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.

<table>
<thead>
<tr>
<th>Class</th>
<th>Time</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
<td>8:00-8:50 M, W</td>
<td>SciB 135 (Lecture)</td>
</tr>
<tr>
<td></td>
<td>8:00-8:50 F</td>
<td>(Small Group Session)</td>
</tr>
</tbody>
</table>

Section 11 @ HGH 106 by Yoon G Kim <ygk1@humboldt.edu> 826-5399 @ BSS348
Section 12 @ KA 104 by Ward Nickle <ward.nickle@humboldt.edu> 826-5343 @ BSS312
Section 13 @ KA 102 by Tami Matsumoto <tami@humboldt.edu> 826-5343 @ BSS312
Section 14 @ BSS204 by Adam Falk <ayf3@humboldt.edu> 826-5343 @ BSS312

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 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:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage of Final Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>38 Days of Attendance</td>
<td>15%</td>
</tr>
<tr>
<td>Homework #1~#13 (20 points per homework)</td>
<td>20%</td>
</tr>
<tr>
<td>One homework assignment per week</td>
<td></td>
</tr>
<tr>
<td>Two midterm tests &amp; Final (9/25/17, 10/30/17 &amp; 12/11/17)</td>
<td>65%</td>
</tr>
</tbody>
</table>

**Final Letter Grades:** with OVERALL%

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>(&gt;93%)</td>
</tr>
<tr>
<td>A−</td>
<td>(&gt;90%)</td>
</tr>
<tr>
<td>B+</td>
<td>(&gt;86%)</td>
</tr>
<tr>
<td>B</td>
<td>(&gt;83%)</td>
</tr>
<tr>
<td>B−</td>
<td>(&gt;80%)</td>
</tr>
<tr>
<td>C+</td>
<td>(&gt;76%)</td>
</tr>
<tr>
<td>C</td>
<td>(&gt;70%)</td>
</tr>
<tr>
<td>C−</td>
<td>(&gt;60%)</td>
</tr>
<tr>
<td>D</td>
<td>(&gt;50%)</td>
</tr>
<tr>
<td>F</td>
<td>(&lt;50%)</td>
</tr>
</tbody>
</table>
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 wasn’t there last time”** 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.**

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**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/](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](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](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](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](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](http://studentaffairs.humboldt.edu/judicial/attendance_behavior.php) for information.
# Class Calendar:

<table>
<thead>
<tr>
<th>Week</th>
<th>Monday</th>
<th>Wednesday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8/21/17</td>
<td>Class #1 8/23/17 A1</td>
<td>No Meeting</td>
</tr>
<tr>
<td>Week 2</td>
<td>8/28/17 A2</td>
<td>Class #2 8/30/17 A3</td>
<td>9/01/17 A4 HW#1 is due</td>
</tr>
<tr>
<td>Week 3</td>
<td>Labor Day</td>
<td>Class #3 9/06/17 A5</td>
<td>9/08/17 A6 HW#2 is due</td>
</tr>
<tr>
<td>Week 4</td>
<td>9/11/17 A7</td>
<td>Class #4 9/13/17 A8</td>
<td>9/15/17 A9 HW#3 is due</td>
</tr>
<tr>
<td>Week 5</td>
<td>9/18/17 A10</td>
<td>Class #5 9/20/17 A11</td>
<td>9/22/17 A12 HW#4 is due</td>
</tr>
<tr>
<td>Week 6</td>
<td>9/25/17 Test #1</td>
<td>Class #6 9/27/17 A13</td>
<td>9/29/17 A14 HW#5 is due</td>
</tr>
<tr>
<td>Week 7</td>
<td>Class #7 10/02/17 A15</td>
<td>Class #8 10/04/17 A16</td>
<td>10/06/17 A17 HW#6 is due</td>
</tr>
<tr>
<td>Week 8</td>
<td>Class #10 10/09/17 A18</td>
<td>Class #11 10/11/17 A19</td>
<td>10/13/17 A20 HW#7 is due</td>
</tr>
<tr>
<td>Week 9</td>
<td>Class #12 10/16/17 A21</td>
<td>Class #13 10/18/17 A22</td>
<td>10/20/17 A23 HW#8 is due</td>
</tr>
<tr>
<td>Week 10</td>
<td>Class #14 10/23/17 A24</td>
<td>Class #15 10/25/17 A25</td>
<td>10/27/17 A26 HW#9 is due</td>
</tr>
<tr>
<td>Week 11</td>
<td>Test #2 10/30/17</td>
<td>Class #16 11/01/17 A27</td>
<td>11/03/17 A28 HW#10 is due</td>
</tr>
<tr>
<td>Week 12</td>
<td>Class #17 11/06/17 A29</td>
<td>Veteran’s Day</td>
<td>HW#11 is due</td>
</tr>
<tr>
<td>Week 13</td>
<td>Class #18 11/13/17 A31</td>
<td>Class #19 11/08/17 A30</td>
<td>HW#12 is due</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Class #20 11/15/17 A32</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Class #21 11/17/17 A33</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Class #22 11/17/17 A34</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Class #23 11/17/17 A35</td>
<td></td>
</tr>
<tr>
<td>Week 14</td>
<td>Class #24 12/04/17 A37</td>
<td>Review 12/06/17 A38</td>
<td>No Meeting</td>
</tr>
<tr>
<td>Week 15</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

### 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.

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**Math103**

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

1. 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).

2. 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).

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**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