

Welcome to Math 330 Discrete Math – Fall 2016
2:00 - 3:15 M-Th in Hertz 105

Instructor: Dr. Jean Marie Linhart
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F 10-10:50 and 2-3:15
and by appointment

Text: *Mathematics for Computer Science*, by Eric Lehman, F. Thomson Leighton, Albert R. Meyer, available freely on Canvas and on the web at <http://people.csail.mit.edu/meyer/mcs.pdf>. You may notice that one of the authors of this book, F. Thomson Leighton, is CEO Akamai Technologies, and Eric Lehman is a software engineer at Google – they are doing their best to present ideas that will be of use to you later. I have enjoyed reading this book; it has a lot of subtle humor woven into the technical information. That said, you may need to use resources such as Khan Academy online in addition to the textbook to learn the material.

This syllabus is subject to modification. Students will be notified of changes in class and on Canvas.

Course Goals: Math 330 is a course in the mathematics behind computer science concepts and applications. Mastery of college algebra is required for success in this course. This course is meant to familiarize you with mathematics foundational to computer science such as the logic rules you learned in Math 260, and math that is used to analyze algorithms, such as recurrence relations and counting arguments, and math in computer science applications, such as applications of graph theory. Understanding why things work, and being able to explain your logic is as or more important than getting the correct answer. Abstract thinking, good writing skills, logic and (un)common sense are required for success.

This course will cover the following topics:

- I. Counting, Cardinality and Combinatorics (Chapter 14)
- II. Recurrence relations (handout, chapter 6)
- III. Induction Proofs (chapter 5, based on chapters 1-4)
- IV. Number Theory (chapter 8)
- V. Graph Theory (chapter 11, 9)
- VI. Networks (chapter 10)

It is my hope that this course is a step in your preparation for a successful career. The behavior and standards expected of a professional in the work place are what you should aim for in all aspects of work, attendance, and preparation for this course.

Grades/Exams/Homework

Grades

We will be using Standards Based Grading this quarter in Discrete Math, which means that the course is broken down into standards, or key learning areas, and student's must demonstrate their competency on the standards to get a *C*, *B* or *A* for the course. Students may retest on the standards if their first attempt was not successful.

I have a list of 19 standards on Canvas for this course, with 8 identified as key (required) areas. Standards will be graded with an *A* (4, excellent) or *B* (3, very good) or Not Yet (*NY*, 0) passed. I may, at my discretion, assign a 2 to indicate substantial progress has been made in learning the area.

To get a *C* in the course, a student must pass 10 standards, including all 8 key standards, and obtain a 75% or better score on homework and reading assignments.

To get a *B* in the course, a student must pass 13 standards, including all 8 key standards, with at least 8 evaluated as an *A*, and obtain a 75% or better score on homework and reading assignments.

To get an *A* in the course, a student must pass 16 standards, including all 8 key standards, with at least 11 evaluated as an *A*. Additionally, students should obtain 85% or better score on homework and reading assignments.

Other grades will be assigned based on this standard as logically as possible.

Because of privacy rights, I do not discuss grades over email or telephone.

Standards Based Grading and Standards Testing

There will be at least three class days during the quarter that are devoted to testing, and testing will be offered on occasion in class as we finish up a unit. On challenging material, students should expect to test during office hours or by appointment. In order to take a test or re-test during office hours, students must email me a day ahead of time so I can have the evaluation prepared for them. I may also, at my discretion, ask students to show practice or understanding and mastery of homework problems on that material. The **last** opportunities to test are Wednesday of the last week of the quarter and, after that, during the final exam period for our class.

- You may retest on a required standard up to 5 times during office hours.
- On an optional standard, you may retest up to 3 times (4 total).
- Email me a day ahead of time with the name of the evaluation you want to take to test or retest on during office hours or by appointment.
- In order to take a test or retest, you must have been to class that day or provide evidence of an excused absence.
- At my discretion, I may ask you to explain a homework problem or show evidence that you have been practicing problems based on the standard retested in order to retest outside of class.
- If you are not successful in a retest on a standard, I recommend you take time to meet with me to go over the questions you missed so that you are better prepared to retest. **I recommend you retest as soon as possible, and continue retesting frequently until you are successful.**

Attendance

Regular attendance, as is required for any job or area of endeavor, is one of the standards for the class. A student is tardy if they arrive after the beginning of class (2 pm) but before 2:10 pm. A tardy is considered 1/5th of an absence. A student with exemplary attendance (no more than 2 missed days and 2 tardies) will be credited with an additional evaluation at the end of the quarter. Every 10 days absent over the course of the quarter will require a student to fulfill an additional evaluation to achieve a given grade.

Excused absences will be handled on a case-by-case basis. If you must be out of class for a field trip, court date, work event or other planned event, contact me and provide documentation ahead of time. If you are absence due to illness or emergency, contact me and provide documentation within 2 working days of the absence.

Students are responsible for all material presented in class. If you miss a day, get notes from a classmate.

One serious consequence of missing class is that you will not be allowed to take any evaluations in the next office hour after the missed class.

