Course Details
Class Meetings: Cuneo Hall, Room 103; Tu/Th 8:30–9:45 a.m.
Office Hours: Loyola Hall, Room 302; Mon 12:30–1:30 p.m., Tue 1:45–2:45 p.m., & Wed 1:30–2:30 p.m.

FINAL EXAM:
• what: cumulative, closed-book; formula sheet and calculator allowed.
• when: Saturday, May 4, 9:00–11:00 a.m.

Course Texts:

Instructor Coordinates
Aaron Lauve
Loyola Hall, Room 302
lauve@math.luc.edu
773.508.3727
www.math.luc.edu/~lauve

Contact
Communication by email is welcome. Please include 108 in the subject line. Expect a reply within 48 hours.

Course Web Page
Relevant course material will be posted on Blackboard and at www.math.luc.edu/~lauve/108.html.

Important Dates
In-term exam dates are tentative. Scheduled dates will be announced at least a week in advance.

| Exam #1     | February 12 | Spring Break | 3/4–8 |
| Exam #2     | April 4     | Last day to drop with a “W” | March 25 |
| Final Exam  | May 4       | Last day of class | 4/26 |

Requests to reschedule your final exam will be heard only for extenuating circumstances (e.g., three exams in one day is not deemed burdensome enough) and must be made through your Dean’s office.

Course Summary
SYLLABUS. An introduction to mathematical reasoning and modeling as it pertains to the “real world.” See www.luc.edu/math/academics/courses/math108/ for specifics.
PREREQUISITE. Math Placement Test or Math 100.

Technology
We may occasionally use Excel and Mathematica during lecture. Mathematica is *free* for every Loyola University student (myits.luc.edu/mathematica). If you need help installing it, let me know. (You’ll need to log in using your Loyola Network ID.)

Disability Services
The Americans with Disabilities Act (ADA) is a federal statute that provides comprehensive civil rights protection for persons with disabilities. It requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring accommodation, please contact the SSWD office: in the Sullivan Center, suite 117, phone 773.508.3700, fax 773.508.3810, or online at www.luc.edu/sswd/.
Course Components

**Homework.** Students are expected to work and submit homework at the start of each class period. This may be done via **www.webassign.net** (preferred, class key: **luc 4419 5784**) or on paper. In either case, the recorded score will effectively be pass-fail...

Work will not be corrected before being returned. If you complete 90% of the work (or more), it will count as 100% correct; if you complete 80% of the work, it will count as 90% correct; and so on. No late homework will be accepted. Your top 25 scores will be used to compute your final grade. I have set up a homework blog within Blackboard for students to share ideas on how to solve the problems. You are strongly encouraged to come to my office hours with any questions.

**Quizzes.** In class, roughly every two weeks. These short quizzes will be based on assigned homework. Your top five quizzes will be used to compute your final grade.

**Found Math.** This component of the course may be satisfied in two distinct ways. Either author a “blog post” for blogs.luc.edu/mathstats/ or “share” five found articles or news tidbits with www.facebook.com/lucmathstats. Evidently, these efforts should have something to do with mathematics and modeling. See Page 5 for details.

**Exams.** There will be two in-term exams and a final exam. The final exam will be cumulative.

Course Grade

Course components will be weighted as follows when computing the final course grade:

\[
\text{HW} (10\%) + \text{Qz} (15\%) + \text{FM} (10\%) + \text{Ex} (3 \times 20\%) = 100\%
\]

The astute reader will notice that these numbers actually add up to 95. The highest exam score will be given a weight of 25% (instead of 20%).

Final grades will be assigned as follows (all numbers are in \%):

- A (92)
- A- (90)
- B+ (88)
- B (82)
- B- (80)
- C+ (78)
- C (72)
- C- (70)
- D+ (68)
- D (60)

Getting Help

You are expected to read and comprehend much beyond what is covered in lecture. Use your book well: learn the definitions and theorems; read and understand the proofs; read the examples’ solutions.

Please, SEEK HELP if you are falling behind. Form study groups, come to my office hours, find online resources (e.g., www.khanacademy.org or patrickjmt.com), get inspired (www.youtube.com/user/vihart), work lots of problems, meet me outside of my office hours, give me feedback, find a tutor, etc.

