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Welcome to Math 330 Discrete Math – Winter 2015
10:00 - 10:50 M-F in Bouillon 210

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Instructor: Dr. Jean Marie Linhart   **Office:** Bouillon 119
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Webpages: (course) http://canvas.cwu.edu   **Office Hours:** M-Th 11:00 - 11:45 pm
   (me) http://www.cwu.edu/math/jean-marie-linhart   and by appointment.

Text: *Mathematics for Computer Science*, by Eric Lehman, F. Thomson Leighton, Albert R. Meyer, available freely on the web at http://webwork.math.cwu.edu/~montgomery/143/330/2013.pdf as well as on Canvas.

Assignments and grades will be posted to Canvas.

Course Goals: Math 330 is a second proofs course geared towards computer science applications and majors. This course follows up on material presented in Math 260 *Sets and Logic*. The material from Math 260 is foundational to our course, a good understanding of it is required for success in this one. Abstract thinking, good writing skills, logic and (un)common sense are required for success.

Students should be able to construct proofs by mathematical induction and strong mathematical induction. This should remind the computer scientist of `for` and `while` loops. Students should also be able to identify fallacies that make untrue induction proofs.

Students should be able to define the greatest common divisor, least common multiple, modular arithmetic, and be able to use direct proofs, proof by contradiction and inductive proofs with these concepts. Additionally, students should be able to use Euclid's algorithm to find the greatest common divisor, and the Pulverizer algorithm to find an inverse in the modular space $\mathbb{Z}_n$. Much of this is foundational material required to understand encryption algorithms.

Third we cover elementary graph theory, including applications that are in use today in matching medical residents to programs and students to NY City schools.

Fifth, we cover recurrences, subject of some beautiful mathematics and also a standard (advanced) programming technique for the computer scientist.

From there we manage counting (and probability) problems; this subject might sound easy, but it is far from it. You will sharpen your critical thinking and logical skills here.

Additionally, 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
Grades will be calculated using the following weighting system:
Written Assignments: 45%;
Attendance: 5%;
In class and small assignments: 10%;
Exams: 40% total, 15% for the mid-term and 25% for the final
and the following scale:

	$87 - 89.9 : B+$	$77 - 79.9 : C+$	$67 - 69.9 : D+$	below 60 : F
$93 - 100 : A$	$83 - 86.9 : B$	$73 - 76.9 : C$	$63 - 66.9 : D$	
$90 - 92.9 : A-$	$80 - 82.9 : B-$	$70 - 72.9 : C-$	$60 - 62.9 : D-$	

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

Written Assignments
We will have approximately seven graded written assignments, there will likely be one due the last week of class and another due due during finals week. Attempt the problems on your own, without using outside resources. If you are stuck, you are welcome to work with other students, use the web or books to gain additional insight. However, you must put these other resources away, and write up your own

understanding of the solutions in your own words. More information on my policy on working with others and using outside resources is available at
http://www.cwu.edu/math/group-work-and-using-outside-resources. Copying will result at minimum with a zero on the assignment, and will be reported to the student conduct office. Assignments make up 60% of your final grade, which is more than even the final exam. Getting these done is important, both to your grade and to your understanding of the material.

In Class and Small Assignments
In class and small assignments will not be announced in advance; if you miss class the day we do one, you miss the points. All will be graded on a 5 point scale, They will often be graded on a done (5 points), partially done (2.5 point) and not done (0 points) scale. Some will be graded for correctness. The lowest 2 scores will be dropped to take care of unexpected absences.

Exams
There will be two exams: a mid-term and a final. The mid-term will be on Friday February 13 and the Final Exam will be on **Thursday, March 19 at 8 am**. The Final Exam will be cumulative, and **cannot** be taken early. If you miss an exam, you may be allowed to take a make-up. To get a make-up, you must notify me before the exam (if possible) or within 24 hours after the exam. In addition, a make-up is only allowed if you have proof of a compelling reason for having missed the exam. When a make-up exam cannot be taken before I return the corrected exam, I may instead replace that portion of your course grade with your final exam grade. You will be allowed to bring in a half of an 8.5×11 inch sheet of paper, filled out front and back however you wish, for use with the midterm exams. For the final you may fill out a full 8.5×11 inch sheet of paper front and back. In all cases, you must fill out your own sheet of notes.

Attendance
I expect you to attend class. Any student who is not in class when attendance is taken is subject to being marked absent for the day.

Late and Make-up Policy for Assignments
This policy does not include in-class and small assignments. I expect you to hold yourself to professional standards in this class. Because even professionals sometimes run into conflicts, I will accept at most **two** late assignments for full credit, provided you ask permission to hand them in late at least half a day before the due date, thus showing me that you are planning ahead. To get credit for a late assignment, it must be turned either before I return the corrected assignments to the rest of class or within two days of instruction of the due date, whichever comes first. After two late assignments have been accepted, I will not accept any late work for credit.

Teams
Please sit with your team on a daily basis. Some in-class assignments and activities will be team-based, and this will require you to be with the rest of your team. If you want a different team name than the one I assigned, please let me know by the end of the first week of class.

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.

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. Note that I have two sections of this course, and so it is entirely possible for someone to be taking an exam at a later time than you are.

If a paper or report is assigned, students are expected to conform to academic standards for citing summarized, paraphrased and quoted work used; if you are not sure what this means, please **ask**.

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.

Expectations

As I am preparing you for employment out there in the *real world*, I expect you to adhere to professional standards while taking my class. Daily attendance is expected. Be on time and prepared, take notes. Work should be neat and well-organized, and certainly should be handed in on-time.

Math classes are considered difficult largely because the material is hierarchical in nature; you must master the first step to be able to manage the next.

We have a great deal of material to cover in a quarter. As a result, the pace of the class will be very fast, and it may not always be possible to answer every question in class. If you have a question that we weren't able to get to in class, please come by office hours or post a question to Canvas.

Secrets for success:

1. You should budget a minimum of 10-15 hours per week for work outside of class.

2. Start on the homework problems as soon as you can.

3. 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 30-60 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.

4. 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**. You may not copy anyone else's work. See my guide to group work and using outside resources, http://www.cwu.edu/math/group-work-and-using-outside-resources, on the web.

5. 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 (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.

6. In addition to using mathematical symbols and formulas, you must explain what you are doing. Use your words. This will help you to understand the concepts critical to success in the class, and it will help you get a higher grade.

7. 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.

8. 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.

Important Dates

January 12 – Last Day for Add/Drop
January 19 – Martin Luther King Jr. Holiday
January 28 – faculty development day
February 13 – mid-term exam
February 16 – President's Day Holiday
February 20 – Last day for uncontested withdrawal
March 13 – Last day of classes
March 19 – Final exam at 8 am Bouillon 210

Students with Disabilities

I am happy to work with students with disabilities. To set up academic adjustments in this class, you should give me a copy of your *Confirmation of Eligibility for Academic Adjustments* from the Disability Support Services Office and 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 dssrecept@cwu.edu or (509) 963-2171.