

**MATH 109-01, Excursions in Mathematics**  
MWF 2:00-2:50pm, S017

**Instructor:** Dr. Amy DeCelles

Email: [amy.decelles@betheluniversity.edu](mailto:amy.decelles@betheluniversity.edu)

Professional Webpage: <https://amydecellesmath.org>

Office: Science Building 013

Office phone: 7-7095

Office Hours\*: MF 9-9:50; T 10-10:50; W 3:30-4:20; R 1-2:50

*\*If you anticipate wanting to come to office hours regularly, and none of these times work for you, please email me about this within the first week of the semester.*

**Course Description:** A General Education math course designed to foster development of problem-solving skills, quantitative literacy (particularly in the use of data), and effective communication in writing and speaking on mathematical subjects. Topics of the course may include probability and statistics, geometry, voting theory, graph theory, and notions of infinity.

**Course Prerequisite:** MATH 070 or Math Proficiency

**Credits and Workload Expectations:** 3 credits, 6 hours per week outside the classroom.

**Course Materials:**

- *The Joy of x*, Steven Strogatz.
- Other readings and videos posted on Canvas.
- Scientific calculator. (Available from Staples or Amazon for about \$10.)

**Course Objectives:** Upon successful completion of this course, students will be able to ...

- Appreciate the beauty and usefulness of math in a wide variety of contexts
- Apply mathematical reasoning to gain insight into situations and solve problems in daily life
- Articulate how mathematics can glorify God and be used to serve Him and the world

**Structure of the Course:** This course is likely structured differently from other math classes you have taken. You will be asked to prepare for each class, typically by reading a selection from a book. In each class, you will work with a small group of fellow students, to increase your understanding of the subject, through discussion and problem-solving. Your “homework” will often consist of writing up what you discovered in class and reflecting on what you learned. There will be several quizzes but no exams. Formulas, computation, and speed are less important than ideas, careful reasoning, and thoughtful reflection. You will be assigned a couple projects, in which you will address the “big” questions: “How is math useful in modern society?” and “How can doing math foster personal growth and equip a person for service to God and to the world?”.

**Collaboration and Consultation:** I encourage you, when working on homework, to collaborate with fellow students, to reread the textbook, and to ask the professor or the Learning Commons tutors for help. You are also free to consult other textbooks or online resources for general information on the topic. However, if you come upon a fully worked solution to an assigned problem, you must not consult it unless given express permission from the professor, and, if granted permission, you must cite the source of your solution. Moreover, the work you submit must be in your own words, and you must be able to explain your work verbally if asked. If in doubt about the acceptability of a certain kind of collaboration or consultation, ask the professor. Please see the university policy on academic dishonesty, below.

**Writing Help:** I encourage you, when working on your essays and projects, to discuss your ideas with peers, faculty members, mentors, and anyone who will help you think deeply about the important questions we are addressing in this class. Of course, the work you submit must be entirely your own: your ideas, your words. I also encourage you consult the tutors in the Writing Center for coaching in the writing process, from drafting, to revising, proofreading, and finalizing; they will support you and honor you as the one whose ideas must come through and who is solely responsible for the finished product. Unless you have been given explicit permission from the professor in advance, **you may not use ChatGPT or other AI tools**; these tools shorten the writing process at the expense of deep and careful thinking. If in doubt about the acceptability of a certain kind of collaboration or consultation, ask the professor. Please see the university policy on academic dishonesty, below.

**Attendance:** Attendance in class is expected, and a portion of the final grade comes from preparation for and participation in class. Absences for official university functions will be excused, provided that the instructor is notified in advance. Absences due to qualifying family or medical emergencies will also be excused, though the instructor reserves the right to ask for verification. **In the case of an excused absence, it is the student's responsibility to contact the instructor in a timely fashion and make arrangements for an assignment to compensate for the missed discussion participation**, unless the student chooses to use one of their three free "drops," as described in the "Missed or Late Work" policy, below.