Escape Routes

At any time, even after the last date for W-dropping the course, students who are experiencing medical or personal difficulties should not hesitate to consult their advisors or the Student Development Office (www.luc.edu/studentdevelopment/) or their dean. Don’t allow yourself to be overwhelmed by such problems; Loyola has resource persons who may be able to help you. (e.g., www.luc.edu/wellness/tools/mentalhealth and www.luc.edu/bct)

---

1This is an online homework system that allows students to get immediate feedback if their answers are incorrect. Apart from my office hours and the odd exercises in the text (which have solutions), this is the best way to ensure you have mastered the chapters’ concepts. An access code for WebAssign will cost about $30.
Academic Integrity
The Academic Standards and Regulations web page

www.luc.edu/academics/catalog/undergrad/reg.shtml

outlines the definition and ramifications of cheating at Loyola University (the “Academic Integrity” link) as well as the recourses available to you should you be accused of cheating (the “Academic Grievance Procedure” link). By attending this course, you agree to uphold the high standards of Loyola. If you are found cheating on an exam, you will receive a zero(0) for the exam, you will not be allowed to drop the course, and the incident will be reported to your academic dean and recorded in your permanent file.

Course Etiquette
Sleeping in class happens and is always forgiven. Reading newspapers or surfing the web is impolite and is a distraction to your instructor; please find a better use for your time. Please set your cell phones to “silent” upon entering class; these are a distraction to everyone. Likewise, talking with your neighbor while I am lecturing is unacceptable.

Finally, and most importantly, respect for others is stressed above all else; please allow me the first chance to answer your fellow students’ questions. I expect everybody to participate in class discussions, but that begins by fostering an environment where we do not hesitate to ask our questions.

Odds and Ends
Make-Up Quizzes/Exams. If a real emergency or University-sponsored event arises which prevents you from appearing at a scheduled examination time, you must notify me prior to the next regularly scheduled class (and before the examination if possible). Make-up examinations will be administered only at my discretion. If a student fails to appear for a make-up at the mutually arranged time, no further opportunities will be extended. Failure to contact me as stated above or sufficiently document the extenuating circumstances of your absence will result in a grade of zero on the examination.

Loyola email. On the occasion that I need to contact students outside of class, this is the only sensible way to proceed. If you would rather not use your @luc.edu email account, ... tough! If you do not receive an email message from me on Monday, January 21, please let me know.

Use of the Internet. For both course delivery and course assessment, students are expected to have easy access to the internet. If this presents a problem, please let me know as soon as possible.
WebAssign vs. Written Homework

If you choose to purchase this online homework system, navigate to www.webassign.net and look for a place to enter your class key: luc 4419 5784. You will need to purchase an access code as well. This should cost around $30. See www.webassign.net/user_support/student/ for assistance. It would be helpful to me if you use your Loyola universal ID as your username when creating your account. The benefit of using WebAssign is that you can get (instant) feedback for whether or not you are working problems correctly. Apart from my office hours and the odd exercises in the text (which have solutions), this is the best way to ensure you have mastered the chapters’ concepts. If you do not wish to purchase access to WebAssign, you may submit written solutions to me, at the start of each class period.

Suggested and Assigned Exercises

Students are strongly encouraged to work more than the assigned problems. Due dates for specific problems will be announced in class.

