

EDUC 5389
Interdisciplinary Methods
Spring 2025

Instructor Information

Yasemin Gunpinar, Ph.D., Assistant Professor of Mathematics Education

Office: BEP 241

Office Hours: Mondays 9:00am-12:00pm or by appointment

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Indication of best way to contact the instructor: Email

Last Day to Withdraw from Courses: March 31, 2025

The office hours and some optional online synchronous sessions (highly recommended) will be held through Zoom. The link and more information will be provided in Canvas.

Course Catalog Description:

Science, Technology, Engineering, and Mathematics (STEM) Education is by definition interdisciplinary. This course will explore how K-12 teachers can best integrate multiple disciplinary concepts within their STEM and Non-STEM classrooms. Interdisciplinary methods related to STEM; STEM with Fine Arts; STEM with Language Arts; and STEM with Social Studies will be addressed in this course.

Student Learning Outcomes & Assessments:

1. The student will be able to discuss, critique, and reflect on the research and experiences related to interdisciplinary methods in STEM education.
 - a. (Texas Educator Standards: 1ai, 1aii, 1aiii, 1bi, 1bii, 1biii and 1cii; 2ai, 2bi, 2bii, 2biii, and 2ciii; 3ai, 3aii, 3aiii, 3bi, 3bii, 3biii, 3ci, 3cii, and 3ciii; 5ai; 6ai)
 - b. (INTASC Standards: 1, 2, 4, 5, 7, and 8)
2. The student will be able to prepare, implement, and reflect on instructional lesson planning regarding interdisciplinary methods in STEM education.
 - a. (Texas Educator Standards: 1ai, 1aiii, 1bi, and 1cii; 2bi, 2ciii)
 - b. (INTASC Standards: 1, 2, and 7)
3. The student will be able to synthesize personal perspectives and research literature as it relates to interdisciplinary methods in STEM education.
 - a. (Texas Educator Standards: 1bii, 1biii, 1ci, 2bi, 2bii, 2biii, and 2ciii; 3ai, 3aii, 3aiii, 3bi, 3bii, 3biii, 3ci, 3cii, and 3ciii)
 - b. (INTASC Standards: 1, 2, 4, 5, and 8)

Evaluation and Grading

Video Reflections and Blog Posts

25%

--Students will be asked to provide video reflections throughout the semester related to interdisciplinary methods.

Talking Head Lectures

25%

-- Lectures focused on specific readings will be viewable and launched throughout the semester. The instructor will present content during these Talking Head Lectures. Quizzes will be associated with these lectures related to the selected readings and content discussed in the lectures.

<i>Professional Article Summaries</i>	25%
--Various articles related to interdisciplinary instruction will be researched, selected, read, and summarized by students throughout the semester. An example of the guidelines and work sample are provided in the Canvas.	
<i>Interdisciplinary PjBL Unit Project</i>	25%
-- Students will be expected to generate an interdisciplinary STEM PjBL unit illustrating the integration of STEM with Fine Arts, Language Arts, and Social Studies.	

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

Required Text, Materials/Supplies, and Related Readings:

There **is no required textbook** for this course. This course will utilize published articles for its literature.

Required Course Materials

The Professional Article Reading guidelines and example work product are provided at the end of the syllabus.

Course Policies (attendance, make-up assignments, etc.)

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

Sample Readings:

Definitions and Uses: Case Study of Teachers Implementing **Project-based Learning**.

Authors:

Tamim, Suha R.1, *srtamim@memphis.edu*
 Grant, Michael M.1, *michael.m.grant@gmail.com*

Source:

Interdisciplinary Journal of Problem-based Learning; Fall2013, Vol. 7 Issue 2, p71-101, 31p

Abstract:

The purpose of this descriptive study was to explore inservice teachers' definitions of **project-based learning** (PjBL) and their accounts on the meaning of their PjBL implementations. A purposive sample of six teachers from grades four through twelve in public and private schools participated. Three themes evolved from inductive analysis: (1) teachers define PjBL through its perceived advantages on **learning**, (2) teachers vary in their use of PjBL over the continuum of the **learning** process, and (3) teachers adopt student-centered approaches in PjBL. Interpretations and implications of the findings are also presented. [ABSTRACT FROM AUTHOR]

Considerations for Teaching Integrated STEM Education.

