



Technology for Teaching Mathematics

MATH 621 | 3 credit hours | Fall 2022 Semester | 8/22/22 – 12/16/22

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Zoom Room: Request Original Syllabus

Virtual Office Hours: Thursdays 5pm CT

In-Person Office Hours: By Appointment

Course Format: Online Asynchronous

Office Number: SC 3275

Course Description

This course prepares mathematics teachers to use technology to make instructional decisions and support students in solving mathematical problems in the secondary mathematics curriculum, including problems in geometry, algebra, functions, data analysis, probability, and calculus.

Prerequisite

None, however, students are typically expected to have an undergraduate degree in mathematics or mathematics teaching.

Learning Objectives

1. Solve secondary mathematics problems using technology, including GeoGebra, Desmos, and CODAP.
2. Utilize and create dynamic tools to be used in the teaching of mathematics at the secondary level.
3. Evaluate the appropriateness of various technology tools to solve mathematical problems and to teach specific concepts in secondary mathematics.
4. Interpret secondary students' thinking when using mathematics software and select appropriate responses based on students' thinking.
5. Read and interpret recent literature on the use of technology in the teaching of mathematics.

Communication Guidelines

- **Netiquette**

All class communications and interactions with other students and the professor should follow common social standards for respect and courtesy. Learn about the [USI Netiquette Guidelines for Online Students](#) so that you can get the most out of your class.

- **Communication Expectation**

In general, the best way to communicate with the instructor is via email at macreager@usi.edu. Students should typically expect a response to email within 24 hours (except on weekends). Assignments and assessments for the course will typically be graded within one week of the due date of the assignment.

Blackboard Course Site Overview

When you open BlackBoard, the initial page is labeled “Start Here” and includes general course information, such as an introductory message, a syllabus, and a course calendar. The BlackBoard course site is organized into the three major modules of the course – Algebra (ALG), Geometry (GEO), and Data Analysis/Probability (DAP). Each module will include a content folder for each week the module is the primary focus. All materials, including a Voice Thread presentation and supporting tech files will be located.

Course Requirements

- **Curricular Resources**

There is no required textbook for the course, however all students must have access to the following technological tools:

- **CODAP:** CODAP can be accessed for free at <https://codap.concord.org/>
- **GeoGebra:** GeoGebra is a free tool that can be downloaded to a device or it can be accessed via the web at <https://www.geogebra.org/classic>
- **Desmos:** Although no download is required, Desmos is also a free tool that can be accessed from <https://www.desmos.com/>
- **Screencast-O-Matic:** Free screencasts can be made using the tool at <http://screencast-o-matic.com/home>
- **Zoom:** Zoom can be used to communicate with your instructor and peers at <https://zoom.us/>. A link

The course was designed using the three-volume *Preparing to Teach Mathematics with Technology* curriculum series.

- Lee, H. S., Hollebrands, K. F., & Wilson, P. H. (2015). *Preparing to teach mathematics with technology: An integrated approach to data analysis and probability* (3rd Edition). NC State University, Raleigh, NC.
- McCulloch, A. M., Lee, H. S., & Hollebrands, K. F. (2015). *Preparing to teach mathematics with technology: An integrated approach to algebra* (1st Edition). NC State University, Raleigh, NC.
- Hollebrands, K. F., & Lee, H. S. (2015). *Preparing to teach mathematics with technology: An integrated approach to geometry* (2nd Edition). NC State

University, Raleigh, NC.

- **Required Readings:** Required readings will be made available on BlackBoard and VoiceThread.
- **Technical Requirements**
 - **A Reliable Computer:** a dedicated computer with an updated operating system, such as Windows 7 or later, or Mac OSX.
 - **High-Speed Internet Connection:** (e.g., DSL or Cable). All USI online students are required to have a stable high-speed Internet connection. A wired Internet connection is recommended for online meeting, exams, and assignment submission.
 - Microsoft Office & [Adobe Acrobat Reader](#) installed. As a USI student, you can also access [Office 365](#) (USI login needed).
 - **Supported Web Browser:** [Firefox](#), [Google Chrome](#), or [Safari](#).
 - Webcam and/or microphone.
 - Access to the technological tools mentioned above.