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Exercises</th>
</tr>
</thead>
</table>
| 1       | Suggested: 9, 11, 27, 33, 45, 51, 53  
          | Assigned: 2, 6 (for part (b) assume no city is visited more than once), 24, 25, 28, 34, 38, 42, 44, 50, 56, 60. |
| 2       | Suggested: 1, 21, 39, 41, 57, 75  
          | Assigned: 2, 4, 10a, 12, 40, 42, 44a,b,c, 46a, 48, 50, 54, 60, 74. |
| 3       | Suggested: 5, 15, 23, 35, 41  
          | Assigned: 6, 14, 18, 22a,b,c, 24, 36, 42a,b,c. |
| 4       | Suggested: 1, 3, 23  
          | Assigned: 2, 6, 8, 10, 12, 16, 24, 38, 44, 46. |
| 9       | Suggested: 9, 41  
          | Assigned: 10 (use Condorsets method), 14, 16, 32, 42. |
| 11      | Suggested: 1, 5, 13  
          | Assigned: 2, 4, 14 (List the winning coalitions and underline the critical voters in each; compute the Banzhaf power index.), 24a,b,c,d,e, 34, 36. |
| 13      | Suggested: 1, 13, 31  
          | Assigned: 2, 6, 10, 14, 28, 30, 36 (Parts a,b,c are Steps 1 thru 5 as listed in problem 37; also carry out steps 6 thru 9 of problem 37 to divide the trimming; finally indicate how each player views all three players’ final pieces). |
| 14      | Suggested: 7, 29, 39  
          | Assigned: 6, 8, 10, 14, 30 (also use the Adams method), 38, 40. |
| 15      | Suggested: 1, 3, 5, 9, 25  
          | Assigned: 2, 4, 8, 10, 12, 16, 24, 26 (For 24 and 26: Label top row A and the bottom row B; label the first column A and the second column B. For each player, decide what they should do for each strategy choice (A and B). Does either player have a dominant strategy? If so, give it. Find all Nash equilibria; justifying your choice(s) and nonchoice(s).) |
| 16      | Suggested: 15, 59, 61  
          | Assigned: 2, 4, 12, 14, 18, 22, 26, 60, 62, 78, 80, 84. |
| 17      | Suggested: 1, 3, 5, 7, 10, 23  
          | Assigned: 2, 4, 8, 12, 22. |
Found Math: Expectations and Rubrics

**Course Component: Found Math**

For 10% of their final grade, students will either author a “blog post” for blogs.luc.edu/mathstats/) or “share” five found articles or news tidbits with www.facebook.com/lucmathstats.

**Blogging**

This should be something along the lines of a book report. See the following for some examples of what I have in mind:

- **Understanding the Enigma** (sareenl; Vanderbilt blog for Math115F)
- **Huffman Codes** (Steven Pigeon; Harder, Better, Faster, Stronger Blog)
- **Tessellations** (Scott Cram; Grey Matters Blog)

**Possible Topics.** We will cover Chapters 1–4, 9, 11, 13–17 as part of the course. There is a lot of interesting math and stats in the remaining chapters. Alternatively, you may find something entirely different that interests you. In either case, an extra two points will be given if you choose something relevant to your major. In either case, an (additional) extra two points will be given if you choose something with a **social justice** slant. Here are two links full of interesting topics with the latter focus:

- **Mathematics and Social Advocacy** (Jeff Suzuki; Brooklyn College)
- **Math for a Change** (Fr. Thul; St. Ignatius College Prep, available at mtachicago.org)

**Calendar.** You will schedule an appointment to talk with me about your idea for a post. This appointment should take place by **February 22.** You must offer a draft for critique (without penalty, see below) by **April 16.** Final post must be submitted to our Blackboard blog by Wednesday, **May 1st.** (Whenever you are ready, I will help you post it to the Math Department’s blog site.)

**Grading.** Your grade will be out of 20 points. One point will be subtracted for each misspelling or grammar mistake. Two points will be subtracted for each mathematical mistake. Five points will be subtracted if there is judged to be an insufficient amount of math. (Note: this “math” is not restricted to “equations” and “formulas” but extends to “mathematical ideas” as well.) Ten points will be subtracted if there is evidence to suspect plagiarism.

**Sharing**

Did you find something math and modeling related on your daily stroll around the internet? Share it. This can be a news article, a blog post, or an especially illuminating webpage that helped you understand a math/modeling concept (from class or otherwise).

You may not simply share a link or picture. You must include (at least) two sentences introducing/describing what you’ve shared. An extra half point will be given if you choose something relevant to your major. An (additional) extra half point will be given if you choose something with a **social justice** slant.

**Calendar.** You must share (at least) five things by the end of the course (due by **May 1st**). You must share at least two items in **February** and in **March**, and at least one in either January or April. You may use our Blackboard blog for scratchwork, but ultimately they should be shared on the Math Department’s facebook page.

**Grading.** Each will be scored out of five points. If you share more, I will take your top five scores. (Note, however, that I will only consider your first 10 shared items when making this determination.) I will deduct 1 point for each spelling or grammatical mistake. Accompanying text deemed inadequate will result in a 2 point deduction. Shared items deemed mathematically irrelevant will lose 3 points. Vulgar or otherwise inappropriate posts will be deleted and subtracted from your count of 10 that I am willing to look at.