

Math 1090 Spring 2021 Syllabus

You will notice that parts of this syllabus repeat in your Canvas course, that's because we want to make sure you don't miss anything! This document also serves as an easy, one-stop reference, if you need it.

Course Overview

We are excited that you have enrolled this semester in Math 1090 – Statistical Reasoning for Everyday Life! Data has become a critical and pervasive part of our lives. As the use of computers, phones, smart watches, and social media increases, so too does the data generated and collected about all of us! In this course, you will learn the tools to use that data, critique it, and draw conclusions from it.

To do this, we will be focusing on two broad areas:

- **Descriptive Statistics** is the process of collecting, describing and analyzing observations that quantitatively describe features of a set of data. The aim of descriptive statistics is to summarize information about a sample, drawn from a population about which we want to learn.
- **Inferential Statistics** is the process of drawing conclusions about a population based on an analysis of the data from a sample.

If you demonstrate that you have mastered the concepts and skills necessary to utilize these two types of statistics to answer questions in the real world, you will have succeeded in the class.

Course Meetings

This course is designed primarily around synchronous class meetings that take place at the time stated in GET. Depending on your particular section, you are either meeting on campus or via Zoom. To see if you are meeting on campus, please check the schedule in GET. If a room is listed for your section, then you are meeting on campus. If the room assignment says "CANVAS", then you will be meeting remotely via Zoom.

You automatically have a Zoom account associated with your university email address which can be accessed through my.calstatela.edu. You will be prompted to log in to Zoom when attending class.

The link to your Zoom class will be available by clicking on "Zoom" on the left-hand navigation in Canvas. The class session will be recorded, so if you miss a class, you can review the class session afterwards.

Many of the classes that meet on campus will also record class sessions on Zoom. Please check with your instructor to find out if class sessions will be recorded.

Course Materials and iClicker Information

The purchased **course materials** consist of two components:

1. **Achieve** e-learning system, which includes an electronic version of the course textbook *Statistics: Concepts and Controversies, 10th Edition* by David S. Moore and William I. Notz and is used for online homework
2. **iClicker Reef** response system which will be used in many of our synchronous class sessions.

You will purchase these in the form of an **ACCESS code for Achieve** from the bookstore or from within your Canvas course by clicking on the McMillan Learning link. If you would like to use a physical book in addition to the e-text, you can purchase it anywhere, but it **WILL NOT** replace the Achieve e-learning system. A few copies of the physical book are also on course reserve in the library.

Once you have purchased your course materials bundle from the bookstore, have your access code ready and follow the instructions on the **How to Activate your Course Materials** page in Canvas. Make sure to keep the Achieve access code until you have completed the course because there is no record of it anywhere else. If you lose it, you will have to repurchase it!

If you are repeating the course from a previous semester, you do not need to purchase a new access code. Please follow the instructions on Canvas to contact the course coordinator.

Important Dates – Fall 2021

There are several key dates that you need to keep in mind for this semester:

Monday, Aug 23	Classes Begin
Monday, Sep 6	Holiday - Labor Day, University Closed, No Classes
Tuesday, Sep 7	Last day to add/drop classes without a W.
Thursday, Nov 11	Holiday - Veterans Day, University Closed, No Classes
Friday, Nov 19	Last day to drop classes with a W.
Mon - Fri, Nov 22 - 26	Fall Break (Thanksgiving) - No Classes
Saturday, Dec 11	Last day of classes.
Monday - Friday, Dec 13 - 18	Final Exams

Math 1090 – Activity Section

You are enrolled in both an odd- and an even-numbered section of Math. The even-numbered section is an activity component of the course. Its purpose is to assist you in being successful in Math 1090.

Active participation and completion of online homework is the main basis for receiving the Activity P³ points. You can earn up to 300 P³ points from the Math 1090 Activity portion of the course.

You will NOT need to purchase additional course materials for the activity component of the course.

How Your Grade is Determined in Math 1090

In this course, we will use mastery-based grading to determine your letter grade. We will keep track of how well you master specific mathematical tasks or concepts that are called standards. We have a total of 15 standards in this course:

- The first eleven standards, S1 – S11, relate to mastery of **statistical concepts**
- The next three standards, MP1 – MP3, are about **mathematical practice**, and they assess how well you reason, communicate, and use statistical tools.
- The P³ standard assesses how well you **Prepare** before class, **Participate** during class time, and **Practice** after class.

Your course grade depends on the number of standards you achieve mastery in.

Desired Grade	A	A-	B+	B	B-	C	NC
Standards that need to be mastered	14 or 15	13	12	11	10	9	8 or fewer

A listing of all standards can be found in the Standards section of this syllabus.

