Syllabus

Math 380 Spring '22

Text: **A History of Mathematics – an Introduction** by V. Katz, 3rd edition

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Office Hours: M 3:00-3:50, T 2:00 – 3:50, F 12:00 – 12:50 (zoom only)
Class times & room: TTh 11:00 – 12:15 pm in Science A213

What Kind of Course is This??

This course may be different from any other math major course you have taken so far. Most math courses focus on methods or techniques – a differential equations course, for example, emphasizes methods to solve DE's. This course is not like that.

This course is a *synthesis* course – it was designed as a Capstone for the math major. It is supposed to be taken after you have spent time already learning lots of different kinds of mathematics in lots of different courses. I (your instructor) will assume you possess a broad range of mathematical knowledge and skills and are developing an understanding of what mathematics… is. Our focus will be to further that understanding. We do this by **reading about** and **discussing** how mathematical concepts developed over time.

Note the underlines and bold emphasis.

This course requires reading. In lots of math classes you might skim the section, try a problem to see if it makes sense, then wait for the teacher to make it all make sense. Or you might be someone who skips the reading altogether, hoping the teacher (or a roommate) will give you the basic steps. You might be really good at this method of mastering techniques.

It won't work here. **This is a student-driven discussion course**. That means you can't learn it by waiting for the teacher to tell you the steps – because *there aren't steps!* We aren't learning how to solve problems. We're learning *different ways to think about mathematics*. And you can't do that without the *thinking*, and you can't do it without talking about it.

You also can't wait for the teacher to tell you the steps because the teacher won't be driving the course. Think of this like a Driver's Ed course, with you behind the wheel. I'll be in the car guiding you, but the car only moves if you turn it on and give it gas and steer (etc.). I will be there to guide you occasionally, but the goal is for students to drive the discussion (so to speak).

There are tools to help this along (more on these later) – and I will be there in case the discussions end up crashing (more or less). Think of the course as a work in progress, where we are all working towards improving our understanding of mathematics.

Reading expectations: roughly 20 pages of (sometimes) very dense material for each class period. You will need to read (maybe re-reading some parts), take decent notes, and come to class prepared to talk about the readings.

What Kind of Course is This?? (continued)

*How do we **talk** about mathematics history?* We will depend on the book a lot. It's organized pretty well, so we will follow the text a lot – though we may jump around occasionally. Students have told me the book is very – dense? boring? hard to read? all of the above?... it's not an easy read. But there are reading tools. There are also tricks to help discuss the material.

We will cover the tools and tricks later, the purpose of this section is to emphasize what is expected of you:

- you will read the book regularly and take notes
- you will help in the class discussion, offering comments or questions or possibly answers to questions as appropriate
- there are also some course assignments and occasional classwork and even some exams (wow, what a shock)… more on these later

What if I really don't like talking in class? Let me know if this is a problem. If you're just quiet, there should be opportunities to participate – and there are ways to participate in the discussion outside of speaking (there will be Canvas boards to continue the classroom discussion ideas for those who like to write ideas out – but the course needs in-person participation to work, so you should be ready to offer some ideas in class even if you're more of a writer than a speaker).

Face Coverings

You know this already, but…

At all UW-Stevens Point campus locations, the wearing of face coverings is mandatory in all buildings, including classrooms, laboratories, studios, and other instructional spaces. Any student with a condition that impacts their use of a face covering should contact the Disability and Assistive Technology Center to discuss accommodations in classes. Please note that unless everyone is wearing a face covering, in-person classes cannot take place. This is university policy and not up to the discretion of individual instructors. Failure to adhere to this requirement could result in formal withdrawal from the course.

This policy may change, but follow it until otherwise directed.

Other Guidance

- Please monitor your own health each day using this screening tool. If you are not feeling well or believe you have been exposed to COVID-19, do not come to class; email your instructor and contact Student Health Service (715-346-4646).
- As with any type of absence, students are expected to communicate their need to be absent (email me!) and complete the course requirements (see later about this).
- Wash your hands or use appropriate hand sanitizer regularly and avoid touching your face. Basically, use good hygiene!
- Please maintain these same healthy practices outside the classroom.
- Consider getting a vaccine(s) if you have not already done so. The vaccine will not make you immune to COVID-19, but it will reduce your risk significantly.

