California State University, Fullerton Logo

COLLEGE of NATURAL SCIENCES & MATHEMATICS

DEPARTMENT OF MATHEMATICS

# Math 338-23: Statistics Applied to Natural Sciences

**Instructor:** Fatemeh Khatami

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**Technical Support:** (657) 278-8888

**Office hours:** MW 6:15 – 7:15 PM

**Class Location:** MH 047 (Basement)

**Class Location & Time:**

* **Math 338 – 23 MW** 3:30 – 5:50 PM
* This class is offered as an in **person** class. The lecture portion is offered from 3:30 to 4:45 PM in MH 047 and the Lab portion is scheduled from 5:00 to 5:50 PM ( location TBA)

**The 2 midterm exams and the Final Exam will be also in person on Campus on the scheduled date**s.

**Final Exam: Wednesday, May 15 at 3:00 -4:50 PM**

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## HEalth Information and Resources

If you need support but not sure where to get it, or just want to talk, I’ll be happy to listen and perhaps direct you to others who can help.

Here is a list of available services on campus:

* [Student Wellness Website](http://www.fullerton.edu/studentwellness/)
* [Counseling and Psychological Services (CAPS)](http://www.fullerton.edu/caps/) – CAPS provides virtual individual and group counseling sessions via Zoom. To make an appointment, call the CAPS front at (657) 278-3040 Monday through Friday between 9 a.m. to 4 p.m.
* CAPS Crisis Support – CAPS Crisis Line is open 24/7 for support services at (657) 278-3040 or text home at 741741.
* [YOU@Fullerton](https://you.fullerton.edu): A free and confidential wellness portal that connects students to academic, physical and mental health resources.
* Please call 911 for any and all emergencies.

## Important University Policies:

Go to [Student Information for Course Outlines](http://itwebstg.fullerton.edu/FDC/teaching/syllabus.php) for the latest university policies regarding the topics listed below:

* Students with Special Needs
* Academic Dishonesty Policy
* Emergency Preparedness
* Undergraduate Student Learning Goals
* General Education: Programmatic Student Learning Goals and Learning Outcomes
* Graduate Student Learning Goals
* Student Learning Outcomes by Degree Programs
* Library Support
* Final Exams Schedul

## Course Communication

All course announcements and individual emails are sent through Canvas Announcements and my CSUF email account ([fkhatami@fullerton.edu](mailto:fkhatami@fullerton.edu)) , all of which use CSUF email accounts. Therefore, you MUST check your CSUF email on a regular basis (several times a week) for the duration of the course.

You may change the notification setup on Canvas to control receiving notifications and its frequency. You may even set it up to receive text notifications on your cellphone. Follow the provided link and instruction on Canvas for more information.

### Response Time

Emails to the instructor will usually be responded to, if a response is requested/needed, **within 2 business days**. Requests accompanied by proper and clear information will be given priority. If related to your course, **include your class code and section numbers and meeting days** (MW OR TTH) in the email subject.

## Course Information

### Course Description

The course includes a short review of elementary probability and covers basic statistical theories in estimation, hypothesis testing, regression analysis, analysis of variance, and non-parametric testing. The lab portion of the course offers exercises in the application of statistics ranging from data visualization, generating and interpreting statistical outputs, and presenting statistical analysis.

### Course Prerequisites/Corequisites

Math 130 (A Short Course in Calculus), Math 150B (Calculus II) or consent of instructor.

### Course Objectives

The course serves as a platform for:

* Introducing Statistics, a branch of Mathematics that deals with studying data;
* Learning about collection and processing data.
* Applying the fundamentals of Probability in interpreting the inherent uncertainty in data.
* Making informed inferences, decisions, and predictions.
* Learning about the use of technology in applying statistical analyses and interpreting their results.

