

MATH 575
High School Mathematics From an Advanced Viewpoint
Spring 2019

Class Time/Location: TR 5:30 p.m. – 6:45 p.m., EMS E424A

Instructor: Suzanne Boyd, Associate Professor, Mathematical Sciences

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Office hours : Tues & Thurs 4-5pm, and by appointment

Prerequisite: jr st, either Math 451 or 453, & either Math 431 or 531; or cons instr; or grad st.

Textbook(s): The main (and required) text is *Sultan & Artzt, The Mathematics that Every Secondary School Math Teacher Needs to Know*. I'll be using the 2nd edition. If you have a 1st edition please let me know so I can be sure to get you the right homework assignment (as some page / problem numbers have changed). We'll be covering most of Chapters 1—4, 10, 11, & 8 [that's 1—4, 9, 10, & 6 in 1st ed.]. You are encouraged to read the rest on your own, we simply don't have time in one course for it all.

Supplemental readings will be from *Berlinghoff & Gouvêa, Math Through the Ages, A Gentle History for Teachers and Others* (either the 1st or the 2nd edition is fine and the "Sketch" numbers match), and possibly from other articles which I will distribute throughout the semester, and from web resources (see Canvas for web resources).

Content Description: The ultimate aim of this course is to provide you with the deep understanding of high school mathematics that you will need in order to become an effective teacher. In order to do this, we will *not* simply repeat the material of a typical high school algebra or geometry course. Instead, we will explore this material from a deeper viewpoint, making connections between content strands and trying to understand *why* mathematics works the way it does. Course topics will include the number concept; the relations between arithmetic and algebra, and between algebra and geometry; and functions and modeling. You will be expected to take an active role in class, participating in activities and discussions. For this reason, attendance is particularly important: you will not be able to make up a missed class just by reading the textbooks.

Class information and materials will be posted on the class Canvas page (go to <https://uwm.edu/canvas/home/>). Any relevant information about the class, such as exam dates or other announcements, will be posted on the website, so you should get into the habit of checking it on a regular basis. Homework will also be posted, so if you do have to miss a class you can still be prepared for the next one. If I find useful and relevant links during the semester, they will also be posted; if you find some yourself, please let me know. **You are responsible for any information posted on the Canvas course page**, so please check it regularly.

Important Dates Spring 2019:

Tuesday, January 22	First day of classes
Monday, January 28	MathSci Department's last day to add a class
Monday, February 4	University last day to add, last day to change to or from credit/no credit/audit status.
Monday, February 18	Last day to drop without a "W" (Withdrawn) on record
March 17-24	Spring Break
Sunday, April 7	Last day to drop
Thursday, May 09	Last day of classes
Friday, May 10	Study day
May 11-18	Final examination period

Course Work/Grading Policy: Your grade for the course will be based on the following factors:

- **Reading/Class participation (10% of your grade):** *Attendance is mandatory and you are expected to participate in classroom discussions.* The texts are quite readable. After each class I will assign reading for the next one. You are expected to read the material and come prepared, with questions and comments, for a discussion. We will not cover every chapter or every section in the book, BUT for those we do cover, we may not cover everything in the assigned sections during class, but you are responsible for that knowledge (unless I tell you otherwise to skip some sub-section). I suggest you make an outline of each chapter as you are reading them, to help prepare you for classroom activities and discussion.
- **Discussion posts (5% of your grade):** Approximately weekly (sometimes twice, sometimes not that week), your class to-do list will include posting or replying to a post on the Canvas class discussion board. These discussions are timed so you must respond by the due date to earn credit. With the variety of computers available on campus, and Canvas's supposed ease of use on mobile, technical difficulties will not be a good excuse for not doing one of these.
- **Homework/Presentations (20% of your grade):** You will be given suggested exercises after each class period (always posted on Canvas). The next class, groups will work on these problems (briefly) in class, and representatives from each group will present some of the problems. You will then write up and turn in *all* presented problems at the beginning of the next class period (not just the ones that you/your group presented!). Your homework grade is a combination of your presentation and writeups (both are important – everyone should present regularly).
- **Papers (10% of your grade EACH):** You will be asked to write two research papers on topics connected to the material covered in class or, more generally, to the class goals. More information will follow but you will have some choice on the topic, subject to my approval. This portion of the course is what allows this course to satisfy the L&S Research Requirement (and the capstone requirement for the Mathematics BS or BA).
 - Paper 1 will be due on Thurs, March 28, Paper 2 on Thursday, May 9.
- **Midterm (20% of your grade):** This will be a 75 minute exam, given likely in class on Thursday, March 14. (The exact date will depend on the pace of the class, and will be announced at least one week in advance. It's possible we could get to it sooner.)
- **Final Exam (25% of your grade):** The final exam will be comprehensive, and will take place from 5:30-7:30 pm on Tuesday, May 14, room TBA (may be our classroom, maybe not).