Learning Outcomes:

- Apply discipline-specific standards of communication to compose an articulate, grammatically correct, organized presentation and written work which is properly supported and documented, and is suitable to an appropriate audience
- Critique your own and others' writing/oral presentations to provide effective and useful feedback to improve communication skills
- Integrate knowledge, skills, and experience related to GEP Outcomes related to mathematics
- Demonstrate skills, processes, and resources needed to make a successful transition from college to the world beyond

Calculators:

For this course we will be more concerned with mathematical IDEAS than mathematical FORMULAS or COMPUTATIONS, so for much of the course calculators will not be useful. When it is necessary, almost any calculator will do.

Schedule (see Reading Guide/Homework page):

Part I (chapters 1 through 6)	about 5 weeks
Part III (chapters 12 through 16)	about 5 weeks
Part IV (various chapters)	about 4 weeks

Each part will culminate in an exam – these are scheduled on February 24, April 7, and May 5. Note that we are skipping Part II… sort of.

Assessment:

This course is challenging, so it will be graded according to the following scale:

87%+ A- or better	77%-86.9% B-, B or B+
67%-76.9% C-, C or C+	57%-66.9% D-, D or D+
<57% F	

I reserve the right to adjust the final percentage +/- up to about 2%, based on my assessment of your effort and/or participation in the class and course in general.

To get your overall score, you will be graded on the following:

Exams (all three)	3/6
Final*	
Homework	1/6
Discussions (class and Canvas)	1/6
Presentations (mathematician, group, feedback on other students' work)	1/6
Total	100%

* the final does not count as a separate part of the grade. Instead, it can be used to replace one other component of your grade.

Can we skip the final if we like our grade without it? Yes, with one exception: you must have *passed* each other non-exam component (at least 60%) to be able to skip the final. Otherwise, you must take the final even if you like your grade without it.

Exams

Exam dates are listed in the Schedule section (above). Exams will cover techniques – but they will focus more on written answer components. Much of this material is conceptual – you will need to be putting it into concepts and words.

Homework

Homework will be due most weeks, typically on Tuesday. Discussing the material is the heart of the subject, but it is still important to try out occasional techniques and do written reflections on the topics. Homework assignments are designed mostly with those ideas in mind, and are not overly long. Homework has an oversized impact on your grade, so make sure to do the assingments!

Note: weekly assignments are broken into two parts: problems that are due (required) and problems that are recommended (not required). The required problem list is kept fairly short to allow for time spent readying Presentation problems (see later!). The recommended problems are exactly what their name suggests – you should consider looking at them and spending some time on them, but you do not have to finish them or turn in your work. Some recommended problems give additional practice; others explore interesting ideas we are not able to focus on.

You will turn your homework in on Canvas – scan or take pictures of your work and upload it to the appropriate place. Please try to write clearly and in an organized manner – basically, *write it as if you wanted someone to read it*! For some people, that might mean doing the work on a scratch copy and then writing it out again; for others, that might mean typing it out. Don't ignore these assignments – they are a significant part of your grade!

Canvas discussion boards are also set up for each week, for students to post questions and/or answers to questions about the problems. One last bit: your work is your work. Working with others is good, but simply copying their work is not.

Presentations

As part of the course you will need to make one (or two) presentations:

- A 4 minute oral biography of a famous mathematician (presented between February 7 and March 11) **AND ALSO** give feedback on other students' presentations. Choose your mathematician and presentation day on Canvas; and

- AN EXTRA CREDIT OPPORTUNITY: an 8 minute video (uploaded to or linked in Canvas) about the mathematics of an ancient or medieval civilization not covered in class (basically, something from Part II of the book) **with a partner**. You can be creative in your presentation! Choose civilization on Canvas; no more than two presentations on any particular civilization.

- If you do not create a video, you will be required to give feedback on some of the videos created. If you create a video, you are exempted from this (and earn extra credit).

If nobody is willing to create videos, we will have to do something else… we'll see.

Discussion

It's mentioned above, but most class days will be discussion days, where you come to class having read and taken notes (SEE STUDY GUIDES ON NEXT PAGE) on the sections for the day as indicated on the Schedule and discuss the material. **Participation is part of your grade – whether you make a comment, ask a question, answer a question, or whatever**. The grading criterion are not super-strict – the goal is to generate good discussion about the material and get people to talk.

One option to help facilitate discussion and move it along is for students to take on various classroom roles. This may become less necessary as the semester progresses, but for now I anticipate the following class roles – you choose a (potentially different) role each week:

Regardless of role, EVERYONE is expected to have read and taken notes AND is expected to have something to say.

