Each student will complete two 6<sup>th</sup> 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 four exams 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.

### **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

<https://www.iste.org/iste-standards>

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.uttyler.edu/>

Creative Publications

[https://www.isbns.net/author/Creative\\_Publications](https://www.isbns.net/author/Creative_Publications)

EAI Education [www.eaieducation.com](http://www.eaieducation.com)

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

AIMS [www.AIMSedu.org](http://www.AIMSedu.org)

Eye on Education

<https://www.routledge.com/go/routledge-eye-on-education>

Casio <https://www.casio.com/us/calculators/education/>

NASCO [www.eNASCO.com](http://www.eNASCO.com)

### **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 Canvas. 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.

*Attendance:* This course is designed and organized to be highly collaborative and experiential. Our synchronous sessions, in particular, will involve small and whole group activities and discussions. Therefore, your attendance and participation are essential to the learning of everyone in our course. It is very difficult to be enriched by discussions and collaborations if you are not present or prepared for class. However, given the current global pandemic and all of the personal challenges that can be associated with it, if you are unable to attend a Zoom session, please be sure to notify me as soon

as possible. Whether an excused or unexcused absence, important components to the course are still being missed. All teacher candidates are responsible for material covered during absences.

Poor or late attendance, not attending for the full class time, or lack of preparation (i.e., not completing graded or other non-graded assignments) will adversely affect your grades in this course. Specifically, you are allowed to miss ONE (1) synchronous session without penalty, no explanation necessary. Every subsequent unexcused absence will result in 5 points being deducted from the student's final grade. Excused absences will automatically be granted for religious observances, military duty, and any UT Tyler sponsored event.

If more than 15 minutes of a synchronous session is missed, you will be counted as absent. Three (3) tardies will count as 1 unexcused absence.

*Children in Class:* For those of you with children at home, please rest assured that our synchronous sessions are friendly to children. As a parent, I completely empathize with the challenges associated with balancing your professional and personal lives rights now. Feel free to turn your camera off or mute your microphone if your environment becomes too distracting to the rest of the class.

## 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 [University Guidelines, Links and Policies](#).

- 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](mailto:writingcenter@uttyler.edu), <http://www.uttyler.edu/writingcenter/>
- UT Tyler Tutoring Center (903.565.5964), [tutoring@uttyler.edu](mailto: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/>

## 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 21<sup>st</sup> 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](#).

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

| Week | Dates                 | Topic  |
|------|-----------------------|--|
| 1    | January 9-15          | Read Course Syllabus and Overview  |
|      | January 16            | Martin Luther King, Jr. Holiday-No Class                                   |
| 2    | January 17-22         | First 6 <sup>th</sup> Grade Test January 19                                |
| 3    | January 23-29         | Historical Perspective of Problem Solving (PS) and Work Problems (PS1 Due) |
| 4    | January 30-February 5 | Work Problems (PS2 AND PS3 Due)  |
| 5    | February 6-12         | <b>Exam 1</b> February 9   |
| 6    | February 13-19        | Work Problems (PS4 Due)  |
| 7    | February 20-26        | Work Problems (PS5 Due)  |
| 8    | February 27-March 5   | Work Problems (PS6 AND PS7 Due)  |
| 9    | March 6-12            | <b>Exam 2</b> March 9  |
|      | March 13-18           | Spring Break-No Class  |
| 10   | March 20-26           | Work Problems (PS8 Due)  |
| 11   | March 27-April 2      | Work Problems (PS9 Due)  |
| 12   | April 3-9             | Work Problems (PS10 Due)   |
| 13   | April 10-16           | Second 6 <sup>th</sup> Grade Test April 13                                 |
| 14   | April 17-23           | <b>Exam 3</b> April 20 and <b>Place-Based Project Due April 23rd</b>       |
| 15   | April 24-29           | <b>Final Exam Date</b>   |
|      | April 29              | End of Spring Term   |