

Introduction to the Methods of Teaching Secondary School Mathematics

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.

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

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

10%: Active Class Participation

- 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.

10%: Observations

- Observe 36 Hours [48 regular (about 40 minutes) class periods] of classroom teaching in secondary schools. Leave yourself some room for flexibility for unforeseen circumstances.
- Maintain a journal 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 by the latest the week of September 11th.
- Each district has different requirements for observing in their school. Contact the schools as soon as possible. (Fingerprinting, ID Cards, 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.

15%: Reflections on Observations and Readings

- Class discussion will be coordinated with prompts for observations and readings required for the week.
- A written response will be assigned most weeks after the class discussion.
- Just like in teaching, scheduling, organizing responsibility, and finishing tasks on-time will be incredibly important.

25%: Lesson Presentation

- Choose a class and time that works for both the lecturer and this instructor.
- Observe one lecture of the class that you will be presenting your lesson.
- Pre-Observation Meeting with a complete lesson plan: The preparation, planning, and presentation should reflect a constructivist philosophy.
- Send a final plan to the lecturer you will be working with.
- Present a 30 minute lesson.
- Post-Observation Meeting and Reflection
- This will be discussed more carefully in class. Tentatively, the presentations should be done in October.

25%: Final Presentation

- Same structure as in the Lesson Presentation.
- The preparation, planning, and presentation should reflect a constructivist philosophy with focus on implementing changes based on feedback of the first lesson presentation.
- More specific requirements will be discussed more carefully in class.

15%: Final Essay

- Complete 3 hours in the MLC and document the math problems you did with a student and the strategy you used to support their understanding. Explain in detail why you chose this strategy and why you think it was effective. If it was ineffective, explain why and what you would change.
- Time in the MLC **must** be coordinated with me and the MLC director.
- More specific requirements will be discussed in class.

Grading Scale: A 96-100, A- 92-95, B+ 88-91, B 84-87, B- 80-83, C+ 76-79, C 72-75, C- 68-71, D 62-67, F below 67

There will be no extensions for (or exemptions from) any assignments, reading, or other class requirements unless your absence is based on a well-documented extenuating circumstance. There will be no extra credit given to any student on an individual basis.

Response Time and Feedback on Assignments: Assignments and assessments should be handed back with grades and feedback within a week of their submission. Sometimes this timeline is not possible.

Google Classroom: This will be our main form of communication as this is likely what you will use in your classroom. **Google Classroom Code: y4o74ca**

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 Learning Standards](#)
- Access to [NYS Common Core Curriculum](#)
- Access to [Desmos](#) and [Geogebra](#) apps (a graphing calculator would also be helpful)
- Create an account with [DeltaMath](#) and enroll in the section of your course with your Stony Brook gmail account.

Lecture Times: Tuesday and Thursday 4:00-5:20p; Harriman 206

Contact Info:

- Email: kristen.pagano@stonybrook.edu
- Office Hours: You can find the most up to date office hours and contact info by clicking <https://www.math.stonybrook.edu/departments-directory>

Contact: Please feel free to contact me anytime you have a question or concern, or want to provide feedback to me. The easiest way to contact me is through email. Contacts made Monday-Friday before 3pm will be answered within 24 hours.

Campus Academic Support Services As part of your journey toward teaching, it is important to gain experience in working with students. Here are some places to consider applying to on campus:

There are multiple resources, university offices, and help desks that are available to assist students with everything from advising, tutoring, accessibility and much more. Review some [Academic Success Strategies](#) and visit the [Student Resources](#) page for links to resources on campus.

Math Learning Center (MLC): Free math tutoring for all students. No appointment is required, just come in and ask for help. The MLC is located in the basement of the Mathematics Tower and virtually through Zoom. For more information:

<http://www.math.stonybrook.edu/mlc/center-hours.html>

PAL Sessions: Free Test Review Sessions https://www.stonybrook.edu/commcms/academic_success/about/pal.php

Academic Success and Tutoring Center: Campus Provided Tutoring Services https://www.stonybrook.edu/commcms/academic_success/

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 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 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*

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

Teacher Education Program Mandatory Professional License Disclosure:

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

University Policies

Drop/Swap/Add Policies: If you need to drop or withdraw from the course, it is your responsibility to be aware of the tuition liability deadlines listed on the registrar [Academic Calendar](#). Before making the decision to drop/withdraw you may want to [contact me or] refer to the University policies: [Undergraduate Course Load and Course Withdrawal Policy](#)

Incomplete Policy Under emergency/special circumstances, students may petition for an incomplete grade. Circumstances must be documented and significant enough to merit an incomplete. If you need to request an incomplete for this course, contact me for approval as far in advance as possible. You should also read the University's policies that apply to you: [Undergraduate Bulletin](#)

Course Materials and Copyright Statement: Course material accessed from Brightspace, Zoom, Echo 360, VoiceThread, Google Classroom, etc. is for the exclusive use of students who are currently enrolled in the course. Content from these systems cannot be reused or distributed without written permission of the instructor and/or the copyright holder. Duplication of materials protected by copyright, without permission of the copyright holder is a violation of the Federal copyright law, as well as a violation of Stony Brook's Academic Integrity.

Student Accessibility Support Center (SASC) 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 Professions, 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. Faculty in the HSC Schools and the School of Medicine are required to follow their school-specific procedures. Further information about most academic matters can be found in the Undergraduate Bulletin, the Undergraduate Class Schedule, and the Faculty-Employee Handbook.

Technical Requirements and Assistance: Computers are available for use at the various [SINC site computer labs](#). Both physical and virtual labs are available. You can also borrow a computer through [SBU Laptop Loan Program](#). Visit the [Technical Requirements](#) page for additional information regarding hardware and software options.

Stony Brook University: Academic Technology Services

Phone: 631-632-9800 Email: AcademicTechnologies@stonybrook.edu