

Contemporary Math (Math 103: #24137)

Sp 2017

Text: *Math in Society* by David Lippman (available "FREE" at <http://www.opentextbookstore.com/mathinsociety/>)

Class notes: Available at HSU Bookstore. This package contains most class materials (class notes, sample problems, and others) that will be covered. ♣
required

Class: 9:00-9:50 M, W UC 225 (Lecture)
9:00-9:50 F (Small Group Session)

Section 11 @ HGH 225 by
Section 12 @ TA 110 by **Steven Margell** <stm22@humboldt.edu> 826-4020 @ BSS312
Section 13 @ FR 107 by **Holland Heese** <hrh15@humboldt.edu> 826-4020 @ BSS312
Section 14 @ ARTA 027 by **Mark Rizzardi** <mar13@humboldt.edu> 826-4951 @ BSS336
Section 15 @ WDFS250 by **Yoon G Kim** <ygk1@humboldt.edu> 826-5399 @ BSS204

Professor: Dr. Yoon G. Kim, Department of Mathematics

Office: BSS 348 (Between 16th & Union) ☎826-5399, (fax)826-3140, <ygk1@humboldt.edu>
<http://users.humboldt.edu/ygkim>

Office hours: 10:00-10:50 MWF; 11:00-11:50 T or by appointment. **Check** your TA's office & hrs.

Objectives: This course is designed as part of the general education for relatively nonmathematical students. Emphasis is on quantitative concepts, modern mathematical ideas, mathematical reasoning, and their useful applications to a variety of real world issues.

* This course fulfills [Lower Division General Education Area B: Mathematical Concepts & Quantitative Reasoning](#)

General education in the natural sciences and mathematics focuses on the physical universe and its life forms. This requirement helps students cope with, and participate in, the changing world. Recognizing the importance of scientific methods as investigative tools, the courses present science as a unified discipline with a major impact on the human condition. GE science courses:

- provide an understanding of the nature, scope, and limits of science and its relation to other branches of human inquiry;
- teach the language of science to facilitate cognition, interpretation, and communication;
- develop scientific reasoning for use in the critical examination of information;
- identify sources of information for the pursuit of scientific inquiry;
- impart the facts and principles which form our understanding of the living and nonliving systems of our universe;
- provide direct participation in a laboratory experience;
- develop mathematical concepts and quantitative reasoning and demonstrate their widespread applications in problem solving;
- promote an understanding of the impact of scientific knowledge and technology on our civilization both past and present and recognize the contributions made by men and women; &
- consider the moral & ethical implications of science so as to nurture a respect for human values.

Upon completing this requirement students will be able to:

- use skills beyond the level of intermediate algebra to solve problems through quantitative reasoning
- apply mathematical concepts and quantitative reasoning to problems

Grading:

38 Days of Attendance (Turn in daily attendance slips):	15% of the final GRADE
Homework #1~#13: (20 points per homework) <u>One homework assignment per week.</u>	20% of the final GRADE
Two midterm tests & Final (2/20/17, 4/03/17 & 5/08/17)	65% of the final GRADE

Final Letter Grades: with **OVERALL%**

A (>93%); A- (>90%); B+ (>86%); B (>83%); B- (>80%);
C+ (>76%); C (>70%); C- (>60%); D (>50%); F (<50%)

♣ Daily activity puzzle will be distributed at the end of Monday and Wednesday meetings and they are 5 points: 4 points if you are wrong.
♣ Friday's attendance will also be 5 points.
○ Homework assignments, which are not turned in on time, will receive a grade of zero. Any tests taken at different time will be always more difficult than the regular test.
○ You are strongly encouraged to attend regularly. If you miss a class you are responsible for finding out what you missed. " <i>I wasn't there last time</i> " is never an acceptable excuse.
• In case you have to miss a class, fill out an excuse form (at the end of the notes or create your own in a similar format) and turn it in.
• Absence without an excuse form in advance (and your responsibility on that particular day) will receive 0 attendance point. Check with your group leader for more details.

Special Notes

Students with Disabilities: Persons who wish to request disability-related accommodations should contact the Student Disability Resource Center in House 71, 826-4678 (voice) or 826-5392 (TDD). Some accommodations may take up to several weeks to arrange. See <http://www.humboldt.edu/disability/> for additional information.

Add/Drop policy: Students are responsible for knowing the University policy, procedures, and schedule for dropping or adding classes. See <http://www.humboldt.edu/~reg/regulations/schedadjust.html> for additional information.

Emergency evacuation: Please review the evacuation plan for the classroom (posted on the orange signs), and review http://studentaffairs.humboldt.edu/emergencyops/campus_emergency_preparedness.php for information on campus emergency procedures. During an emergency, information can be found on campus conditions at <http://www.humboldt.edu/emergency> or by calling 826-INFO.

Academic honesty: Students are responsible for knowing policy regarding academic honesty. See http://studentaffairs.humboldt.edu/judicial/academic_honesty.php for information.