What is Mastery-Based Grading?



It is quite simple:

*Grades should reflect **demonstrated mastery of course content** and have a positive effect on **learning**.*

Therefore, we use an approach to grading that involves three key features.

1. Final course grades are determined by **how much of the course content a student has mastered**, based on a clear list of content and skills required.
2. Work is graded on mastery of each of the pieces of course content (called "Standards" or "Outcomes") **on a scale** from "No Mastery" to "Exceeds Expectations"
3. **Eventual mastery** matters and early mistakes/failures are not penalized.

Mastering the Standards

For the statistical and the mathematical practice standards, mastery means that you have received a “” or a “” on TWO (2) mastery checks for that standard. Your score on the mastery checks will be based on the following rubric:

Score	Formal Meaning	Informal meaning	Interpretation
✓ +	Exceeds expectations – exceptional understanding	I own this! I can explain how to do this task and why it works to someone else. I can complete the task in both familiar and unfamiliar situations - I could teach it.	Student demonstrates complete understanding of the relevant concepts and solution methods. <ul style="list-style-type: none"> • Problems are solved correctly and completely. • Concepts are applied and explained correctly. • Arguments are complete, convincing and clear
✓	Meets expectations – solid understanding	I know how to do this task. I can do problems independently, but I am not quite sure why it works. I can complete this task in familiar situations with good accuracy and few mistakes.	Student demonstrates understanding of the relevant concepts and solution methods. <ul style="list-style-type: none"> • Solution of problems may include some algebraic or conceptual errors, but they are minor. • Arguments are mostly complete, but may have some omissions of details
☁	Needs more work – partial understanding	I do not quite understand how to do this, task and need to look at examples to complete the problem. I can complete the basics of this task in familiar situations only.	Student demonstrates partial understanding of the relevant concepts and solution methods. <ul style="list-style-type: none"> • Problem solutions contain a fundamental error, conceptual misunderstanding, or the solution is incomplete. • Arguments are only partially correct or are unclear.
✗	Insufficient evidence to assess	I have no idea what you are talking about and can't write down enough to make sense of!	Insufficient work was shown to determine the level of mastery of this standard.

For the statistical and the mathematical practice standards you will have multiple opportunities to earn ✓'s and ✓ + 's.

For **Standards S1 – S10**, the first two opportunities to demonstrate mastery will be check point quizzes.

Standards MP1 – MP3 will be assessed as part of the various checkpoint quizzes and the TAMS (= **T**asks to **A**chieve **M**astery in **S**tatistics) assignments.

For **Standard S11**, there is a **two-part** TAMS assignment at the end of the course that takes the form of a presentation (Part I) and a discussion board (Part II). You need to complete the requirements on **BOTH** parts to receive mastery on this standard. **This is the only opportunity** to get ✓'s or ✓ + 's on S11, and therefore scoring a ✓ or ✓ + on **BOTH** parts of this assignment will demonstrate mastery of S11.

If you do not score either a ✓ or ✓+ on the S1 – S10 and the MP standards on the two initial mastery opportunities, there will be at least three additional opportunities per standard (TAMS, checkpoint 3 quizzes, and the final exam). All recheck opportunities are optional - you choose which standards you need to recheck based on your current mastery scores. This is the beauty of mastery-based grading – if you have mastered a topic, then you can concentrate on the other standards, and if you have not **YET** mastered a topic, then you can redouble your efforts and prove mastery later in the semester! Thus, it always makes sense to go back and learn any topics that you have not yet mastered.

There is one standard where mastery is **determined differently - the Three P's standard**.

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The Three P's - Preparation, Participation, and Practice

This is the **ONLY** standard in Math 1090 that uses "points" to assess mastery. Preparation, participation and practice are all needed in order for you to be successful in mastering the statistical standards. We have created a structure that will assist you in this process. Points for the Three P's standard will be referred to as PPs.

Preparation - this is the stuff that you do to **BEFORE** class. In this class, you will initially be introduced to the new material **PRIOR** to class via videos and notes. This will give you an opportunity to absorb new material at your own pace, in the comfort of your own home, and get you prepared for class. Often this involves finding definitions of terminology, which will then be reinforced in class through activities. Having heard or seen those terms before class gives you the opportunity to check your understanding while in class.

