



MATH 107: Understanding Data

Syllabus and Course Information

Section 004, TuTh 2:00 p.m.-3:15 p.m.

Meinel Optical Sciences Building, Room 410

Instructor: Aaron Larsen

Office Hours: MW 11:15 a.m.-12:15 p.m.

F 10:30 a.m. - 11:30 a.m.

Email Address: aaronml@math.arizona.edu

Office: ENR2

Course Catalog Description

The main purpose of this course is to help students understand, interpret, and represent data in a useful way to prepare students for courses in statistics. The course will provide students with the knowledge of basic mathematical and software tools and concepts that they can utilize to interpret quantitative information they encounter in their daily life. With the knowledge they gain, students will be able to better understand and assess the validity of quantitative information they receive through the web, newspaper, television, etc. Course topics will include creating various data summaries and descriptive statistics, probability, normal distributions, linear and other regression models, applying techniques to real world data sets. Examinations are proctored.

Course Prerequisites

PPL 30+ or MCLG 40+ or SAT I MSS 530+ or ACT MATH 21+. Test scores expire after 1 year. Some students may need to take Math 100 first.

Note: Math 107 is a prerequisite to SBS 200, ISTA 116, PSY 230, but is not a prerequisite to any UA MATH course. Students who need to take Math 112, 120R, 113, 116, or other math courses should NOT take Math 107 and may need to take Math 100 instead. Consult your academic advisor.

Course Objectives

- To help students read, create, and interpret graphical and tabular displays of data, and make estimations using various tools such as spreadsheets and graphing calculators
- To help students evaluate and interpret descriptive statistics that describe a data set, including measures of central tendency (e.g., mean, median) and dispersion (e.g., range, standard deviation)
- To help students calculate empirical probabilities of various events, including normally-distributed data
- To help students describe the relationship between two variables graphically (scatterplot), establish an association between them, and interpret these models.

Expected Learning Objectives

Upon completion of this course, students should be able to:

- Use the techniques and tools learned in this course to represent quantitative data encountered in other courses or found in public databases.
- Recognize and analyze displays of data, use of probability, and association.
- Solve a variety of application problems involving these types of problems, using algebraic, spreadsheet, and graphical tools.

Make up Policy for Students who Register Late:

- Students who register for the class after the first class meeting may not be able to make up missed assignments.
- Exceptions may be considered by the student's instructor.

Class Format and Teaching Methods

- This class is a live, in-person lecture. The class meets twice a week on Tuesdays and Thursdays except when there are no class meetings due to university holidays or university reading days (November 24th and December 8th).
- The class structure consists of a lecture and time for students to work together to complete assignments with guidance from the teacher and TA.

Attendance:

- If you feel sick or may have been in contact with someone who is infectious, stay home. Except for seeking medical care, avoid contact with others and do not travel.
- Notify your instructors if you will be missing an in-person or online course meeting, or you will miss an assignment deadline.
- *Non-attendance for any reason does not guarantee an automatic extension of due date or rescheduling of examinations.* Instead, grace periods and dropped assignments have been built into the homework category.
- If you have extenuating circumstances (e.g. an extended hospitalization or required university sponsored athletic competition), please communicate and coordinate any request directly with your instructor.
- Students who need to miss more than one week of classes in any one semester must provide a doctor's note of explanation to DOS-deanofstudents@email.arizona.edu.
- As we enter the Fall semester, the health and well-being of everyone in this class is the highest priority. Accordingly, we are all required to follow the university guidelines on COVID-19 mitigation. Please visit covid19.arizona.edu for the latest guidance.

Required Materials

- A graphing calculator (TI 36X Pro, TI-83, 84, or 86) is required for this course. Calculators that perform symbolic manipulations (such as the TI-89 or TI-92 or certain TI-Nspire CAS) cannot be used.
- For this class you will need daily access to a laptop or web-enabled device with webcam and microphone, and regular access to reliable internet signal. Much of our course work will take place in Microsoft Excel and Word. You will be writing electronically on lecture notes and worksheets. Having access to either a tablet or an electronic drawing tablet that connects to your computer may make the task easier.
- MyMathLab
 - The course textbook and several graded components for Math 107 are found in MyMathLab. MyMathLab course materials are being delivered digitally via D2L through the Inclusive Access program. Please access the material through D2L the first day of classes to make sure there are no issues in the delivery, and if you are having a problem or question, it can be addressed quickly.
 - You automatically have access to the course materials FREE through September 9th. You **must** take action (**even if you have not accessed the materials**) to opt-out if you do not wish to pay for the materials and choose to source the content independently. **The deadline to opt-out for courses is 9:00pm MST, September 9th, 2022.** If you do not opt-out and choose to retain your access, the cost of the digital course materials will appear on your Bursars account.
- Microsoft Suite Software – Excel and Word
UA students receive a **free download** of these programs [here](#). It is strongly recommended that you download this software to your laptop rather than use the online versions so that you can always have access to your documents.