**Missed or Late Work:** Late work is typically not accepted. However, each student may miss a typical week's worth of assignments in the following sense: (1) the lowest three reading questions and participation scores will be dropped at the end of the semester; and (2) each student is allowed one late submission for a weekly or end-of-unit assignment—in this case, the student must contact the professor within 24 hours of the original deadline to request a new deadline. Extensions on other assignments will be considered if requested before the due date, and work may certainly be submitted before the due date, if arrangements have been made with the professor in advance. If there is a serious, unforeseeable reason for missing more than one week of class, it is the student's responsibility to contact the professor as soon as possible and to make an appointment with the professor upon returning to classes to make a plan, e.g. whether to continue with the course, take an incomplete, or withdraw; and if continuing, how to make up missed work.

**Missed Quizzes:** Make-up quizzes may be given to students with legitimate excuses such as serious illness, university sponsored events, etc., as long as the make-up quiz can be taken within a reasonable time frame. If it is not possible to schedule a make-up quiz within a reasonable time frame, the grade for the quiz may be prorated from the final quiz. Written documentation may be required. Rescheduling the final quiz is not possible except under very extreme circumstances.

**Final Course Grade:** The overall score for this course will be computed as outlined below.

- Prep. and Participation (15%): reading questions or other preparation (10%), class discussion or (5%)
- Weekly Assignments (40%): report and reflect on class activities
- Summative Assessments (15%): end-of-unit and end-of-semester assignments
- Quizzes (10%): one or two quizzes per unit
- Projects and Essays (20%): addressing “big” questions about math and life

Final letter grades will be determined from the overall score as follows:

A	93-100	B+	87-89	B-	80-82	C	73-76	D+	67-69	D-	60-62
A-	90-92	B	83-86	C+	77-79	C-	70-72	D	63-66	F	0-59

**Incompletes:** Grades of I are normally not given in this course. However, they may be granted due to extenuating circumstances if (i) at least 60% of the course work has been completed at a level of C or better and (ii) the student demonstrates the ability to complete the remaining coursework outside of the classroom. In such cases, a well-documented petition should be submitted to the professor well before grades are due to the Registrar. Please see the university policies on [incomplete grades](#) and [withdrawing from a class](#).

**Education Majors:** Please use the link below to review all appropriate standards.

<https://bethelcollege.instructure.com/courses/11416/pages/standards-library>

**Learning Commons:** Located on the lower level of the Miller/Moore Academic Center (AC), the [Learning Commons](#) offers in-person and online tutoring services to all Bethel students, including help with any sort of writing projects, from conception to completion. Tutors are trained to give thoughtful feedback and advice on a variety of study skills, understanding concepts pertaining to relevant coursework, and overall writing concerns.

**DEI:** Bethel University respects the dignity of all God’s image-bearers, and stands against racism, prejudice, and discrimination. Because Christ calls us to love our neighbor as ourselves, Christian discipleship includes pursuing the good of those who suffer injustice due to their color, race, or ethnicity. Therefore, we aim to continually transform our classrooms into safe and hospitable spaces where we listen to one another with mercy, learn from and value each other with tenacity, and commit to pursuing justice for the most vulnerable in our community.

**Accessibility and Accommodations:** Bethel University strives to make learning experiences accessible to all participants. If you anticipate or experience physical or academic barriers based on disability, please contact the Center for Academic Success to discuss options. To schedule an appointment, email [rachel.kennedy@betheluniversity.edu](mailto:rachel.kennedy@betheluniversity.edu) or call 574-807-7460.

**Cell Phones:** Cell phones must be turned off and stowed in book bags during class. Any student using a cell phone for any reason (without permission) will be asked to leave the class and an unexcused absence will be recorded. Students using cell phones during exams or graded activities may be cited for cheating (at professor’s discretion). In the case of expected emergencies, students

may seek permission from the professor to leave their cell phones on during class, but the phone must remain in the book bag. Professors reserve the right to have operational cell phones in class.

