

MAE 311/510: Introduction to Methods of Teaching Secondary School Math

**Please Note: This is a tentative syllabus and schedule.*

Kristen Pagano

kristen.pagano@stonybrook.edu

Fall 2022

Tuesday/Thursday 4:45-6:05p

Physics P129

Office Hours: <https://www.math.stonybrook.edu/cards/paganokristen.html>

Google Classroom Code: opyylmr

Course Description

This is a course in the theory and practice of teaching mathematics at the secondary level. Students will discover the benefits of student-centered teaching, grounded in a constructivist philosophy of learning and acquire tools for successfully implementing effective teaching strategies. We will analyze the NYS Next Generation Math Standards and learn how to create tasks and lessons that facilitate student mastery of these standards. Students will actively observe and reflect upon the lessons of practicing teachers and will create and teach mathematics lessons to their peers.

Course Expectations and Grades

Course grades are tentative based on the following and due dates are to be determined during the semester.

-Be sure to register on teach.org and go through the process of getting fingerprinted. The sooner you complete this, the easier it will be to start in a school.

Active Class Participation 10%

- This course requires you to start your journey as a teacher. Teachers work together to hone their craft and discuss experiences and pedagogy.
- This is one of the most important components to making the class successful.
- Be present and on-time to class. Missing more than one class will result in a significant grade reduction.
- Be prepared for discussions and be open to learning and to share your thoughts and experiences. We work on a growth mindset.

Observations 10%

- Observe 36 Hours (*48 regular class periods*) of classroom teaching in secondary schools. 4 periods every week. Leave yourself some room for flexibility for unforeseen circumstances. *Note that due to the COVID-19 pandemic, you will not necessarily be observing at schools in-person. Details on observation procedures will be provided as we receive further direction from the state.
- Maintain an electronic journal, using instructor-provided template, to record your observation reflections each week. Be ready to discuss your observations.

- The hours should be split evenly between a middle school and a high school.
- At least half of the hours should be in high-needs schools (schools with a 50% or higher free/reduced price lunch rate- economically disadvantaged).
- When choosing a district, you may not choose one in which you actually attended.
- Begin observing on the fourth week of the course (the week of September 13th).
- Each district has different requirements for observing in their school. Contact the schools as soon as possible and fulfill the necessary requirements. (Fingerprinting etc.)
- Remember you are a guest at each school, so be sure to dress and act professionally. Inappropriate or unethical behavior is grounds for course failure and dismissal from the teacher education program.

Reflections on Observations and Readings 15%

- Class discussion will be coordinated with prompts for observations and readings required for the week.
- Each week, a written response will be assigned after the class discussion.
- It will be important to stay on task and not fall behind. Just like in teaching, scheduling, organizing responsibility, and finishing tasks on-time will be incredibly important.

Midterm- Lesson Presentation 25%

- Plan and present a lesson to your peers. The preparation, planning, and presentation should reflect a constructivist philosophy.
- During your observations, choose a topic that the teacher is teaching that you would teach differently.
- Prepare a 10 minute presentation that includes an explanation of how you observed the math being taught and concisely teach us in your way.
- Be prepared to answer questions about why you chose that topic, why you made different choices in your practice, and a reflection on how you would change your technique.

Final Presentation 25%

- Pre-Observation Meeting
- Plan and present a lesson to your peers. The preparation, planning, and presentation should reflect a constructivist philosophy with focus on implementing changes based on instructor's and peer's feedback of the midterm presentation.
- Post Observation Meeting and Reflection
- More specific requirements will be discussed more carefully in class.
- This will be completed during finals week.

Final Essay 15%

- Write an essay that effectively communicates your understanding of various course topics.
- More specific requirements will be discussed in class.
- Due before the posted date for the final.

Required Resources

- Stigler, J. W., & Hiebert, J. (2009). The teaching gap: Best ideas from the world's teachers for improving education in the classroom. Simon and Schuster.
- Boaler, J. (2015). Mathematical mindsets: Unleashing students' potential through creative math, inspiring messages and innovative teaching. John Wiley & Sons.
- Access to the New York State Next Generation Mathematics Learning Standards <http://www.nysed.gov/common/nysed/files/programs/curriculum-instruction/nys-next-generationmathematics-p-12-standards.pdf>
- Access to NYS Common Core Curriculum <https://www.engageny.org/common-core-curriculum>
- Desmos and Geogebra apps (a graphing calculator would also be helpful)

Contact: Please feel free to contact me anytime you have a question or concern, or want to provide feedback. Contacts made Monday-Friday before 3pm will be answered within 24 hours. <https://www.math.stonybrook.edu/cards/paganokristen.html>