- Leader (2 people). Responsibility: keep discussion from stagnating, help make sure all/most topics and sections are covered, help encourage quieter participants
- Note-taker (2 or 3 people). Responsibility: write down major discussion points and ideas and later post them on Canvas
- Maven (1, 2 or 3 people). Responsibility: know at least something discussion-worthy in (nearly) each section of the reading material. In other words, someone who read each section in a bit of depth. If you don't like the word "maven" you can use "expert" – I avoided it because it maybe sounds a little egotistical

… once we have at least one person in each of those roles, the following role also becomes available:

- Specialist (2 or 3 people per section group). Responsibility: at least skim all of the reading, but study a designated section group in depth and be able to explain (or at least talk about) most of the trickier bits in the section group

Note: I want two leaders because it's a tricky role and having two people makes it easier. Likewise, having at least two note-takers is good because coverage will be better. Beyond that, there may be some flexibility.

Second note: this system is a bit new to me, so it may require certain tweaks to work better. Please try to make it work! Ideally, roles should not be necessary – good discussions can work without formal roles. But having the roles just seems like a good back up plan to me…

There are ALSO Canvas discussion boards about each chapter. They take the classroom discussion and move beyond; they also allow options for students who may be unable to attend class in person (for example, those in quarantine). Functionally they work like normal discussion, but there is less need for any roles.

Study Guides

This is a fairly dense, ponderous text. It does a good job in a lot of ways, but reading it is not easy. To help – especially when you take notes on your reading! – I have created study/reading guides for each chapter. They are not amazing magical documents that will fill you will enlightenment, but they may serve to help organize your thoughts a little bit better. You are not required to use them in any way, but you should consider looking at them when approaching the chapter readings. In past years, students have told me they are very helpful.

Group Presentations

For the last third of the semester, groups of students (three or four per group) will take ownership of a large mathematical topic and present the material from text chapters. Unlike the rest of the course, the group will dictate how their presentation day will progress, what is covered, and how it is covered. Part of the project involves creating a lesson plan that includes introduction of topics and important persons, (a small amount of) class reading for discussion, a (small) homework assignment, and possible extras like mini videos and slide presentations.

More will be mentioned on this later, but note that when another group is presenting you will want to pay attention, because the third class exam will focus on these presentations!

Note that group presentations typically net a group grade, though there will be parts that are individualized. Group dynamics can be frustrating, but your instructor has used this method of instruction in more than 10 semesters' worth of courses and has experience dealing with some of the challenges. You will need to meet with me (in person or virtually, or possibly via email) several times to discuss how it is progressing and to provide me with evidence of the progress.

(One more note: when you plan, plan for redundancy: make sure at least one other group member can step in for each topic if someone gets confused, or drops the ball, or gets sick, or whatever. But you really don't have to plan this yet!)

Attendance and Engagement:

Attendance is expected. Because class discussion is graded, being in class is essentially part of your grade. Of course, real life is messy, so sometimes things can come up which make you miss a class or two. If you have to miss a class period, let your instructor know ahead of time (email is a good way).

Missing exams and/or presentation days will only be allowed for extreme circumstances and will require DOCUMENTATION (so for example, if you are too sick to take an exam the instructor will need a note from a medical professional; if you are under quarantine your instructor will require proof of the covid test; etc.). Whenever possible, you will need to let your instructor know BEFORE the day in question.

Canvas Storage and Homework Boards

Canvas will serve as a storage space for course content. That way, you can easily get access to them if you miss them. There will also be discussion boards available for work groups, and for book topics.

The boards will be monitored after the fact. That is, you will post directly to the board, and I will monitor (semi-weekly). Postings (and email messages) are never anonymous and must not contain inappropriate (foul, rude, hostile) language. Violation of this rule may constitute academic misconduct (see below).

The instructor will check all boards periodically. If you need an instructor response quickly, email is a much faster way to get it.

Student Rights and Responsibilities

You have certain rights and responsibilities. For more information, see the following link: http://www.uwsp.edu/admin/stuaffairs/rights/rightsCommBillRights.pdf

Disabilities

Information concerning accommodations made as per Section 504 of the Rehabilitation Act or the Americans with Disabilities Act can be found at http://www.uwsp.edu/admin/stuaffairs/rights/rightsADAPolicyInfo.pdf

In particular, to request any accommodations of this type, relevant to this class, you should discuss the matter with the Disability Services Office. Information and contact information may be found at http://www.uwsp.edu/special/disability/