**Academic Dishonesty:** The student handbook (p. 156) states: “Any act of deceit, falsehood or stealing by unethically copying or using someone else’s work in an academic situation is strictly prohibited.

1. A student found guilty of plagiarism or cheating will receive an “F” (zero) for that particular paper, assignment or exam. Should this occur, the professor will have an interview with the student and will submit a written report of the incident to the academic dean.
2. If a second offense should occur, the student will be asked to appear before the professor, the academic dean and the vice president for student development.

The student should realize that at this point continuation in a course and even his/her academic career may be in jeopardy. In the event of a recommendation for dismissal, the matter shall be referred to the Student Development Committee.”

**Disclaimer:** This syllabus is not a legal contract, but serves as a general outline for the semester. The professor reserves the right to announce in advance necessary adjustments to the course as the need arises.

#### **Tentative Schedule:**

- Unit 1: The Joy of Numbers (Jan 12 – Feb 2)
  - In this unit, we will work on developing our investigative skills as we take another look at the basic (but sometimes subtle and profound!) properties of numbers.
  - For a detailed Unit 1 schedule, see the next page.
- Unit 2: Math for Life and Decisions (Feb 5–23)
  - We will see how math is important for life, both at the individual and societal level.
  - Project 1 Presentations (Feb 21–23)
- Unit 3: Financial Math (Feb 26 – Mar 22)
  - We will develop skills with Excel as we apply math to the area of personal finance.
  - Quiz 2 (Mar 1)
  - Quiz 3 (Mar 18)
- Unit 4: Statistics and Voting (Mar 25 – Apr 12)
  - We will learn how to use data to describe a situation and to make a group decision.
  - Quiz 4 (Apr 10)
- Unit 5: Further Topics (Apr 15–26)
  - Project 2 (Apr 22)
- Final Assessment (Apr 29)
  - The final exam time slot for this class is Monday, April 29, 1:00 – 3:00 pm.

# Unit 1 Plan, Math 109, Spring 2024

Mon	Wed	Fri
Jan 8, 2024	Jan 10, 2024	Jan 12, 2024
		Intro to Course (Syllabus) Math for Human Flourishing (Su) Growth Mindset (Boaler)  Turn in at end of class: • Reflection on videos and class conversation.
Jan 15, 2024	Jan 17, 2024	Jan 19, 2024
MLK: No classes 1-6pm  Due today: • Mathematical Autobiography	“From Fish to Infinity” & “Rock Groups” (Numbers and their Quirks) Activity #1 Preview  Due today: • Read <i>Joy</i> , Ch 1-2, Answer RQ	Activity #1: Patterns in Numbers  Due today: • Read Dweck article, Answer RQ  Due tonight: • Reflection 1
Jan 22, 2024	Jan 24, 2024	Jan 26, 2024
Activity #1 Wrap-up Discuss Weekly Report #1 Activity #2 Preview  Due today: • Read <i>Joy</i> , Ch 3, Answer RQ	“The Enemy of My Enemy” (Negative Numbers) Activity #2: Unbalanced Triangles  Optional: • Read Mumford’s article on negative numbers (cross-cultural)	“Commuting” Arithmetic of Percentages  Due today: • Read <i>Joy</i> , Ch 4, and Diaz, Section 1.1; Answer RQ  Due tonight: • Reflection 2
Jan 29, 2024	Jan 31, 2024	Feb 2, 2024
Percentages in Daily Life Practice with Percentages  Due today: • Report 1 (Activity #1 or 2) • Prep Story Problems (Percents)	“Division and Its Discontents” & “Location, Location, Location” (Division, Decimals, and Place Value)  Due today: • Read <i>Joy</i> , Ch 5-6, Answer RQ • Project 1 Preferences Survey	<b>Quiz 1: Percentages</b> Discuss Project 1  Due today: • Study for quiz  Due tonight: • Reflection 3