MAE 301/501 FOUNDATIONS OF SECONDARY SCHOOL MATHEMATICS

FALL 2020

Instructor: Lisa Berger
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Current Office Hours:

>   Mondays: 10:00-12:00 on-line.
>   Wednesdays: 2:30-3:30 on-line

Office hours may be adjusted to accommodate the instructor's schedule and/or student needs. Students unable to meet during scheduled office hours are encouraged to schedule an appointment with the instructor.

Semester Schedule. This course will run **in-person**, Tuesday/Thursday 3pm - 4pm, in Earth and Space Sciences, room 069. In addition, there will be approximately 40 minutes in video material posted **on-line** weekly. The instructor will send links to the video material.

The video material will generally either introduce new material or provide closure to class discussions.

Ending the class at 4pm should allow students to fully participate in the co-requsite course, MAE 311/MAE 510, which is running on-line.

General Information.
This is a course in mathematics. We will study many of the topics that are studied in the high school curriculum at an advanced level. One goal of the course is for students to make connections among different areas of mathematics and between high school and advanced mathematics. This course may include both new and familiar topics; your goal should be to increase your depth of understanding of each topic studied. A main focus of the course will be on mathematical problem solving, proof, and writing mathematics. You should be prepared to work through a lot of problems, prove your results, and write your work clearly and accurately. We will study a range of topics selected from the areas of algebra, geometry, trigonometry, functions, probability and statistics.

Learning Objectives:
- Students know, understand, and apply the process of mathematical problem solving.
- Students reason, construct, and evaluate mathematical arguments and develop an appreciation for mathematical rigor and inquiry.
- Students communicate their mathematical thinking orally and in writing to peers, faculty, and others.
- Students recognize, use, and make connections between among mathematical ideas and in contexts outside of mathematics to build mathematical understanding.
- Students use varied representations of mathematical ideas to develop and communicate their mathematical understanding.
- Students select and use appropriate technological tools.

- Students demonstrate computational proficiency, including a conceptual understanding of numbers, ways of representing number, relationships among number and number systems, and meanings of operations.
- Students emphasize relationships among quantities including functions, ways of representing mathematical relationships, and the analysis of change.
- Students use spatial visualization and geometric modeling to explore and analyze geometric shapes, structures and their properties.
- Candidates demonstrate a conceptual understanding of limit and continuity and of their relevance to the secondary curriculum.
- Students apply some of the fundamental ideas of discrete mathematics in the formulation and solution of problems.
- Students demonstrate an understanding of concepts and practices related to data analysis, statistics and probability.
- Students apply and use measurement concepts and tools.

Course Materials.

Video Material. Video material will be posted weekly on-line, and the instructor will send an access link when the first material is posted. This is an essential component of the course, and student interaction with video material will be included in the classwork component of your final grades. Since most of the in-person classes will be managed in a discussion format, we will try to use the video component for introducing new topics and also for providing important closure to in-class discussions.

Homework/Class Work/Quizzes.
Homework is an essential component of the course. Homework will be assigned and collected regularly, and selected problems will be graded. Late homework will not be accepted. Announced and/or unannounced quizzes may be given, and there may be assignments completed and collected during class. Students are expected to be present for class, and missed quizzes and classwork may not be completed for credit. The lowest 2 scores in the homework/classwork/quiz category will be dropped.

Course Materials. There is no required text-book for this course. There will be some reading assignments from other sources, such as the NY State Curriculum Modules, the journal *Mathematics Teacher*, and instructor provided notes. All supplemental reading material will be available on-line, through our library system, or provided by the instructor.

Exams.
There will be three exams. **Exam** 1 will consist of problems selected from the New York State Regents Exam. **Exam 1 is tentatively scheduled for the third week of classes. The in-class component will be on Tuesday, September 8. There will be a take-home component as well, which is tentatively due on Tuesday, September 8**. Students who do not achieve a score of at least 85% on Exam 1 will have two opportunities to to schedule and pass a make-up exam. There will be a midterm exam and a final. The midterm is tentatively scheduled for **Tuesday, October 13**, and this exam will also include a take-home component, with details to be given in class. The **final exam** is, as scheduled by the University, for **Tuesday, December 15**, from 11:15 a.m. to 1:45 p.m. Students will be required to complete the on-line component of this exam via Zoom, with a webcam on. There may be a take-home component of this exam; details will be provided in class.

Final Grades.
In order to earn a grade above $C-$ in this course a student must achieve a minimum score of 85% on Exam 1 or on a subsequent make-up exam. For students passing Exam 1 with a minimum score of 85%, the grade is determined as follows:

(1) Exam 1: 10%
(2) Homework/Quizzes/Classwork: 30%
(3) Midterm Exam: 30%
(4) Final Exam: 30%

A student not passing Exam 1 with a minimum score of 85% will not receive above a $C-$ for the course.

Academic Integrity:

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`

If you have any questions about the academic integrity expectations, please ask.

Student Accessibility Support Center: If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Student Accessibility Support Center, ECC (Educational Communications Center) Building, Room 128, (631) 632-6748. They will determine with you what accommodations, if any, 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 Disability Support Services. For procedures and information go to the following website: `http://www.stonybrook.edu/ehs/fire/disabilities`]

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 University 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.