### Course Learning Goals

The learning goals that this course aims for are:

* To learn basic techniques for exploring and describing data.
* To understand and appreciate the importance of how data are produced and the difference between experimental and non-experimental studies.
* To learn inferential methods, and to understand why/when they work.
* To gain experience in the use of relevant technology (e.g. Rguroo) and the ability to interpret outputs generated by statistical software. Some of the main objectives include:
  + Reading/importing and manipulating data
  + Exploring data, visualizing, and generating descriptive statistics.
  + Simulating models/processes; computing probabilities for various distributions.
  + Construction of confidence intervals/Performing test of hypotheses.
  + Estimating model parameters (Distribution parameters/ Regression coefficients)

### General Education Learning Objectives

Math 338 satisfies subarea B.5 of GE requirement, “Implications and Explorations in Natural Sciences and Mathematics.” The objectives are to provide students quantitative reasoning competency in natural sciences and mathematics, enabling them to:

* Integrate themes in mathematics and/or science from cross-disciplinary perspectives.
* Solve complex problems that require mathematical and/or scientific reasoning.
* Relate mathematics and/or science to significant social problems or other related disciplines.
* When deemed appropriate, apply disciplinary concepts from mathematics and the natural sciences in a variety of settings, such as community-based learning sites and activities.

## Course Materials

### Required Textbooks

OpenIntro Statistics (OS), Fourth Edition, by David Diez, Mine Çetinkaya-Rundel and Christopher Barr, ISBN: 9781943450077.

A free PDF copy is available at <https://www.openintro.org/book/os/>, and paperback copies are sold in the CSUF bookstore.

### Other Required Materials

**XYZ Homework System**: Accessing XYZ website requires a new access code that can be purchased via Titan shop (CSUF XYZ Homework Access Card). You may use an existing **access code** that you bought before for other CSUF courses within the last 2 or 3 years. XYZ HW has a two-week trial period that you can use immediately if you still need to purchase the access code.

When creating or reactivating your account on XYZ, use the Course ID listed on Canvas to be listed on the correct course.

**Rguroo:** Accessing Rguroo is free for CSUF students. You may activate your subscription via the **Launch Rguroo** link on Canvas.

A scientific calculator is also required for solving problems on written exams, quizzes, or in-class practices.

**Grading**

### Grading Items: Assignments and Assessments

**Online Homework (15%):** These are mainly the assignments on the XYZ Homework site and some Canvas assignments if needed. Students need to purchase an Access Code and use the Class ID for their section to be able to complete these assignments. Each question has multiple trials.

**Lab work, Project (15%):** Labs are activities that students will complete during the lab sessions. They are mainly Canvas quizzes with instructions for completing steps in analyzing data and making inferences. . There may be some individual or group projects during the semester as well.

**Participation, Classwork (10%):** Student participation is measured through attendance, Reading Quizzes (5%) (*should be completed before class if there is any*) and being active during class activities and group work (5%). The class activity grade is determined at the *instructor's discretion*.

**Exam 1 (15%), Exam 2 (15%):** Midterm exams include two portions: a written, in-class exam that focuses on application and problem solving and a canvas portion that focuses on basic concepts and definitions.

**Final Exam (30%)**: This is mainly a written cumulative exam that covers all materials covered in the course. To pass the course, a student should have a total grade of 70% or better and 60% or better on the final exam.

All 3 exams ( 2 midterms and final) will be in person on campus for the entire class.

### Grading Policy

The final grade is calculated primarily based on your performance on two midterms (35%) and the final exam (30%). The remaining 35% is allocated to weekly lab work and project(s), online homework assignments, and in-class and group participation. Detailed grade breakdown is shown below:

Table . Grade Distribution

| **Assignments or Exams** | **Points** |
| --- | --- |
| Online Homework | 15% |
| Lab work, Project | 15% |
| Participation, Classwork | 10% |
| Mid-Term 1 | 15% |
| Mid-Term 2 | 15% |
| Final | 30% |
| Total | **100%** |

NOTE: The final exam is comprehensive, and to pass the course, a grade of 60% or better on the final is required.

### Grading Standards, and Criteria

In this course, the plus/minus system will be used.

The grade breakdown is as follows:

Table . Outstanding

| **Grade** | **Lowest Score %** |
| --- | --- |
| A+ | 97 |
| A | 93 |
| A- | 90 |

Table . Good

| **Grade** | **Lowest Score %** |
| --- | --- |
| B+ | 87 |
| B | 83 |
| B- | 80 |

Table . Acceptable

| **Grade** | **Lowest Score %** |
| --- | --- |
| C+ | 77 |
| C | 73 |
| C- | 70 |

Table . Poor

| **Grade** | **Lowest Score %** |
| --- | --- |
| D+ | 67 |
| D | 63 |
| D- | 60 |
| F | 0 |

Students must earn a grade of C (1.7) or better in this course to receive credit. Students earning grades of D+ or lower must repeat the course.