Implementation: Before every class a preparation and participation activity will be posted on Canvas. Print out the document associated with the activity and follow the instructions to complete the activity. This will typically will require a combination of watching videos, reading the book, and completing a worksheet. **Bring this completed preparation activity to class to receive the preparation credit - it will be checked for completion at the beginning of class.**

PPs Value: 30 points each, 17 assignments = 510 points

Participation - this is the stuff you do **IN** class. Neuroscience has given us a much better understanding of how learning works, and we now know that **ACTIVE** participation with the typical struggle to figure out things is how the brain actually learns and makes new neural pathways. Unlike copying down a well-prepared lecture, which may give you a **FALSE** sense of having understood the material, discussions with group mates give you a **TRUE** sense of how much you have understood. And while I will not necessarily hand you the answers, I will guide you to the answers and also make sure that by the end of class, loose ends are tied up.

Implementation: In class, you will do a variety of activities, including iClicker sessions, lab work using statistical software, and/or working in groups on activities designed to support the development of a deeper understanding of the material. I will let you know what you need to do to claim these participation points. **Be sure that you bring the printed participation activity sheets posted on Canvas, as you will need to complete these in class.** It will be **EXTREMELY** useful to have a laptop computer in class. Phones, tablets, and Chrome books do not have the necessary capabilities to use CrunchIt!, the software that is included with the textbook.

PPs Value: 20 points each, 14 chapters or more = 280 points

You can't participate if you are not in class, therefore attendance is required and contributes to your PPP mastery. Attendance will be taken at every class session.

PPs Value: 100 points total, calculated as a percentage. For example, if you attended 78% of the class sessions, then that translates into 78 points for attendance. Note that arriving late or leaving early only gives you half attendance credit for that day.

Practice - this is the stuff you do **AFTER** class. Once you have had your initial introduction (preparation) and your more in-depth exploration (participation), you then need to **PRACTICE** to deepen the understanding from class.

Implementation: After class, practice activities will be posted. These may include online homework assignments, problem sets that can be turned in for credit, extra lab activities, or other designated (non-mastery) assignments.

PPs Value: Varies, Minimum total points available: 360 points

SUMMARY

The table below shows the different components of the Three P's standard and how many PPs are available from each component.

PP Activity	Total PPs Available
Preparation	510
Participation	280
Attendance	100
Practice	360
Total	1,250

You will need **900** points to master this standard. Instructions on how to check your progress for this standard can be found in the syllabus on Canvas.

The Standards

There are 14 standards in this course, broken into three sections: Statistics Content, Mathematical Practice, and the Three P's.

Statistics Content

- S1 – Populations and Samples:** Describe, use and analyze information about populations and samples. Identify margin of error in simple random samples (SRS) and bias in sampling methods.
- S2 – Statistical Studies:** Identify and distinguish experiments and observational studies; analyze statistical studies.
- S3 – Graphical Summaries of Data:** Create and interpret graphical summaries of sample data. Identify and repair flaws in graphical representations of data. Choose and justify the proper graphical representation for a given data set and context.
- S4 – Numerical Summaries of Data:** Describe, calculate, and interpret numerical summaries and boxplots of sample data.
- S5 – Regression and Correlation:** Describe, create, and analyze correlations of data through scatter plots and correlation coefficients; use regression equations to make predictions and assess the quality of the prediction.
- S6 – Probability:** Define and apply basic probability concepts.
- S7 – Normal Distributions of Data:** Describe and analyze normal distributions of data. Compare normally distributed sets of data. Use and analyze sampling distributions.
- S8 – Confidence Intervals:** Define and calculate confidence intervals and interpret the interval in the context of the problem.
- S9 – Hypothesis Testing:** Perform hypothesis tests for proportions or means and interpret the conclusion in the context of the problem.
- S10 – Critically Evaluating the Media:** Evaluate, analyze, and critique published media related to a statistical study.

Mathematical Practice

- MP1 – Quantitative Reasoning:** Use and switch between numerical, graphical and algebraic representations of quantities and interpret the information contained in these representations. Accurately complete numerical calculations and round to appropriate numbers of significant digits.
- MP2 – Construct and Communicate a Viable Argument/Explanation:** Use data to make a statistical inference and justify that inference. Communicate a statistical analysis and conclusion using words.
- MP3 – Correct Use of Statistical Tools:** Correctly utilize tools such as statistical software, calculators or z-score tables.

The Three P's

PPP (Preparation, Participation, Practice): Be a full contributor to the success of the class through proper preparation before class and attendance with full participation during class. Utilize post-class time to practice key concepts and enhance overall understanding.

TurnItIn

TurnItIn will be used for submitting several of the TAMS assignments.

Students agree that by taking this course all mastery-graded (TAMS) assignments are subject to submission to Turnitin.com for the detection of plagiarism. All submitted papers will be included as source documents in the Turnitin.com reference database solely for the purpose of detecting plagiarism of such papers. You may submit your papers in such a way that no identifying information about you is included. Another option is that you may request, in writing, that your papers not be submitted to Turnitin.com. However, if you choose this option you will be required to provide documentation to substantiate that the papers are your original work and do not include any plagiarized material.