Attendance and disruptive behavior: Students are responsible for knowing policy regarding attendance and disruptive behavior. See http://studentaffairs.humboldt.edu/judicial/attendance_behavior.php for information.

Class Calendar:

	Monday	Wednesday	Friday
Week 1		1/18/17	
Week 2	Class #1 1/23/17 A1	Class #2 1/25/17 A2	1/27/17 A3 HW#1 is due
Week 3	Class #3 1/30/17 A4	Class #4 2/01/17 A5	2/03/17 A6 HW#2 is due
Week 4	Class #5 2/06/17 A7	Class #6 2/08/17 A8	2/10/17 A9 HW#3 is due
Week 5	Class #7 2/13/17 A10	Class #8 2/15/17 A11	2/17/17 A12 HW#4 is due
Week 6	2/20/17 Test #1	Class #9 2/22/17 A13	2/24/17 A14 HW#5 is due
Week 7	Class #10 2/27/17 A15	Class #11 3/01/17 A16	3/03/17 A17 HW#6 is due
Week 8	Class #12 3/06/17 A18	Class #13 3/08/17 A19	3/10/17 A20 HW#7 is due
SPRING BREAK			
Week 9	Class #14 3/20/17 A21	Class #15 3/22/17 A22	3/24/17 A23 HW#8 is due
Week 10	Class #16 3/27/17 A24	Class #17 3/29/17 A25	Cesar Chavez Holiday HW#9 is due
Week 11	4/03/17 Test #2	Class #18 4/05/17 A26	4/07/17 A27 HW#10 is due
Week 12	Class #19 4/10/17 A28	Class #20 4/12/17 A29	4/14/17 A30 HW#11 is due
Week 13	Class #21 4/17/17 A31	Class #22 4/19/17 A32	4/21/17 A33 HW#12 is due
Week 14	Class #23 4/24/17 A34	Class #24 4/26/17 A35	4/28/17 A36 HW#13 is due
Week 15	Class #25 5/01/17 A37	Review 5/03/17 A38	
	FINAL		

A#: Days "attendance" points are collected (5 points per day, total 190 points)

- Each homework set is worth the same, 20 points. Each test is worth the same, 100 points each.

Math103

* Use **your own blank paper** and write in a similar format in case you have to miss a class.

- Your attendance points will be taken off *unless* this form is given to your group leader ***in advance*** (or after the fact with a doctor's or someone's ***signed*** note).
- You will get 4 points for turning in this form ahead of your absence or 3 points if turned in after absence (but within 2 weeks after absence).

Section: _____ **Name:** _____

I have to miss Math103 class on _____ because _____

Date: _____

Signature: _____

MATH 103 Syllabus

Chapter 1. The Mathematics of Voting

- 1.1 Preference Ballots and Preference Schedules
- 1.2 The Plurality Method
- 1.3 The Borda Count Method
- 1.4 IRV (Instant Runoff Voting), i.e., The Plurality-with-Elimination Method
- 1.5 Copeland's Method, i.e., The Method of Pairwise Comparisons
- 1.6 Rankings

Chapter 2. The Mathematics of Weighted Voting

- 2.1 An Introduction to Weighted Voting
- 2.2 The Banzhaf Power Index
- 2.3 Applications of the Banzhaf Power Index
- 2.4 The Shapley-Shubik Power Index
- 2.5 Applications of the Shapley-Shubik Power Index

Chapter 3. The Mathematics of Apportionment

- 3.1 Apportionment Problems
- 3.2 Hamilton's Method and the Quota Rule
- 3.3 The Alabama and Other Paradoxes
- 3.4 Jefferson's Method
- 3.5 Adam's Method
- 3.6 Webster's Method

Chapter 4. The Mathematics of Fair Division

- 4.1 Fair-Division Games
- 4.2 Two Players: The Divider-Chooser Method
- 4.3 The Lone-Divider Method
- 4.4 The Lone-Chooser Method
- 4.5 The Method of Sealed Bids
- 4.6 The Method of Markers

Chapter 5. The Mathematics of Graph Theory

- 5.1 Euler's Theorems
- 5.2 Fleury's Algorithm
- 5.3 Eulerizing Graphs
- 5.4 Hamilton Paths and Hamilton Circuits
- 5.5 Complete Graphs?
- 5.6 Traveling Salesman Problems
- 5.7 Simple Strategies for Solving TSPs
- 5.8 The Cheapest-Link Algorithm
- 5.9 Kruskal's Algorithm

Chapter 7. The Mathematics of Growth Models

- 6.1 Linear Growth
- 6.2 Geometric Growth
- 6.3 Recursive Relationship
- 6.4 Simple Interest
- 6.5 Compound Interest

Chapter 8. The Mathematics of Finance

- 8.1 Savings Annuities
- 8.2 Loans
- 8.3 Credit Cards