Homework and Reading

Completing required practice carefully and thoroughly is also a standard for the course. Short homeworks will be assigned, often to be completed by the next class day. These will be graded primarily on completeness, organization and also on **explanations of your final answer**. Occasionally, you will be given longer assignments with more time to complete them. It is expected that your work will be neat, complete, correct and well-explained **by the day the homework is due**. Assignments will be graded accordingly.

Reading assignments are to familiarize you not only with material that you will be tested on, but also to give you a broader perspective on the interplay between mathematics and computer science. Reading assignments consist of reading a few pages of material and answering a few questions on Canvas.

In order to pass the class with a C or higher, students must acquire at least 75% of the offered homework and reading points. To receive an A- or an A, students must acquire at least 85% of the offered homework and reading points.

Testing Days

Attendance at the Testing Days is **mandatory**, as it would be for an exam in a regular class. If you have an emergency or illness for one of these days, bring it documentation. Students who miss an in-class testing day will not be permitted to take or retake evaluations in office hours without an excused absence for that testing day until after the next testing day.

On testing days the first evaluations given to a student will be the oldest required evaluations. Once those are complete, students may use the remaining time to test and pass other evaluations.

Students will be given an opportunity in class and by email to let me know what optional evaluations they would like to take during the testing days.

Academic Integrity

You are expected to do your own work. While you are welcome to use outside resources and consult with others on all work taken home, you are subject to the requirement that what you hand in should, in fact, represent your own understanding of the material and not work copied or memorized from another source. See my [guide to group work and using outside resources](#), <http://www.cwu.edu/math/group-work-and-using-outside-resources>, on the web.

All in-class work and tests are expected to be done without any resources except those explicitly authorized by the instructor. Exams and quizzes are not to be discussed with others who may not yet have taken the exam or quiz or within earshot of anyone who may be taking the exam or quiz at a later time.

Cheating will result in at minimum a zero on the assignment, quiz or exam. Cheating will be reported to the office of student conduct. Egregious offenses may result in a failing grade for the course and/or more serious consequences as merited by the situation.

Getting Help:

We've all needed help with something. Working with students on math is one of the best parts of my job. If you find yourself feeling uncertain, wanting a deeper understanding, wanting to get better grades, or struggling to learn and succeed, please ask questions in class, post questions on Canvas, and come see me. I want to answer all your questions thoroughly, even though it may not be possible to answer every question during class itself. Please give me a chance to help. If you can't attend office hours, please send me an email and suggest several times when you are available so we can find a mutually convenient time to meet.

Secrets for success:

1. Read the book before class and take notes on what you read.
2. Attend class daily and participate willingly, whether it is by asking questions, answering questions, or working with others.
3. Budget time for homework – CWU expects you to spend 10 hours per week on work outside of **this** class. It can help to have a regular times scheduled when you know you'll work on math.
4. Start on the homework problems as soon as you can.
5. Attempt to work on your math every day or at least every other day. The hardest part is usually getting started. Find a quiet place to work, get your book and notes together. Put away distractions such as your cell phone, TV, or laptop. Then, set a timer for 30 minutes (or 15 if you are having a bad day) and resolve to put your best effort in for at least that length of time.
6. Discussing problems and solutions with peers and using the internet is encouraged, with two caveats.
 - Before you go ask or look for a solution, make an honorable effort to solve the problem on your own. Spend time thinking and strategizing before asking or searching for help.
 - You must write up your understanding of a solution **on your own**. Practice makes perfect! See my [guide to group work and using outside resources](#), <http://www.cwu.edu/math/group-work-and-using-outside-resources>, on the web.
7. As you progress in your university studies and in your career, problems get more and more difficult to solve. You may have to start with easier (possibly unassigned) problems before you are even ready to start to work on an assigned problem. Some problems may take more than an hour to solve. Persistence pays off.
8. Explain what you are doing. Use your words. This will help you to understand the concepts critical to success in the class, and will help you get a higher grade.
9. I am always happy to help you if you are stuck. You will get the most out of my help and the University Math Center if you attempt the problem on your own or with your peers before asking an expert.
10. Do your scratch work before you do a final write-up of your work. What you hand in should be neat and professional and all pages should be stapled together.

Students with Disabilities

I am happy to work with students with disabilities. To set up academic adjustments in this class, you should give me or email me a copy of your *Confirmation of Eligibility for Academic Adjustments* from the Disability Support Services Office. **You must also come see me in office hours or make an appointment to come see me as soon as possible so we can discuss how the approved adjustments will be implemented in this class.** Students without this form should contact the Disability Support Services Office, Bouillon 140 or dssreceipt@cwu.edu or (509) 963-2171. **Testing requests with testing services must be submitted at least 48 hours before an exam is given, or you may have to take the exam with the rest of the class.**

Important Dates

Sept 21 – classes begin

Sept 27 – change of schedule period ends

October 17 – (tentative) Testing Day 1

November 4 – uncontested withdrawal period deadline

November 7 – (tentative) Testing Day 2

November 11 – Veteran's Day (no class)

November 22 – (tentative) Testing Day 3

November 23-25 – Thanksgiving Holiday (no classes)

November 30 – last day to test during office hours

Dec 2 – last day of class

Dec 6 – Final Exam (last opportunity to test) 12 pm