Keep all assignments and exams returned to you so that any discrepancies can be easily and fairly resolved. The instructor may authenticate your work via an in-person interview outside class time.

### Late Assignments

Late assignments may not be accepted (receiving 0 points), or if accepted, will have penalty to be fair to those who always submit their work on time All assignments have their own posted due dates and students are responsible for checking the due dates and completing the assignments on time.

### Makeup Assignment/Exams

One or more lowest grades from online lab, and classwork items will be dropped. The exact number of dropped items depends on the number of grades in each category. No other make-up for missed work will be considered.

Missed exams, only if due to documented emergencies and at instructor's discretion, will be considered for make-up, if it is reported ahead of time.

## Attendance and Code of Conducts

### Attendance Policy

Students who (are not completely enrolled and) miss the first day of the class without notifying the instructor within 24 hours may be denied admission.

Students who miss any of the first four classes may be dropped by the instructor.

Students are responsible for dropping the course if they do not wish to continue with their enrollment.

Attendance (or absenteeism) impacts the grades and students are responsible for all announcements made in the class (e.g., changes made to the syllabus and due dates, additional materials covered, etc.). You need to be in class for the entire time of the class, and participate in class activities.

To address any absenteeism out of your control, one (or two) of the lowest grades for some assignment groups may be dropped, See the Grading Section of the Syllabus.

### Classroom Etiquette

Each student is expected to conduct themselves in a professional manner during the class - taking full advantage of the learning opportunities available.

Disruptive behaviors shall be avoided during class.

For in-person classes, disruptive behaviors include, but not limited to:

* Unauthorized use of electronic communication devices and computers.
* Showing up late, leaving early, or taking frequent breaks out of the classroom.
* Speaking during the lecture.
* Any behavior that creates distractions and impedes the learning of others.

## CSUF Policy on Disabled Students

The University requires students with disabilities to register within the first week of classes with the Office of Disability Support Services (DSS), located in GH-101 and at (657) 278 – 3112 in order to receive prescribed accommodations and support services appropriate to their disability. Students requesting accommodations should inform their instructors during the first week of classes about any disability or special needs that may require specific arrangements/accommodations related to attending class sessions, completing course assignments, writing papers or quizzes, tests or examinations.

Go to [DSS Website](http://www.fullerton.edu/dss/) for further information about the services provided by DSS to students and the obligations of faculty in making accommodations for students registered with the office of DSS.

## Academic Integrity

Students are expected to maintain a high standard of academic integrity.  The University Catalog and the Class Schedule provide a detailed description of Academic Dishonesty under “University Regulations,” or read this link on CSUF’s policy on [Academic Dishonesty](http://www.fullerton.edu/senate/publications_policies_resolutions/ups/UPS%20300/UPS%20300.021.pdf). These policies apply to all students, whether attending online or on-campus.

## **General Educational Resources**

### University Learning Center

The goal of the [University Learning Center](https://www.fullerton.edu/ulc/) is to provide all CSUF students with academic support in an inviting and contemporary environment.

### Writing Center

The [Writing Center](http://english.fullerton.edu/writing_center/) offers 30-minute, one-on-one peer tutoring sessions and workshops, aimed at providing assistance for all written assignments and student writing concerns.

### Other Important Dates

February 5th (Monday): Last day for students to ADD with a permit.  All permits expire at midnight.

Last day for students to DROP without a grade of “W”.  Students drop using Titan Online.

February 19th (Monday): Census Date.

Last day the Math Department will be flexible on the approval of late withdrawal requests. Beginning Tuesday, February 20th, students must have a serious and compelling reason for non-medical withdrawal requests and must provide supporting documentation for their reason.

Aril 19th (Friday): Last day to withdraw with a truly serious and compelling reason that is clearly beyond the student’s control.  Students must document their reason.

May 3rd (Friday) Last day to withdraw for medical reasons. Students must document their reason.

The tentative weekly schedule is provided on Canvas.

For other important dates, go to [Registration Calendars](http://records.fullerton.edu/apps/calendars.aspx).

**Disclaimer:** Please note that this syllabus may be subject to change. Any changes will be announced in class.