Class Structure

A typical week consists of 5 ordered steps, walking you through the entire learning process:

1. In class lectures introduce you to the new weekly concepts.
2. Knowledge Checks show your understanding of the lecture content.
3. Math in Context worksheets give you the opportunity to try out Excel skills and math concepts in a low-stakes environment.
4. MyMathLab homework assignments give you the opportunity to practice these skills, receiving immediate feedback on your work.
5. Excel Projects give you the opportunity to show off all that you have learned in a cohesive finished product.
6. Chapter Quizzes do a final spot-check on your mastery of the material.

Knowledge Checks

- There will be 24 knowledge checks that will quickly help you gauge your understanding of the previous section's material in a low-stakes environment.
- These are taken in-class in your work group.
- There will be no makeups for these knowledge checks. Instead, the lowest 3 Knowledge Checks will be dropped.

Math in Context Practice

- There will be 15 Math in Context assignments this semester, posted in D2L. These assignments will have you working in Excel and interpreting your results to analyze real-world problems and are due by the end of week. Once completed, the document should be saved as a pdf and submitted through Gradescope.
- These assignments will be graded for completion and accuracy. The lowest 2 Math in Context assignments will be dropped, and the remaining assignments will be averaged together.
- The due dates for these worksheets are Thursdays at midnight, according to the schedule. There is an automatic 2-day grace period to turn these assignments in for 10% deduction.

MyMathLab Assignments

- There will be 19 online homework assignments this semester, posted in MyMathLab.
- These assignments are due by 11:59 PM on the due dates listed on Monday nights.
- If a few questions persist, students can seek help on Tuesday and Wednesday before completing the assignment. Students will receive 90% of the points on questions answered before the Wednesday, 11:59 PM deadline.
- The lowest 2 MyMathLab assignments will be dropped, and the remaining assignments will be averaged together.

Excel Projects

- There will be 5 Excel homework assignments. Due dates are indicated in the course calendar, with a project due most Monday nights. Your lowest Excel project grade will be dropped. It is very important to ***start the Excel assignments early*** so that you have time to get help if you get stuck or confused.
- These assignments are posted in D2L. Once completed, the document should be saved as a pdf and submitted through Gradescope.
- There is an automatic 2-day grace period to turn these assignments in for 10% deduction.

Excel Proficiency

In order to assess your proficiency of excel skills, you will need to sign up for a live demonstration at the end of the semester. Make sure you have thought through all procedures and answers in advance.

Chapter Quizzes and Final Exam

- There are 4 timed, open note chapter quizzes administered during class. A calculator is required for these quizzes.
- The Final Exam is on Friday, December 9th, 3:30-5:30 p.m. It will be comprehensive and will be composed of multiple-choice questions. If you score better on your final exam than your lowest chapter quiz grade, your final exam score will replace it. This means that the final exam may be worth more than listed.
- The first missed quiz will not be available to reschedule, as the final exam will replace the zero.
- Students who are unable to take a successive quiz for a **LEGITIMATE** reason will be asked to contact their instructor a sufficient time period before the exam. Failure to contact the instructor may result in the request for a make-up quiz being denied or the student receiving a penalty on the quiz. Legitimate reasons include Dean's excuses, religious holidays recognized by the University, and verifiable emergencies. University related events without a dean's excuse will generally not be considered as an exam conflict (e.g., club meeting or club dinner).
- If a verifiable emergency arises which prevents you from taking a quiz at the regularly scheduled time, you must notify your instructor or the Mathematics Department as soon as possible. Students who fail to notify their instructor or Mathematics Department within 24 hours after the quiz has been given may receive a grade of zero on the exam. Make-up quizzes will be administered only at the discretion of the Mathematics Department and/or the instructor.

Communication with Students

Announcements and important course information may be sent out via official University email or through D2L. It is the student's responsibility to check for messages and announcements regularly.

Tentative Weekly Schedule:

Week	Class Concepts	Assignments Due		
		MML	MiC	Project
1	Frequency Tables, Bar Graphs,		3.1	
2	Pie Charts, Two-Way Tables	3.1	3.2	
3	Dotplots, Stem Plots, Time-Series Plots	3.2	3.3A	Excel 1
4	Histograms, Misleading Graphical Displays of Data	3.3	3.3B	Word 1
5	Measures of Center – Mean, Median, and Mode <u>Ch 3 Quiz</u>	3.4, 3.5	4.1	
6	Measures of Spread – Range and Standard Deviation	4.1	4.2B	Excel 2
7	Boxplots	4.2	4.3	Word 2
8	Introduction to Probability <u>Ch 4 Quiz</u>	4.3	5.1	Excel 3
9	Complement and Addition Rule, Standard Normal Distribution	5.1	5.2A	Word 3
10	z-Scores, Finding Probabilities for Normal Probability Distributions	5.2	5.5	
11	Finding Values of Variables for a Normal Probability Distribution	5.5	5.6A	Excel 4
12	Scatterplots, Four Characteristics of an Association <u>Ch 5 Quiz</u>	5.6	6.1	Word 4
13	Modeling Linear Associations, Trendlines	6.1, 6.2	6.3B	Excel 5
14	Graphing Equations of Linear Models, Rate of Change	6.3, 7.1		Word 5
15	Slope of a Line, Solving Linear Equations to Make Predictions <u>Ch 6 & 7 Quiz</u>	7.2	7.2B	
16	Bringing it all together	7.3, 8.3	8.3	Excel Proficiency

