

STAT-C1000: INTRODUCTION TO STATISTICS

Effective Term

Fall 2025

CC Approval

11/01/2024

AS Approval

11/14/2024

BOT Approval

11/21/2024

COCI Approval

11/26/2024

SECTION A - Course Data Elements

CB04 Credit Status

Credit - Degree Applicable

Discipline

Minimum Qualifications	And/Or
Mathematics (Master's Degree)	

Subject Code

STAT - Statistics

Course Number

C1000

Department

Mathematics (MATH)

Division

Mathematics (MATH)

Full Course Title

Introduction to Statistics

Short Title

Introduction to Statistics

CB03 TOP Code

1701.00 - Mathematics, General

CB08 Basic Skills Status

NBS - Not Basic Skills

CB09 SAM Code

E - Non-Occupational

Rationale

Updating to reflect changes based on Common Course Numbering template.

SECTION B - Course Description

Catalog Course Description

This course is an introduction to statistical thinking and processes, including methods and concepts for discovery and decision-making using data. Topics include descriptive statistics; probability and sampling distributions; statistical inference; correlation and linear regression; analysis of variance, chi-squared, and t-tests; and application of technology for statistical analysis including the

interpretation of the relevance of the statistical findings. Students apply methods and processes to applications using data from a broad range of disciplines.

Catalog Course Description Part II

N/A

SECTION C - Conditions on Enrollment

Open Entry/Open Exit

No

Repeatability

Not Repeatable

Grading Options

Letter Grade or Pass/No Pass

Allow Audit

Yes

Requisites

Prerequisite(s)

Placement as determined by the college's multiple measures assessment process or completion of a course taught at or above the level of intermediate algebra.

Requisite Justification

Requisite Description

Non-course Requisite

Level of Scrutiny

Required by 4-Year Institution

Explanation

UC has designated only Statistics courses with a pre-requisite of Intermediate Algebra will be accepted for transfer. Although Intermediate Algebra is not taught at this college or in the surrounding area, any student with a passing grade in Intermediate Algebra would be placed into this course.

Appropriate placement has been determined using the extensive research of CAP, and has been verified effective with local data according to AB705 interpretation and the Chancellor's Office.

SECTION D - Course Standards

Is this course variable unit?

No

Units

3.00000

Lecture Hours

36

Activity Hours

36

Outside of Class Hours

90

Total Contact Hours

72

Total Student Hours

162

Distance Education Approval**Is this course offered through Distance Education?**

Yes

Online Delivery Methods

DE Modalities	Permanent or Emergency Only?
Entirely Online	Permanent
Hybrid	Permanent
Online with Proctored Exams	Permanent

SECTION E - Course Content**Student Learning Outcomes**

Upon satisfactory completion of the course, students will be able to:	
1.	Analyze data using graphs and descriptive statistics.
2.	Calculate and interpret probabilities.
3.	Analyze and interpret data using confidence intervals and hypothesis tests.

Course Objectives

Upon satisfactory completion of the course, students will be able to:	
1.	Assess how data were collected and recognize how data collection affects what conclusions can be drawn from the data.
2.	Identify appropriate graphs and summary statistics for variables and relationships between them and correctly interpret information from graphs and summary statistics.
3.	Describe and apply probability concepts and distributions.
4.	Demonstrate an understanding of, and ability to use, basic ideas of statistical processes, including hypothesis tests and confidence interval estimation.
5.	Identify appropriate statistical techniques and use technology-based statistical analysis to describe, interpret, and communicate results.
6.	Evaluate ethical issues in statistical practice.

Course Content**Part I:**

1. Introduction to statistical thinking and processes
2. Technology-based statistical analysis
3. Applications using data from four or more of the following disciplines: administration of justice, business, economics, education, health science, information technology, life science, physical science, political science, psychology, and social science
4. Units (subjects/cases) and variables in a data set, including multivariable data sets
5. Categorical and quantitative variables
6. Sampling methods, concerns, and limitations, including bias and random variability
7. Observational studies and experiments
8. Data summaries, visualizations, and descriptive statistics
9. Probability concepts
10. Probability distributions (e.g., binomial, normal)
11. Sampling distributions and the Central Limit Theorem
12. Estimation and confidence intervals
13. Hypothesis testing, including t-tests for one and two populations, Chi-squared test(s), and ANOVA; and interpretations of results
14. Regression, including correlation and linear regression equations

Part II:

1. Analysis of large data sets using statistical software (for example StatCrunch or Excel)

Methods of Instruction

Methods of Instruction

Types	Examples of learning activities
Activity	Activity Examples: Use the Mean vs Median applet in StatCrunch to analyze the effect of outliers on measures of center. Use the Correlation by Eye applet in StatCrunch to visualize the connection between the linear correlation coefficient and scatterplot.
Discussion	Discussion Examples: Meet with your group to discuss the linear correlation coefficient values you have given to each scatterplot following the Correlation by Eye activity.
Lab	Optional labs may include but are not limited to student exploration of analysis involving the following; Measures of Center and Variation, Linear Regression, Probability Distributions, Confidence Intervals, Hypothesis Testing and ANOVA.
Other	Required instruction and use of technology for data analysis beyond the use of a graphing calculator. Labs and activities involving technology based data analysis, such as R or StatCrunch, will include operating instructions.