Outline of Course Content Schedule

This table will show you the tentative schedule of when we expect to cover the content of the course and the due dates of the mastery assignments, both in-class tests and the TAMS (Tasks for Mastering Statistics) assignments. Use this table to plan for study time, and to schedule tests if taking them through OSD.

Note that the allotted time for quizzes is 20 -25 minutes and 50 minutes for re-quizzes, and that re-testing is optional and only required for students who have not **yet** passed a particular standard.

Dates	Chapters	In-class exams	MW & MWF classes (Wed)	TR classes (Thurs)	TAMS assigns	MW & MWF classes (Wed)	TR classes (Thurs)
Week 1 (Jan 21 - 24)	Introduction to Statistics & Math 1090						
Week 2 (Jan 28 - 31)	Ch 1, 2, and 3						
Week 3 (Feb 3 -7)	Ch 4, 5, and 6						
Week 4 (Feb 10 - 14)	Ch 10, 11				TAMS 1 (S1/S2)	2/12	2/13

Dates	Chapters	In-class exams	MW & MWF classes (Wed)	TR classes (Thurs)	TAMS assigns	MW & MWF classes (Wed)	TR classes (Thurs)
Week 5 (Feb 17 - 21)	Ch 12, 14	Q1 (S1/S2/MP2)	2/19	2/20			
Week 6 (Feb 24 - 28)	Ch 15						
Week 7 (Mar 2 – 6)	Probability				TAMS 2 (S3-S5/MP1/MP2)	3/4	3/5
Week 8 (Mar 9 - 13)	Probability	Q2 (S3-S5/MP1-MP3)	3/11	3/12			
Week 9 (Mar 16 - 20)	Ch 13	RQ1 (S1-S5, MP1-MP3)	3/18	3/19			
Week 10 (Mar 23 - 27)	Ch 21				TAMS 3 (S6/S7)	3/25	3/26
Week 11 (Mar30 – Apr 3) Spring Break							
Week 12 (Apr 6 - 10)	Ch22	Q3 S6/S7, MP1-MP3) RQ2 (S1-S5, MP1-MP3)	4/8 (MW & MWF) 4/8 (MW); 4/10 (MWF)	4/9			
Week 13 (Apr 13 - 17)	Ch 21/22 practice				TAMS 4 (S8/S9/MP2)	4/13	4/14
Week 14 (Apr 20 - 24)	Ch 21/22 practice; intro to project	Q4 (S8/S9,MP1-MP3)	4/20	4/21			
Week 15 (Apr 27 – May 1)	Ch 9; project work	RQ3 (S6- S9, MP1 - MP3)	4/27	4/28			
Week 16 (May 4 - 8)	Presentations	RQ4 (S6- S9, MP1 - MP3)	5/4	5/5	TAMS 5 (S10)	5/4 & 5/6	5/5 & 5/7
Finals Week (May 11 - 16)		Final Exam (optional; as per class schedule)					

Math 1090 Student Learning Outcomes

Each course you will take as part of your degree at Cal State LA has stated student learning outcomes that outline what you should have learned when successfully completing the course. Since Math 1090 is also a General Education course in category B4, there are additional GE learning outcomes. These student learning outcomes are listed below, followed (in parentheses) by the standard(s) that support

each learning outcome. You will note that various standards support a specific learning outcome, and that mastery of the standards will result in achieving the stated student learning outcomes. Here they are:

Course Content Learning Outcomes:

1. Students will state the definitions of basic vocabulary of statistics. (S1)
2. Students will construct and critically interpret graphical and numerical summaries of data and describe how the data involved provides support for answering real world questions. (S3, S4)
3. Students will describe/explain how the nature of data collection methods affects the scope of the conclusions that can be drawn from statistical studies (especially cause and effect). (S2)
4. Students will be able to describe and explain the meaning of various summary statistics such as measures of central tendency and variability and their role in supporting the analysis and comparison of data sets. (S4)
5. Students will explain the role of probability and probability distributions in sampling and experiments. (S6, S7)
6. Students will be able to use a statistical software tool to do basic statistical analyses and critique the output of those analyses. (MP3)
7. Students will analyze and assess the soundness of statistical arguments, such as those found in the popular press and scholarly publications, using given and/or publicly available quantitative data. (S10, MP2)
8. Students will be able to apply the basics of statistical inference such as estimation, statistical significance, and hypothesis testing, recognizing underlying assumptions and limitations, to real-life issues that affect their lives and communities. (S5, S8 - S10)