Learning Standards

- Candidates demonstrate a deep understanding of how students learn mathematics and of the pedagogical knowledge specific to mathematics teaching and learning.
- Teacher candidates plan and present lessons that demonstrate understanding of the New York State Common Core Standards for Mathematics, including the Standards for Mathematical Practice.
- Teacher candidates summarize, analyze, and critique current research in mathematics education.
- Teacher candidates recognize the INTASC critical dispositions and ethical standards of the New York State Code of Ethics, they demonstrate critical dispositions and ethics in their interactions with students and colleagues.
- Teacher candidates use understanding of individual differences and diverse cultures and communities to ensure inclusive learning environments that enable each learner to meet high standards.
- Teacher candidates work with others to create environments that support individual and collaborative learning, and that encourage positive social interaction, active engagement in learning, and self-motivation.
- Teacher candidates engage in ongoing professional learning and use evidence to continually evaluate his/her practice, particularly the effects of his/her choices and actions on others (learners, families, and other professionals in the learning community), and adapt practice to meet the needs of each learner.
- Teacher candidates seek appropriate leadership roles and opportunities to take responsibility for student learning, to collaborate with learners, families, colleagues, other school professionals, and community members to ensure learner growth and to advance the profession.

- Teacher candidates understand how children learn and develop, recognizing that patterns of learning and development vary individually within and across the cognitive, linguistic, social, emotional, and physical areas, and designs and implements developmentally appropriate and challenging learning experiences.
- Teacher candidates use understanding of individual differences and diverse cultures and communities to ensure inclusive learning environments that enable each learner to meet high standards.
- Teacher candidates work with others to create environments that support individual and collaborative learning, and that encourage positive social interaction, active engagement in learning, and self-motivation.
- Teacher candidates understand the central concepts, tools of inquiry, and structures of the discipline and creates learning experiences that make these aspects of the discipline accessible and meaningful for learners to assure mastery of the content.
- The teacher candidate understands how to connect concepts and use differing perspectives to engage learners in critical thinking, creativity, and collaborative problem solving related to authentic local and global issues.
- The teacher candidate understands and uses multiple methods of assessment to engage learners in their own growth, to monitor learner progress, and to guide the teacher's and learner's decision making.
- The teacher candidate plans instruction that supports every student in meeting rigorous learning goals by drawing upon knowledge of content areas, curriculum, cross-disciplinary skills and pedagogy as well as knowledge of learners and the community context.
- The teacher candidate understands and uses a variety of instructional strategies to encourage learners to develop deep understanding of content areas and their connections and to build skills to apply knowledge in meaningful ways.
- The teacher candidate engages in ongoing professional learning and uses evidence to continually evaluate his or her practice, particularly the effects of his or her choices and actions on others, (learners, families, and other professionals in the learning community), and adapt practice to meet the needs of each learner.
- The teacher candidate seeks appropriate leadership roles and opportunities to take responsibility for student learning, to collaborate with learners, families, colleagues, other school professionals, and community members to ensure learner growth and to advance the profession.

Learning Outcomes for “Speak Effectively before an Audience”

1. Research a topic, develop an oral argument and organize supporting details.
2. Deliver a proficient and substantial oral presentation for the intended audience using appropriate media.
3. Evaluate oral presentations of others according to specific criteria.

Student Accessibility Support Center Statement:

If you have a physical, psychological, medical, or learning disability that may impact your course work, please contact the Student Accessibility Support Center, Stony Brook Union Suite 107, (631) 632-6748, or at sasc@stonybrook.edu. They will determine with you what

accommodations are necessary and appropriate. All information and documentation is confidential.

Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and the Student Accessibility Support Center. For procedures and information go to the following

website: <https://ehs.stonybrook.edu/programs/fire-safety/emergency-evacuation/evacuation-guide-disabilities> and search Fire Safety and Evacuation and Disabilities.

Academic Integrity Statement:

Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty is required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology & Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty please refer to the academic judiciary website

at http://www.stonybrook.edu/commcms/academic_integrity/index.html

Critical Incident Management:

Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of Student Conduct and Community Standards any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Until/unless the [latest COVID guidance](#) is explicitly amended by SBU, during Fall 2021 "disruptive behavior" will include refusal to wear a mask during classes.

For the latest COVID guidance, please refer

to: <https://www.stonybrook.edu/commcms/strongertogether/latest.php>

Teacher Education Program Mandatory Professional License Disclosure:

https://www.stonybrook.edu/commcms/dtale/guide/looking_for_job.php#mandatorydisclosure