Authors:

Stohlmann, Micah1
 Moore, Tamara J.1
 Roehrig, Gillian H.1

Source:

Journal of Pre-College Engineering Education; Apr2012, Vol. 2 Issue 1, p28-34, 7p

Abstract:

Quality Science, Technology, Engineering, and Mathematics (**STEM**) **education** is vital for the future success of students. **Integrated STEM education** is one way to make learning more connected and relevant for students. There is a need for further research and discussion on the knowledge, experiences, and background that teachers need to effectively teach **integrated STEM education**. A support, **teaching**, efficacy, and materials (s.t.e.m.) model of **considerations** for **teaching integrated STEM education** was developed through a year-long partnership with a middle school. The middle school was implementing Project Lead the Way's Gateway to Technology curriculum. The s.t.e.m. model is a good starting point for teachers as they implement and improve **integrated STEM education**. [ABSTRACT FROM AUTHOR]

Children's nonfiction trade books: a complement to content area texts.

Authors:

Moss, Barbara

Source:

Reading Teacher; September 1991, Vol. 45, p26-32, 7p

Abstract:

Examines how **teachers** can use children's nonfiction books to enhance content area textbooks for instruction. Literature-based **teaching**; Limitations of textbooks; Criteria for selecting nonfiction books; Organizing content area.

Implementing a science-based **interdisciplinary** curriculum in the second grade: A community of practice in action.

Authors:

Park Rogers, Meredith1, *mparkrog@indiana.edu*

Source:

International Electronic Journal of Elementary **Education**; Mar2011, Vol. 3 Issue 2, p83-103, 21p

Abstract:

The purpose of this study was to explore the role that a collaborative **teaching approach**, referred to as a community of practice (CoP), had on a team of four second grade teachers' implementation of a science-based **interdisciplinary** curriculum. Data was collected in the form of extensive observation notes gathered over 10-weeks of twice weekly team meetings and two 45 minute interviews with each participant. From the field notes developed two vignettes for the purpose of illustrating the members CoP in action. Combining my analysis of the vignettes and the interviews resulted in three emergent themes: 1) benefits, 2) contributions, and 3) their commitment to professional development. From this study I learned that establishing a CoP was viewed as a necessary component of the team's implementation of their science-based **interdisciplinary** curriculum. Implications for encouraging preservice and inservice elementary teachers to develop CoPs to support science **teaching**, specifically **interdisciplinary teaching**, are discussed. [ABSTRACT FROM AUTHOR]

Development of Theme-based, **Interdisciplinary**, Integrated Curriculum: A Theoretical Model.

Authors:

Lonning, Robert A.

DeFranco, Thomas C.

Source:

School Science & Mathematics; Oct98, Vol. 98 Issue 6, p312, 8p

Abstract:

Presents information as it pertains to the development of **interdisciplinary** integrated curriculums, with emphasis on **education**. Information on efforts launched to redefine mathematics, science and social studies curriculums; Role of a teaching curriculum; Reference to the book 'A Bibliography of Integrated Science and Mathematics Teaching and Learning Literature.'

Putting Professionalism Back into Teaching: Secondary Preservice and In-Service Teachers Engaging in **Interdisciplinary** Unit Planning

Author(s):

Stolle, Elizabeth Petroelje; Frambaugh-Kritzer, Charlotte

Source:

Action in Teacher Education, v36 n1 p61-75 2014. 15 pp.

Abstract:

Recently, **interdisciplinary** instruction has come back to the educational scene, specifically supported through the Common Core State Standards. As teacher educators and former middle-level teachers, the authors see this as a positive move to enhance learning for adolescents. This qualitative study sought to answer: How do secondary preservice and in-service teachers respond to **interdisciplinary** instruction? Findings provide key insights into how **interdisciplinary** instruction, when implemented successfully within a content area literacy course, empowers preservice and in-service teachers, and brings about a more professional environment. That is, data shows designing **interdisciplinary** instruction provided the teachers space to take up an identity as teaching professional--acting as specialist, acting as agent, and acting as regulator. Based on the authors' analysis, the authors believe **interdisciplinary** instruction has the potential to elevate the professional status for teachers, and teacher educators can lead and guide secondary preservice and in-service teachers toward new understandings and paradigms surrounding **interdisciplinary methods** as we seek to evolve and improve secondary-level curriculum.