GE B4 Learning outcomes

1. Use mathematical concepts and quantitative reasoning to solve problems, both in a pure mathematical context and in real-world contexts. (MP1, MP2)
2. Interpret information presented in a mathematical form (e.g. equations, graphs, diagrams, tables, words) and convert relevant information into a mathematical form. (MP1)
3. Draw appropriate conclusions based on the quantitative analysis of data, recognizing any underlying assumptions or limits of this analysis. (MP2)
4. Use deductive reasoning in a pure mathematical context to draw conclusions and provide an irrefutable logical justification for them. (MP2)
5. Formulate and communicate a position on a real-world question and use appropriate quantitative information in support of that position, and evaluate the soundness of such an argument. (S9, MP1, MP2)

We hope you will refer back to these student learning outcomes and the mastery standards throughout the course, so that you can remind yourself of the relevance of this course to your daily life.

Getting Support: Smart Start, Office of Students with Disabilities, Tutorial Centers, and More

There are a lot of opportunities to get support for your college experience, in academics as well as other areas including physical health, mental health, and more.

To assist you in successfully completing this course, you can see me during my student hours (= time for me to work with you on YOUR particular questions). In addition, there are stats tutors at the university tutorial center and **Peer-Led Undergraduate Study (PLUS)** sessions through SMART START.

Successful students are those who reach out for support when they realize they struggle, so that they can fill in any existing gaps to be prepared for the course material. You can also make an appointment with a student success coach at the Smart Start Center. This is **highly recommended** for freshmen, but is a good idea for all students.

Here are some key links for academic and non-academic support:

- [Smart Start](#)
- [Office for Students with Disabilities](#)
- [Student Health Center](#)
- <http://www.calstatela.edu/tutorialcenter>
- [Glazer Family Dreamers Resource Center](#)

A larger list of support services can be found here:

- [Academic Support Resources](#)
- [Student Support Resources](#)

Calculator/Technology Policy

Math 1090 and Math 1091 rely heavily on appropriate use of technology. You will need access to:

1. A smart phone with installed **iClicker app** or **physical iClicker remote** for participating in class.
2. **A regular calculator** (non-internet connected) for use on exams. Any calculator is acceptable as long as it cannot access the Internet. Cell phones CANNOT be used. Statistical calculators and/or graphing calculators are allowed, but not necessary.
3. **At least one person in your group** will ideally have a **laptop** that can be brought to class regularly for use with in class data analysis and in class labs. It is unlikely that tablets and phones will be sufficient to access the technology needed for the in-class data work.

PLEASE NOTE: Chrome books are not always sufficient for the work in this class. If you have a Chrome book, please make sure you know where the Open Access Labs on campus are, and how to use them. You will need access to a full desktop/laptop version of Microsoft Excel for several assignments (free for students through Cal State LA's site license). Google Sheets or Microsoft Office Online are not sufficient.

Appropriate In-Class Behavior with Technology

Smart Phones, laptops, and notepads are to be used only for class-related work. Use of these devices for texting, social media use, or voice calls is inappropriate and disruptive to the class experience. If your actions with your phone and/or computer are found to be disrupting the class, you may be to leave, and your attendance and participation points for the class will be lost.

Campus Policies

ADA Statement

Reasonable accommodation will be provided to any student who is registered with the [Office of Students with Disabilities](#) and requests needed accommodation.

Academic Honesty Statement

You are expected to do your own work and to abide by the University Policy on academic honesty, which is stated in the Schedule of Classes. Copying the work of others, giving worked-out solutions on TAMS to a friend, cheating on exams, and similar violations will be reported to the University Discipline Officer, who has the authority to take disciplinary actions against students who violate the standards of academic honesty.

Student Responsibilities

You are responsible for being aware of all announcements that are made in class, such as changes in exam dates, due dates of homework and papers, and cancellation of class due to instructor's absence. Students are responsible for announcements made on days they are absent, so make sure to find a study buddy who can let you know what you may have missed.

You must check your Cal State LA email account regularly for information from the instructor, course coordinator and the Department. Failure to do so may result in missed deadlines or other consequences that might adversely affect students. Note that you can forward your Cal State LA email account to any other account of your choosing. You may have listed a preferred alternative email in GET, but be aware that Canvas will use the Cal State LA email (unless you reset it) and it will not be automatically forwarded to the alternative email listed on GET.

CONGRATULATIONS!

You now have completed the syllabus. Make sure to go back if you have any questions or forget details about how grades are computed, or how to get participation points. The syllabus is your guide to being successful in the course.