Course Grade

Assignment	Points for each	Total Points	Percent of Grade
Knowledge Check	2	42	4%
MyMathLab Assignments	7	119	12%
Math in Context Practice	7	91	9%
Quizzes	62.5	250	25%
Excel Projects	62.5	100	25%
Excel Proficiency	100	100	10%
Final Exam	150	150	15%
Total possible points		1000	100 %

You are Guaranteed a Grade of:	
A	If you earn 90% of the total points.
B	If you earn 80% of the total points.
C	If you earn 70% of the total points.
D	If you earn 60% of the total points.

Please note that neither exam scores nor final grades will be curved. No extra credit or bonus points are offered in this course. A grade of Incomplete will be given only at the instructor's discretion, according to University Policy as described at <https://catalog.arizona.edu/policy/grades-and-grading-system#incomplete>.

Withdrawal

A student may drop the course with a deletion from transcript through September 4, 2022, using UAccess. A student may withdraw with a grade of "W" through October 30, 2022, using UAccess. Students should consult their academic advisor before withdrawal from any course. <https://catalog.arizona.edu/policy/grades-and-grading-system#Withdrawal>

Classroom Behavior Policy

To foster a positive learning environment, students and instructors have a shared responsibility. We want a safe, welcoming, and inclusive environment where all of us feel comfortable with each other and where we can challenge ourselves to succeed. To that end, our focus is on the tasks at hand and not on extraneous activities (e.g., texting, chatting, reading a newspaper, making phone calls, web surfing, etc.). Students are asked to refrain from disruptive conversations with people sitting around them during lecture. Students observed engaging in disruptive activity will be asked to cease this behavior. Those who continue to disrupt the class will be asked to leave and may be reported to the Dean of Students.

The use of personal electronics such as cell phones, laptops, iPads, and other such mobile devices is distracting to the other students and the instructor. Their use can degrade the learning environment. Therefore, students are not permitted to use these devices during the class period unless deemed necessary by the instructor.

Additional Resources for Students

UA Academic policies and procedures are available at <http://catalog.arizona.edu/policies>

Campus Health

<http://www.health.arizona.edu/>

Campus Health provides quality medical and mental health care services through virtual and in-person care.

Phone: 520-621-9202

Counseling and Psych Services (CAPS)

<https://health.arizona.edu/counseling-psych-services>

CAPS provides mental health care, including short-term counseling services.

Phone: 520-621-3334

The Dean of Students Office's Student Assistance Program

<https://deanofstudents.arizona.edu/support/student-assistance>

Student Assistance helps students manage crises, life traumas, and other barriers that impede success. The staff addresses the needs of students who experience issues related to social adjustment, academic challenges, psychological health, physical health, victimization, and relationship issues, through a variety of interventions, referrals, and follow up services.

Email: DOS-deanofstudents@email.arizona.edu

Phone: 520-621-7057

Survivor Advocacy Program

<https://survivoradvocacy.arizona.edu/>

The Survivor Advocacy Program provides confidential support and advocacy services to student survivors of sexual and gender-based violence. The Program can also advise students about relevant non-UA resources available within the local community for support.

Email: survivoradvocacy@email.arizona.edu

Phone: 520-621-5767

Academic Advising

If you have questions about your academic progress this semester, please reach out to your academic advisor (<https://advising.arizona.edu/advisors/major>). Contact the Advising Resource Center (<https://advising.arizona.edu/>) for all general advising questions and referral assistance. Call 520-626-8667 or email to advising@arizona.edu

Life Challenges

If you are experiencing unexpected barriers to your success in your courses, please note the Dean of Students Office is a central support resource for all students and may be helpful. The [Dean of Students Office](#) can be reached at (520) 621-2057 or DOS-deanofstudents@email.arizona.edu.

Physical and Mental-Health Challenges

If you are facing physical or mental health challenges this semester, please note that Campus Health provides quality medical and mental health care. For medical appointments, call (520) 621-9202. For After Hours care, call (520) 570-7898. For the Counseling & Psych Services (CAPS) 24/7 hotline, call (520) 621-3334.

University-wide Policies Link

Links to the following UA policies are provided here: <https://academicaffairs.arizona.edu/syllabus-policies>

- **Absence and Class Participation Policies**
- **Threatening Behavior Policy**
- **Accessibility and Accommodations Policy**
- **Code of Academic Integrity**
- **Nondiscrimination and Anti-Harassment Policy**
- **Subject to Change Statement**

Tech resources for students

The University of Arizona provides technology support for students, including information about the tools necessary to learn in an online/on-campus environment. Visit [this website](#) to learn more about what technology instructors are using.