The Role of Integrated Curriculum in Music Teacher **Education**.

Authors:

Barry, Nancy H.1

Source:

Journal of Music Teacher **Education**; Oct2008, Vol. 18 Issue 1, p28-38, 11p

Abstract:

The article focuses on the key issues encompassing the integrated curriculum and its implications for music teacher **education** in the U.S. It includes a one way of model in which music is used to reinforce content in other academic areas is what commonly passes for integration. Another one is a two-way integrated curriculum in which music and other subject areas are included and provides comprehensive learning that can cross cultural boundaries and individual student differences, resulting in a productive experience for learners and opportunities for teachers.

Revisiting Curriculum Integration: A Fresh Look at an Old Idea.

Authors:

Elizabeth Hinde

Source:

The Social Studies; May/Jun2005, Vol. 96 Issue 3, p105-111. 7p.

Abstract:

This article examines the viability of integrating social studies and elementary core subjects such as reading and math. Elementary teachers in the U.S. report being overwhelmed by pressures to have their students achieve on standardized assessments and complain that there is not enough time in the day to teach reading and math, the areas for which they are held most accountable, and also teach social studies. Moreover, there is another issue constraining the teaching of social studies at the elementary level: Many teachers do not feel comfortable teaching the subject. They lack confidence in their knowledge of social studies content and feel unprepared to teach it. When that lack is added to the pressures being applied by state and federal mandates, it is no wonder that teachers teach social studies only when they have adequately addressed reading and math standards. Therein lie the problems with elementary social studies: There is no time to teach it and it is not seen as a priority. The problem of how to reconcile elementary teachers' discomfort with social studies and the pressure they feel to teach only those areas that are tested with the practical application of social studies **education** remains, however. The answer may lie with the effective integration of social studies into content areas like reading and math and meeting the state-mandated standards in each area.

UNIVERSITY POLICIES

Withdrawing from Class

Students may [withdraw](#) (drop) from this course using the [Withdrawal Portal](#). Withdrawing (dropping) this course can impact your Financial Aid, Scholarships, Veteran Benefits, Exemptions, Waivers, International Student Status, housing, and degree progress. Please speak with your instructors, consider your options, speak with your advisor, and visit the One-Stop Service Center (STE 230) or email enroll@uttyler.edu to get a complete review of your student account and the possible impacts to withdrawing. We want you to make an informed decision. UT Tyler faculty and staff are here for you and often can provide additional support options or assistance. Make sure to carefully [read the implications for withdrawing from a course and the instructions](#) on using the [Withdrawal portal](#).

Texas law prohibits students from dropping more than six courses during their entire undergraduate career*. The six courses dropped includes those from other 2-year or 4-year Texas public colleges and universities. Consider the impact withdrawing from this class has on your academic progress and other areas, such as financial implications. We encourage you to consult your advisor(s) and Enrollment Services for additional guidance. **CAUTION #1:** Withdrawing before census day does not mean you get a full refund. Please see the [Tuition and Fee Refund Schedule](#). **CAUTION #2:** All international students must check with the [Office of International Programs](#) before withdrawing. All international students are required to enroll full-time for fall and spring terms. **CAUTION #3:** All UT Tyler Athletes must check with the Athletic Academic Coordinator before withdrawing from a course. **CAUTION #4:** All veterans or military-affiliated students should consult with the [Military and Veterans Success Center](#).

* Students who began college for the first time before 2007 are exempt from this law.

Artificial Intelligence Statement

UT Tyler is committed to exploring and using artificial intelligence (AI) tools as appropriate for the discipline and task undertaken. We encourage discussing AI tools' ethical, societal, philosophical, and disciplinary implications. All uses of AI should be acknowledged as this aligns with our commitment to honor and integrity, as noted in UT Tyler's Honor Code. Faculty and students must not use protected information, data, or copyrighted materials when using any AI tool. Additionally, users should be aware that AI tools rely on predictive models to generate content that may appear correct but is sometimes shown to be incomplete, inaccurate, taken without attribution from other sources, and/or biased. Consequently, an AI tool should not be considered a substitute for traditional approaches to research. You are ultimately responsible for the quality and content of the information you submit. Misusing AI tools that violate the guidelines specified for this course is considered a breach of academic integrity. The student will be subject to disciplinary actions as outlined in UT Tyler's Academic Integrity Policy.