* More information on the system requirements for taking online courses can be found at [USI Online Learning System Requirements](#)

Minimum Technical Skills

For success in the course, you should learn to navigate the BlackBoard site, take screen shots of your screen, create screen recordings (also known as screencasts) and read/respond to discussion boards. During the first few weeks of the course, you will learn to do these things. You should also be familiar with typing in a Word Processor, such as Microsoft Word. If you need additional help with these tasks, refer to the “Tech Help” link in BlackBoard.

Assessments

Weekly Discussion Boards: Each week, you will use BlackBoard to engage in class discussions. The purpose of these responses is to provide an opportunity for you to discuss your thinking about the tools you are learning with your peers, evaluate the appropriateness of the tools, and consider advantages and disadvantages for using the tool(s). Each week there will be multiple discussion boards that will be available. You do NOT have to respond to every discussion board, but at minimum, you should make 2 posts each week. At least one should be an original response to a prompt given, and the other should be a reply to someone else’s response on a different prompt.

Assignments: Most weeks throughout the semester, you will complete an assignment that ensures that you are practicing and reflecting on your work in the course. If you have questions or concerns about your work, you are encouraged to meet with the instructor for him to review your work prior to submission.

Assessments: At the end of each module, you will complete a summative assessment that you must complete without the support of your instructor or your peers. These summative assessments are intended to determine your potential to understand the course content and engage in using the tools in the teaching of mathematics.

Math Tool Screencast Project: You will choose a mathematical technology tool not currently addressed in the course, investigate the tool, and prepare a brief screencast to present the tool to other students in the course.

Reflection Paper: You will have two choices for your reflection paper in this course. 1) You may choose a tool or activity we have completed in the course that you implement with your own students. You will write about your experiences of planning and implementing this new tool in your classroom. (Note: Your screencast topic and reflection paper topic should be different!) 2) You will choose a research or practice-based article on teaching mathematics that you would like to read and react to. The goal is to research a topic that is addressed in the course in greater depth, or to investigate a topic not addressed in the course.

Grading Methods

Assignment	Due Dates	Point Percentage
Discussion Board Responses	Usually Mondays	5%
Weekly Assignments	Usually Mondays	15%
Algebra Assessment	Week 6	20%
Geometry Assessment	Week 12	20%
Data & Probability Assessment	Week 16	20%
Math Tool Screencast Project	Week 12	10%
Reflection Paper	Finals Week	10%
Total:		100%

	A	B+	B	C+	C	D+	D	F
Percentage	90-100%	85-89.9%	80-84.9%	75-79.9%	70-74.9%	65-69.9%	60-64.9%	Below 60%

Course Policy

- **Discussion Board Responses & Participation**

Your responses to discussion board prompts justify your participation in this course as an active member of the learning community. Remember the goal is to make at least

one original posts per week and one reaction to others each week. You are not required to respond to every discussion board. Your online responses should suggest that you have thought about the prompt in depth, rather than a cursorial response. For example, simple responses such as “I agree” or “That’s not true” will not receive full credit.

VoiceThread responses will typically be scored using a three-point scale:

2 points: The response is thorough, thoughtful, reflective, relevant to the prompt posed, and motivates further discussion on the topic.

1 point: The response is thoughtful and reflective concerning the topic of the prompt.

0 points: The response is not clearly articulated and not relevant to the prompt posed.

- **Late Assignment Policy**

All assignments should be turned in on the day in which they are due. If you expect to submit an assignment late, you should communicate with the instructor. You will lose 10% of your grade each day that the assignment is late. Assignments submitted more than 3 days late will not be graded.

- **Academic Integrity**

Students are expected to maintain complete honesty and integrity in the academic experiences both in and out of the classroom. Any student found guilty of dishonesty including, but not limited to, plagiarism and/or cheating on an examination will be subject to disciplinary action. For more information, please visit [Academic Integrity Policies and Procedures](#) .

