

Math in the Modern World

Math 101.001

Winter 2019

M-F 10:00 AM

Shaw Smyser
Building 101



Course Description and Objectives

In this course we will explore selected topics from the historical development and applications of mathematics together with their relationship to the development of our present society.

We will focus on understanding and interpreting mathematical topics to help you develop the quantitative reasoning skills you will need for college, career, and life.

Why should you care about quantitative reasoning?

Quantitative reasoning is the ability to interpret and reason with information that involves numbers or mathematical

ideas. It is a crucial aspect of literacy, and it is essential in making important decisions and understanding contemporary issues.

Time allowing, topics will include (1) thinking critically, (2) approaches to problem solving, (3) numbers in the real world, (4) managing money, (5) exponential growth, and (6) mathematics in art and politics.

What's in this syllabus?

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Required materials:

You will need a MyMathLab access code that can be purchased either through the CWU Bookstore or by credit card when enrolling through Canvas. We will also be using TopHat. You will need to download the TopHat Student app and install on your phone. You can also use tablets and laptops.

Recommended materials:

Graphing calculator (TI-83/84 preferred). The free smartphone app, Desmos is sufficient for our class.

How to take this course (and any course)

It's not what you "get" in this course, it's how deep you go. Student scholars take Math 101 for a variety of reasons, usually variations of 'it fulfills my graduation requirements'.

Think about why the faculty has decided that learning this material might be essential to your college experience, and what it means for you personally.

It is entirely possible to do well in our class without being transformed by your newly-found or re-learned math skills, but it would be a shame. Learning is all about how much you engage, how deep you chose to go and to challenge yourself. So think about what you want to get out of our course and come with me as deep as you dare....

standing on the seashore

you need your basic math skills; you can see how things work, and can generally input unknowns into an equation

Watchers typically rely on their calculators for simple computations and try and attempt to learn the material through rote learning and memorization. Watchers are concerned with WHAT they need to know.

swimming in the waves

you have the cognitive equipment and tools of mathematics to enter the deeper water; you are ready to get tossed around by the waves

Swimmers notice mathematical relations and respectfully challenge assumptions and themselves to find alternative solutions. They sometimes find themselves outside their comfort zone. HOW to find solutions and WHEN to use different techniques is important.

getting your feet wet

you have a grasp of the basics and are ready to think about ideas critically, you are ready to explore and be a critical thinker

Those with wet feet generally have some life experience and have experienced being fooled by or exposed to some faulty quantitative reasoning. They are interested in understanding WHAT they need to know and WHAT ways they can do it.

scuba diving

you want to go deeper into mathematics and see how things relate and see the hidden connections and interrelations; you are bringing a lot of mathematical skill, knowledge, and equipment with you

Divers don't take any of the course's structure or content as natural or inevitable. They are curious, passionate and concerned with HOW to apply this material to their other course work and their personal lives.

Learning mathematics is not a spectator sport. It requires practice. It requires effort.

Homework (30%)

MyMathLab homework will be assigned each day in class. MyMathLab homework is due the day before the next quiz. 10% per day is deducted for late homework. You will have an unlimited number of attempts on the homework, so everyone can get 100% on their homework. Students who do their homework in sequence of instruction will benefit the most from classroom instruction.

There will also be integrated review worksheets. These are also part of your homework grade and are due in class on the assigned due date. In general, you will not be allowed to use your calculator or other assistance on these assignments.

Attendance: Daily attendance is important for your

The Microscope

Through petri dishes' rings life is transmogrified. When we look into things, we see

there's space inside.

- Heather McHugh, in *Upgraded to Serious*, Copper Canyon Press, 2009

Your Instructor: Dr. Matt Pruis

Office: Samuelson 228D

Phone: 509-963-2139

email: pruism@cwu.edu

Email is the preferred way to reach me

Office Hours:

M-F, 8AM, and by appointment

success in this course and we will use TopHat to take roll call on most days. Roll call attendance will count toward your homework grade. Attending class will be a primary source for learning in this course. Announcements will be made and assignments given during lecture. If you are absent, you are responsible for obtaining any information or materials presented in lecture. If you anticipate being absent for an extended period, please talk to me well in advance.

Quizzes (40%)

Quizzes will be given throughout the quarter. The content and type of questions will be similar to the questions and material in the homework. Quizzes are cumulative and will include material that was presented earlier in the quarter.

Projects (10%)

There will be a number of projects throughout the course. We will generally start the projects together in-class. You will be responsible for completing the project on your own. Projects may require using spreadsheets or other software. You will turn in your projects in class (in paper) at the start of class on the day that they are due. 10% per day is deducted for late projects. Projects are late if it is not turned in when due. If you are going to miss class, you can turn in your project early, or you can turn in your project by sliding a complete and stapled project under my office door (228D Samuelson).

Final Exam (20%)

A comprehensive final exam worth 20% of the final grade will be given at the end of the quarter covering all of the course's learner outcomes. The content and type of questions will be similar to quizzes and homework given during the quarter. We will take the final exam during our scheduled time in the final exam week.