For this course, **AI is not permitted in this course at all.** I expect all work students submit for this course to be their own. I have carefully designed all assignments and class activities to support your learning. Doing your own work, without human or artificial intelligence assistance, is best for your efforts in mastering course learning objectives. For this course, I expressly forbid using ChatGPT or any other artificial intelligence (AI) tools for any stages of the work process, including brainstorming. Deviations from these guidelines will be considered a violation of UT Tyler's Honor Code and academic honesty values.

Final Exam Policy

Final examinations are administered as scheduled. If unusual circumstances require that special arrangements be made for an individual student or class, the Dean of the appropriate college, after consultation with the faculty member involved, may authorize an exception to the schedule. Faculty members must maintain student final examination papers for a minimum of three months following the examination date.

Incomplete Grade Policy

If a student, because of extenuating circumstances, is unable to complete all of the requirements for a course by the end of the semester, then the instructor may recommend an Incomplete (I) for the course. The "I" may be assigned in place of a grade *only when all of the following conditions are met*: (a) the student has been making satisfactory progress in the course; (b) the student is unable to complete all coursework or final exam due to unusual circumstances that are beyond personal control and are acceptable to the instructor, and (c) the student presents these reasons before the time that the final grade roster is due. The semester credit hours for an Incomplete will not be used to calculate the grade point average.

The student and the instructor must submit an Incomplete Form detailing the work required and the time by which the work must be completed to their respective department chair or college dean for approval. The time limit established must not exceed one year. Should the student fail to meet all of the work for the course within the time limit, then the instructor may assign zeros to the unfinished work, compute the course average for the student, and assign the appropriate grade. If a grade has yet to be assigned within one year, then the Incomplete will be changed to an F, or NC. If the course was initially taken under the CR/NC grading basis, this may adversely affect the student's academic standing.

Grade Appeal Policy

Disputes regarding grades must be initiated within sixty (60) days from the date of receiving the final course grade by filing a Grade Appeal Form with the instructor who assigned the grade. A grade appeal should be used when the student thinks the final course grade awarded does not reflect the grades earned on assessments or follow the grading scale as documented in the syllabus. The student should provide the rationale for the grade appeal and attach supporting document about the grades earned. The form should be sent via email to the faculty member who assigned the grade. The faculty member reviews the rationale and supporting documentation and completes the instruction section of the form. The instructor should return the form to the student, even if a grade change is made at this level. If the student is not satisfied with the decision, the student may appeal in writing to the Chairperson of the department from which the grade was issued. In situations where there is an allegation of capricious grading, discrimination, or unlawful actions, appeals may go beyond the Chairperson to the Dean or the Dean's designee of the college from which the grade was issued, with that decision being final. The Grade Appeal form is found in the [Registrar's Form Library](#).

NOTE: The Grade Appeal Form is different from the Application for Appeal form submitted to the Student Appeals Committee, which does not rule on grade disputes as described in this policy.

Disability/Accessibility Services

In accordance with Section 504 of the Rehabilitation Act, Americans with Disabilities Act (ADA) and the ADA Amendments Act (ADAAA), the University of Texas at Tyler offers accommodations to students with learning, physical, and/or psychological disabilities. If you have a disability, including a non-visible diagnosis such as a learning disorder, chronic illness, TBI, PTSD, ADHD, or a history of modifications or accommodations in a previous educational environment, you are encouraged to visit <https://hood.accessiblelearning.com/UTTyler/> and fill out the New Student application. The Student Accessibility and Resources (SAR) office will contact you when your application has been submitted and an appointment with the Assistant Director Student Accessibility and Resources/ADA Coordinator. For more information, including filling out an application for services, please visit the SAR webpage at <https://www.uttyler.edu/disability-services>, the SAR office located in the Robert Muntz Library, LIB 460, email saroffice@uttyler.edu, or call 903.566.7079."

Military Affiliated Students

UT Tyler honors the service and sacrifices of our military-affiliated students. If you are a student who is a veteran, on active duty, in the reserves or National Guard, or a military spouse or dependent, please stay in contact with your faculty member if any aspect of your present or prior service or family situation makes it

difficult for you to fulfill the requirements of a course or creates disruption in your academic progress. It is important to make your faculty member aware of any complications as far in advance as possible. Your faculty member is willing to work with you and, if needed, put you in contact with university staff who are trained to assist you. The [Military and Veterans Success Center \(MVSC\)](#) has campus resources for military-affiliated students. The MVSC can be reached at MVSC@uttyler.edu or via phone at 903.565.5972.