- **Course Materials**

My lectures and course materials, including presentations, tests, exams, outlines, and similar materials, are protected by copyright. I am the exclusive owner of copyright in those materials I create. I encourage you to take notes and make copies of course materials for your own educational use. However, you may not, nor may you knowingly allow others to reproduce or distribute lecture notes and course materials publicly without my express written consent. This includes providing materials to commercial course material suppliers such as Course Hero and other similar services. Students who publicly distribute or display or help others publicly distribute or display copies or modified copies of an instructor's course materials may be in violation of The Student Rights and Responsibilities: A Code of Student Behavior. Similarly, you own copyright in your original papers and exam essays. If I am interested in posting your answers or papers on the course web site, I will request your written permission.

- **COVID-19 Health**

The University of Southern Indiana is committed to providing a safe learning environment for students and employees. It is the responsibility of each person at USI to reduce the risk for COVID-19 transmission and contribute to the overall safety of the campus community. As a student and a member of the USI community, you are required to:

1. Self-monitor for COVID-19 symptoms and report to a medical professional if you experience a fever of 100 °F or higher, a dry cough, difficulty breathing, chills, fatigue, muscle pain, headache, sore throat, nausea or vomiting, diarrhea, or loss of taste or smell;
2. Wear a face covering in all university buildings;
3. Maintain physical distancing of 6 feet or more whenever possible;
4. Stay home if you feel ill or if you have been exposed to someone who is ill or has tested positive for COVID-19. Please email your instructor to make arrangements to complete missed class work in these situations;
5. Inform the university through the self-reporting form if you test positive or are presumed positive for COVID-19. You will be contacted by a trained university employee regarding your next steps. If a student or instructor tests positive for COVID-19, the university safety committee will work with the college dean, Dean of Students and/or Human Resources, and the Provost Office to determine the next steps for classroom instruction and other safety measures. Students and employees who repeatedly disregard these safety guidelines are subject to disciplinary action and will be reported to the Dean of Students Office (students) or to an employee's supervisor.

- **Civility Statement**

The University of Southern Indiana embraces and celebrates the many differences that exist among the members of a dynamic, intellectual, and inclusive community, and strives to maintain an environment that respects differences and provides a sense of belonging and inclusion for everyone. Any form of discrimination or harassment, including sexual harassment and sexual misconduct, will not be tolerated. All members of the University community are expected to conduct themselves in a manner that does not infringe upon the rights of others, and should be aware that the University is prepared to take prompt action to prevent and correct such inappropriate behavior and to remedy its effects.

- **Disability Accommodations**

If you have a disability for which you may require academic accommodations for this class,

please contact Disability Resources at 812-464-1961 or email Disability Communications at usi1disres@usi.edu as soon as possible. Students who are approved for accommodations by Disability Resources should request their accommodation letter be emailed to them to forward to their online instructors. Due to the nature of online courses some accommodations approved for on campus courses may not apply. Please discuss this with Disability Resources to clarify as needed. Students who receive an accommodation letter from Disability Resources are encouraged to discuss the provisions of those accommodations with their professors before or during the first week of the semester. If you will be in an internship, field, clinical, student teaching, or other off-campus setting this semester please note that approved academic accommodations may not apply. Please contact Disability Resources as soon as possible to discuss accommodations needed for access while in this setting. For more information, please visit the [Disability Resources](#) website.

- **Class Withdrawal & Incomplete Policy**

It is the student's responsibility to officially drop/withdraw from any courses before the deadline. The university does not withdraw students from any classes. Please refer to the USI Academic Calendar (<https://www.usi.edu/registrar/academic-calendar>) for specific dates. For more information, please visit [Registrar's Office Schedule Changes](#)

Under special circumstances, students may petition for an incomplete grade. However, it is up to the course instructor to decide if an incomplete will be granted. Students receiving an incomplete grade will need to complete all course requirements by the agreed deadline to avoid an "F" grade.