Grading scale	Homework and Attendance	30%
	Quizzes	40%
	Projects	10%
	Final Exam	20%

Grades will be determined by the following scale:

93-100% = A 90-93% = A- 87-90% = B+ 83-87% = B 80-83% = B- 77-80% = C+
73-77% = C 70-73% = C- 67-70% = D+ 63-67% = D 60-63% = D- Below 60%=F

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Working Schedule, expect that the due dates, subjects covered, and the content will change. Changes will be announced in class.

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1 Dec 31 – Jan 5				Syllabus, Class overview	Living in a Media Age (1A)
Week 2 Jan 7 - 11	Propositions and Truth Values (1B)	Understand Solve, and Explain (2A)	Extending Unit Analysis (2B) IR #1 Due	Project: Spread of Disease	Practice Quiz #1
Week 3 Jan 14 - 18	Quiz #1	Uses and Abuses of Percentages (3A)	Putting Numbers into Perspective (3B) IR #2 Due	Project: Scale of Solar System	Dealing with Uncertainty (3C)
Week 4 Jan 21 - 25	MLK day	Index Numbers (3D)	How Numbers Can Deceive (3E) IR #3 Due	Project: Family Budget	Practice Quiz #2
Week 5 Jan 28 – Feb 1	Quiz #2	Taking Control of Your Finances (4A)	The Power of Compounding (4B)	Project: Compound Interest	Saving Plans and Investments (4C)
Week 6 Feb 4 - 8	Loan Payments, Credit Cards, and Mortgages (4D)	Income Taxes (4E)	Understanding the Federal Budget (4F) IR #4 Due	Project: Savings Plan	Practice Quiz #3
Week 7 Feb 11 - 15	Quiz #3	Growth: Linear vs Exponential (8A)	Doubling Time and Half-Time (8B)	Project: Extra Payment	Population Growth (8C)
Week 8 Feb 18 - 22	Presidents Day	Logarithmic Scales: Earthquakes, Sounds, and Acids (8D) IR #8 Due	Practice Quiz #4	Project: Tax Rates	Quiz #4
Week 9 Feb 25 – Mar 1	Mathematics and Music (11A)	Perspective and Symmetry (11B)	Does Majority Actually Rule? (12A)	Project: Are Earthquake Becoming More Common	Theory of Voting (12B)
Week 10 Mar 4 - 8	Apportionment (12C) IR #12 Due	Dividing the Political Pie (12D)	Practice Quiz #5	Quiz #5	Final Exam Review
Week 11 Mar 11 - 16	Study Day	Finals Week	Finals Week	Finals Week	Finals Week

Fine Print:

Turning in Integrated Review Worksheets and

Projects: Projects and Integrated Review Worksheets should be handed in, on paper, and stapled together, in class on the day they are due. If you are unable to turn it in during class, you can turn it in before class by sliding it under my office door (228D Samuelson). All work that is turned in after class is late. 10% per day is deducted for late projects, worksheets and homework.

Academic Dishonesty: Cheating may result in failure of the course and may have a larger impact on your standing with the university. Cheating includes copying work, hinting, helping, and using notes, book, the internet or any other resources (when not instructed to do so) on an in-class quiz or the final exam.

Disability Resources Statement: Central Washington University is committed to supporting and sustaining an inclusive campus that recognizes disability as diversity. We are dedicated to ensuring individuals with disabilities have an equal opportunity to fully participate in the educational process and university experience. If you anticipate or experience any barriers to learning, please discuss your concerns with me. Students with disabilities should also contact Disability Services to discuss a range of options to removing barriers, including accommodations. Student Disability Services is located in Hogue 126. Call (509) 963-2214 or email ds@cwu.edu for more information.

Classroom Equity: In my classroom, diversity is welcomed and appreciated. I will not tolerate any forms of prejudice or discrimination, including those based on age, color, disability, gender, national origin, political affiliation, race, religion, sexual orientation, or veteran status. We are here to learn in a climate of civility and mutual respect



Help & Resources

If you are feeling lost, overwhelmed, or just need some help...

1. Contact me

You are welcome to email me (pruism@cwu.edu), come to my office hours (Samuelson 228D, 8-8:50am, M-F), or make an appointment to meet at a time not during my office hours.

2. Talk to your teammates

It is a good idea to share some contact information with your teammates. They may know how to solve a problem or explain it in way that makes it easier for you to understand.

3. Use the Math Learning Center

Drop in for Math tutoring (Monday - Thursday 12pm - 9pm and Sunday 2 - 7). Fridays are by appointment. The Learning Center is a terrific place to hang out while completing your homework. The Learning Center is located in Brooks Library 190.

They also have allotted hours for students to set 1-on-1 appointments which is sorted at the Learning Center or you can call the Learning Center at (509) 963-1270.

4. Use online resources

CWU is part of an e-tutoring consortium that went live last term. You can set a time to meet with a tutor online or jump on and get instant help and feedback. Instructions for how to access the e tutoring consortium can be found at <http://www.cwu.edu/learning-commons/online-tutoring>.