Students on an F-1 Visa

To remain in compliance with Federal Regulations requirements you must do the following:

- Traditional face-to-face classes: Attend classes on the regular meeting days/times.
- Hybrid Classes: Attend all face-to-face classes convened by the instructor according to the schedule set for your specific course.
- Online course: Only one online course can count toward your full-time enrollment. Students are expected to be fully engaged and meet all requirements for the online course.

Academic Honesty and Academic Misconduct

The UT Tyler community comes together to pledge that "Honor and integrity will not allow me to lie, cheat, or steal, nor to accept the actions of those who do." Therefore, we enforce the [Student Conduct and Discipline policy](#) in the Student Manual Of Operating Procedures (Section 8).

FERPA

UT Tyler follows the Family Educational Rights and Privacy Act (FERPA) as noted in [University Policy 5.2.3](#). The course instructor will follow all requirements to protect your confidential information.

Absence for Official University Events or Activities

This course follows the practices related to [Excused Absences for University Events or Activities](#) as noted in the Catalog.

Absence for Religious Holidays

This course follows the practices related to [Excused Absences for Religious Holy Days as noted in the Catalog](#).

Absence for Pregnant Students

This course follows the requirements of Texas Laws SB 412, SB 459, SB 597/HB 1361 to meet the needs of pregnant and parenting students. Part of the supports afforded pregnant students includes excused absences. Faculty who are informed by a student of needing this support should make a referral to the Parenting Student Liaison. NOTE: Students must work with the Parenting Student Liaison in order to receive these supports. Students should reach out to the Parenting Student Liaison at parents@uttyler.edu and also complete the [Pregnant and Parenting Self-Reporting Form](#).

Campus Carry

We respect the right and privacy of students who are duly licensed to carry concealed weapons in this class. License holders are expected to behave responsibly and keep a handgun secure and concealed. More information is available at <http://www.uttyler.edu/about/campus-carry/index.php>.

UT Tyler Resources for Students:

- [UT Tyler Student Accessibility and Resource \(SAR\) Office](#) (provides needed accommodations to students with document needs related to access and learning)
- [UT Tyler Writing Center](#)
- [The Mathematics Learning Center](#)
- [UT Tyler PASS Tutoring Center](#)
- [UT Tyler Supplemental Instruction](#)
- [Upswing \(24/7 online tutoring\) - covers nearly all undergraduate course areas](#)
- [Robert Muntz Library](#) and [Library Liaison](#)
- [Canvas 101](#) (learn to use Canvas, proctoring, Unicheck, and other software)
- LIB 422 -- Computer Lab where students can take a proctored exam
- [The Career Success Center](#)
- [UT Tyler Testing Center](#)
- [Office of Research & Scholarship Design and Data Analysis Lab](#)
- [UT Tyler Counseling Center](#) (available to all students)
- [MySSP App](#) (24/7 access to Student Support Program counseling through phone or chat and online wellness resources available in a variety of languages)
- [Student Assistance and Advocacy Center](#)
- [Military and Veterans Success Center](#) (supports for our military-affiliated students)
- [UT Tyler Patriot Food Pantry](#)
- [UT Tyler Financial Aid and Scholarships](#)
- [UT Tyler Student Business Services](#) (pay or set up payment plans, etc.)
- [UT Tyler Registrar's Office](#)
- [Office of International Programs](#)
- [Title IX Reporting](#)
- [Patriots Engage](#) (available to all students. Get engaged at UT Tyler.)

COLLEGE OF EDUCATION AND PSYCHOLOGY (CEP) VISION AND MISSION

CEP Mission

The mission of the CEP is to prepare competent and passionate professionals in the fields of education, psychology, and counseling; to advance knowledge and expertise; and to impact these fields locally, regionally, nationally, and internationally.

CEP Vision

The CEP will be a global leader in responding to needs in the fields of education, psychology, and counseling, with a focus on the East Texas region, by creating innovative academic and scholarly pathways and partnerships.

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](#).