- **Title IX – Sexual Misconduct**

The University of Southern Indiana is committed to providing a safe learning, living and working environment free from discrimination. Sexual misconduct and incidents of interpersonal violence deeply interrupt the collegiate experience, and USI is dedicated to ensuring a campus that is free of these types of incidents in order to promote community well-being and student success.

USI encourages individuals who believe that they have been sexually harassed, assaulted or subjected to sexual misconduct to seek assistance and support. Confidential resources are available on campus at [Counseling and Psychological Services](#) (CAPS) and the [University Health Center](#) (UHC).

As Responsible Employees, all faculty, staff, and administrators of the University community (except those noted above) are not considered confidential resources and are required to report incidents of sexual misconduct to the University Title IX Coordinator. The University will work with complainants to protect their privacy by sharing information with only those who need to know to ensure that USI can respond and assist. For a full list of resources, support opportunities, and reporting options, contact Chelsea Keaton, the University Title IX Coordinator, at 812-464-1703 or Dameion Doss, Deputy Title IX Coordinator, at 812 464-1835.

Additionally, you may email the office at title.IX@usi.edu or stop by the Title IX office located in the Wright Administration Building, Forum Wing, Suite 171.

Technical Support

- **IT Help Desk Support**

Since your professors are not trained as technology experts, they will not be able to assist you with your technical needs. Please contact the Help Desk at (812) 465-1080 or send an email to it@usi.edu for technical support. To learn more about the USI helpdesk, please visit [USI IT Help Desk](#)

- **Blackboard Support**

If you would like to speak to a support technician, you can call (812) 465-1080 during normal USI business hours (8am-4:30pm, Monday-Friday). Click on the following link for more [FAQ about Blackboard](#)

- **Zoom Support**

For issues involving [Zoom](#), please contact the Information Technology office at 812-465-1080 or send an email to it@usi.edu. For additional Zoom tutorials, please go to [Zoom Support](#)

- **Online Learning Office Support**

- **VoiceThread Support**

For issues involving VoiceThread, please contact Online Learning at (812) 228-5124 or send an email to online.support@usi.edu. The following link will direct you to tutorials on how to use VoiceThread <https://voicethread.com/howto/>

- **Privacy Policies & Accessibility Statements**

For detailed information about the privacy policies and accessibility statements of the course technologies, please visit [USI Online Learning Support Services](#)

Academic Support Services

- **Online Learning Library Services**

<https://usi.libguides.com/onlinelearning>

- **Research Guides**

Research assistance, subject guides, and useful resources compiled by your friendly librarians.

<http://usi.libguides.com/>

- **Counseling Center**

The Counseling Center is open every Monday through Friday from 8:00 am to 4:30 pm. You'll find the Counseling Center in the Orr Center, Room 1051; their phone number is 812/464-1867

<http://www.usi.edu/counselingcenter/>

- **Disability, and ADA Support**

<http://www.usi.edu/university-division/disabilities>

- **Student Grievances**

<https://www.usi.edu/media/3402299/Grievance-and-Complaints-Procedures.pdf>

- **Additional Student Resources**

The university provides a comprehensive range of support services and activities for students.

Please refer to <http://www.usi.edu/students/> for detailed information regarding academic advising, registration, financial aid, student affairs, counseling, career services, etc.

- **University Health Center**-The University Health Center is a full-service clinic offering medical services and health-related information to students, faculty, and staff. It is located in the lower level of the Health Professions Center and is open Monday through Friday, 8 am to 4:30 pm. Click on this link to learn more about the [Health Services](#) offered at USI, or to make an appointment, please call 812/465-1250.
- **Financial Aid Office**- Information about current or future financial aid (including the implications of withdrawal from courses) can be obtained from the University Financial Aid Office. The office is open every Monday through Friday from 8:00 am to 4:30 pm; phone 812/464-1767, or email them at finaid@usi.edu