Instructor-Initiated Online Contact Types

Announcements/Bulletin Boards
 Chat Rooms
 Discussion Boards
 E-mail Communication
 Telephone Conversations
 Video or Teleconferencing

Student-Initiated Online Contact Types

Chat Rooms
 Discussions
 Group Work

Course design is accessible

Yes

Methods of Evaluation

Methods of Evaluation

Types	Examples of classroom assessments
Other	Examples of potential methods of evaluation used to observe or measure students' achievement of course outcomes and objectives could include but are not limited to quizzes, exams, laboratory work, field journals, projects, research demonstrations, etc.
Exams/Tests	Traditional exams including a final exam.
Quizzes	Quizzes on class material.
Projects	Data Analysis projects/labs.
Homework	Homework problems from textbook.

Other

The Mathematics Department maintains a commitment to diverse teaching methods in courses emphasizing vital quantitative skills and qualitative reasoning ability. To that end, it is expected that sufficient formative assessments will be given to students that in frequency, length and rigor adequately assess both quantitative skills and qualitative reasoning.

Sample assessment questions follow.

1. Using the given data, calculate the most appropriate measures of center and variation and interpret them in context.
2. Analyze the following data to describe the relationship between cricket chirps/minute and ambient temperature.
3. Does the given data provide evidence that the proportion of students successfully transferring to a four-year university from community college A is higher than that from community college B? Use a full hypothesis test to support your conclusion.

Assignments

Reading Assignments

Example 1: Read the section on observations and experiments and be ready to discuss the content.

Writing Assignments

Example 1 - Online or Paper Homework: Complete assigned exercises from applicable section in the text.

Example 2 - Lab: Analyze the data set to describe the relationship between cricket chirps/minute and ambient temperature.

SECTION F - Textbooks and Instructional Materials

Material Type

Textbook

Author

Open Learning Initiative (OLI)

Title

Concepts in Statistics

Publisher

Open Learning Initiative through Carnegie Mellon University

Year

2023

Rationale

This web-based text includes a rigorous approach to most content required in the COR, as well as a GAISE viewpoint and the option to integrate StatCrunch technology instructions. Guidelines for Assessment and Instruction in Statistics Education (GAISE) recommendations, from the American Statistical Association, have been accepted and approved by the department. Instructor must supplement instruction for Binomial Random Variables and ANOVA not contained in the text.

ISBN

2818440008115

Material Type

Textbook

Author

Gould, R., Wong, R., Ryan, C.

Title

Introductory Statistics: Exploring the World Through Data

Edition/Version

4e

Publisher

Pearson

Year

2025

Rationale

Recommended by the Chancellor's Office as one representative textbook for the course.

ISBN #

9780138242145

Material Type

Other required materials/supplies

Description

Each listed text has the option to include additional algebra review materials.

Material Type

Other required materials/supplies

Description

Statistical analysis platform, beyond the use of a graphing calculator, is required. Individual instructors will choose the platform, such as R, Statcrunch or Excel. StatCrunch instructions may be integrated into each listed text.

Material Type

Open Educational Resource (OER)

Author

Çetinkaya-Runde, M. Hardin, J.

Title

Introduction to Modern Statistics

Edition/Version

2nd

Publisher

Open Intro

Year

2024

ISBN #

<https://www.openintro.org/book/ims/>

Material Type

Textbook

Author

Peck, R., Case, C.

Title

Statistics: Learning From Data

Edition/Version

3rd

Publisher

Cengage

Year

2024

Rationale

Common Course Numbering Recommendation

ISBN #

9780357758298

Material Type

Open Educational Resource (OER)

Author

Illowsky, B., Dean, S.

Title

Introductory Statistics

Edition/Version

2nd

Publisher

OpenStax

Year

2023

ISBN #

<https://openstax.org/details/books/introductory-statistics-2e>

Material Type

Open Educational Resource (OER)

Author

The Dana Center Mathematics Pathways, Charles A. Dana Center

Title

Introductory Statistics: Analyzing Data with Purpose

Publisher

University of Texas at Austin

Year

2021

ISBN #

<https://www.utdanacenter.org/products/introductory-statistics>

Course Codes (Admin Only)

ASSIST Update

No

CB00 State ID

CCC000602743

CB10 Cooperative Work Experience Status

N - Is Not Part of a Cooperative Work Experience Education Program

CB11 Course Classification Status

Y - Credit Course

CB13 Special Class Status

N - The Course is Not an Approved Special Class

CB23 Funding Agency Category

Y - Not Applicable (Funding Not Used)

CB24 Program Course Status

Program Applicable

Allow Pass/No Pass

Yes

Only Pass/No Pass

No