There will be no make-up for the final exam barring extraordinary circumstances. You may have a make-up for the midterm if I am convinced that you had a valid excuse for missing the original exam. The make-up must be taken within a short time frame of the original midterm, and will be an oral exam.

Time investment: The amount of time that an average student should expect to spend on this class is as follows (but for individual students it may be more or less):

- Classroom time (face to face instruction): 45 hours
- Time taking exams (midterm, final exam): 4 hours
- Time for preparation and study for exams: 16 hours
- Time completing reading and other homework assignments: 85 hours

Total number of hours: 150.

University / Departmental Policies:

- Room changes, course cancellations, etc., will be emailed to the students and posted outside of the classroom door.
- Students will be allowed to complete examinations or other requirements that are missed because of a religious observance.
- If you need special accommodations in order to meet any of the requirements of the course, please contact me as soon as possible.
- Other Syllabus Links can be found here (*on student with disabilities, absences due to religious observation, students called to active military duty, Incompletes, discriminatory conduct, Title IX, academic misconduct, complain procedures, grade appeal procedures, LGBT+ resources, and final exam policies*): <http://uwm.edu/secu/wp-content/uploads/sites/122/2016/12/Syllabus-Links.pdf>

You will be held responsible for the information and policies contained at these links.

Policy on Children in Class: It is my belief that if we want women in academia, that we should also expect children to be present in some form. Currently, I do not think the university has a formal policy on children in the classroom. The policy described here is thus, a reflection of my own beliefs and commitments to student, staff and faculty parents.

1) All exclusively breastfeeding babies are welcome in class as often as is necessary to support the breastfeeding relationship. Because not all women can pump sufficient milk, and not all babies will take a bottle reliably, I never want students to feel like they have to choose between feeding their baby and continuing their education. You and your nursing baby are welcome in class anytime.

2) For older children and babies, I understand that minor illnesses and unforeseen disruptions in childcare often put parents in the position of having to choose between missing class to stay home with a child and leaving him or her with someone you or the child does not feel comfortable with. While this is not meant to be a long-term childcare solution, occasionally bringing a child to class in order to cover gaps in care is perfectly acceptable.

3) I ask that all students work with me to create a welcoming environment that is respectful of all forms of diversity, including diversity in parenting status.

4) In all cases where babies and children come to class, I ask that you sit close to the door so that if your little one needs special attention and is disrupting learning for other students, you may step outside until their need has been met. Non-parents in the class, please reserve seats near the door for your parenting classmates.

5) Finally, I understand that often the largest barrier to completing your coursework once you become a parent is the tiredness many parents feel in the evening once children have *finally* gone to sleep. The struggles of balancing school, childcare and often another job are exhausting! I hope that you will feel comfortable disclosing your student-parent status to me. This is the first step in my being able to accommodate any special needs that arise. While I maintain the same high expectations for all student in my classes regardless of parenting status, I am happy to problem solve with you in a way that makes you feel supported as you strive for school-parenting balance. Thank you for the diversity you bring to our classroom!