

Spring 2023 Course Descriptions as of 01/04/2023 08:07 PM

Information in Browse Course Catalog is subject to change. Information is term specific. Please refer to the appropriate term when searching for course content. Key to Course Descriptions may be found at: http://rcs.registrar.arizona.edu/course_descriptions_key.

Statistics and Data Science (DATA)

DATA 195M: Math and SDS Major Colloquium (1 unit)

Description: Seminar-style course designed to introduce math department majors to the mathematical community at large, support new majors as they adjust to university life and expectations, and build students' written and oral communication skills, especially on math-related topics.

Grading basis: Alternative Grading: S, P, F

Career: Undergraduate

Course Components: Colloquium Required

Also offered as: MATH 195M

Course typically offered:

Main Campus: Fall, Spring

Home department: Mathematics

Course Equivalencies: Cross Listed

Freshman Colloquia: Freshman Colloquia

DATA 199: Independent Study (1 - 6 units)

Description: Qualified students working on an individual basis with professors who have agreed to supervise such work.

Grading basis: Alternative Grading: S, P, F

Career: Undergraduate

Course Components: Independent Study Required

Repeatable: Course can be repeated a maximum of 99 times.

Course typically offered:

Main Campus: Fall, Spring, Summer

Online Campus: Fall, Spring, Summer

Field trip: NA

-SA represents a Student Abroad & Student Exchange offering

-CC represents a Correspondence Course offering

May Be Offered Departments may offer this component in some semesters. See the Schedule of Classes for term-specific offerings.

DATA 199H: Honors Independent Study (1 - 5 units)

Description: Qualified students working on an individual basis with professors who have agreed to supervise such work.

Grading basis: Regular Grades

Career: Undergraduate

Course Components: Independent Study Required

Repeatable: Course can be repeated a maximum of 99 times.

Course typically offered:

Main Campus: Fall, Spring, Summer

Online Campus: Fall, Spring, Summer

Field trip: N/A

Enrollment requirement: Student must be active in the Honors College.

Honors Course: Honors Course

DATA 293: Internship (1 - 10 units)

Description: Specialized work on an individual basis, consisting of training and practice in actual service in a technical, business, or government establishment.

Grading basis: Alternative Grading: S, P, F

Career: Undergraduate

Course Components: Independent Study Required

Repeatable: Course can be repeated for a maximum of 10 units.

Course typically offered:

Main Campus: Fall, Spring, Summer

Online Campus: Fall, Spring, Summer

Field trip: NA

DATA 299: Independent Study (1 - 5 units)

Description: Qualified students working on an individual basis with professors who have agreed to supervise such work.

Grading basis: Alternative Grading: S, P, F

Career: Undergraduate

Course Components: Independent Study Required

Repeatable: Course can be repeated a maximum of 99 times.

Course typically offered:

Main Campus: Fall, Spring, Summer

Online Campus: Fall, Spring, Summer

Field trip: NA

-SA represents a Student Abroad & Student Exchange offering

-CC represents a Correspondence Course offering

May Be Offered Departments may offer this component in some semesters. See the Schedule of Classes for term-specific offerings.

DATA 299H: Honors Independent Study (1 - 5 units)

Description: Qualified students working on an individual basis with professors who have agreed to supervise such work.

Grading basis: Regular Grades

Career: Undergraduate

Course Components: Independent Study Required

Repeatable: Course can be repeated a maximum of 99 times.

Course typically offered:

Main Campus: Fall, Spring, Summer

Online Campus: Fall, Spring, Summer

Field trip: NA

Enrollment requirement: Student must be active in the Honors College.

Honors Course: Honors Course

DATA 361: Elements of Statistics using Calculus (3 units)

Description: Focusing on statistical inference, the course has two goals in addition to teaching the statistical techniques. One is theoretical: To explore the links between probability, statistics and calculus, showing students the mathematical underpinnings. The second is applied: Provides experience with real data sets, many bearing on education. Students who complete this course will be prepared to teach high school level statistics courses.

Grading basis: Regular Grades

Career: Undergraduate

Course Components: Lecture Required

Also offered as: MATH 361

Course typically offered:

Main Campus: Spring

Recommendations and additional information: Credit allowed for only one of MATH 361 or MATH 363 or DATA 363

Home department: Mathematics

Enrollment requirement: MATH 223.

Approved Grading: Pass/Fail Option

Honors Course: Honors Contract

-SA represents a Student Abroad & Student Exchange offering

-CC represents a Correspondence Course offering

May Be Offered Departments may offer this component in some semesters. See the Schedule of Classes for term-specific offerings.

DATA 362: Introduction to Probability Theory (3 units)

Description: Sample spaces, random variables and their properties, with considerable emphasis on applications. Computer exercises and hands-on activities will be used in class to introduce the concepts.

Grading basis: Student Option ABCDE/PF

Career: Undergraduate

Course Components: Lecture Required

Equivalent to: MATV 362

Also offered as: MATH 362

Course typically offered:

Main Campus: Fall

Home department: Mathematics

Enrollment requirement: MATH 223.

Approved Grading: Pass/Fail Option

DATA 363: Introduction to Statistical Methods (3 units)

Description: An applications-oriented calculus-based statistics course with an introduction to statistical software. Course topics: Organizing data numerically and visually. Axioms of probability, conditional probability and independence. Random variables and expectation with emphasis on parametric families. Law of large numbers and central limit theorem. Estimation, bias and variance, confidence intervals. Hypothesis testing, significance and power. Likelihood ratio tests such as proportion tests, t-tests, chi-square tests, and analysis of variance.

Grading basis: Regular Grades

Career: Undergraduate

Course Components: Lecture Required

Also offered as: MATH 363

Course typically offered:

Main Campus: Fall, Spring

Recommendations and additional information: Ability to program, preferably in Python.

Enrollment requirement: Math 223 and (CSC 110 or ISTA 130) and have completed Math 310, 313, or 215, or are registered for Math 310 or 313.

Course Equivalencies: Cross Listed

Honors Course: Honors Contract

-SA represents a Student Abroad & Student Exchange offering

-CC represents a Correspondence Course offering

May Be Offered Departments may offer this component in some semesters. See the Schedule of Classes for term-specific offerings.

DATA 367: Statistical Methods in Sports Analytics (3 units)

Description: This course will introduce statistical methods and training in statistical consulting aimed to analyze sports by using observational data on players and teams. With an emphasis on statistical inference and modeling, the students will learn how to analyze a sports related problem, utilize statistical tools to find a solution and interpret those results to sports professionals. The course will also offer the opportunity to focus on a semester long sports analytics project in partnership with a University of Arizona athletics team.

Grading basis: Regular Grades

Career: Undergraduate

Course Components: Discussion Required
Lecture Required

Course typically offered:

Main Campus: Fall, Spring

Recommendations and additional information: It is also recommended that students have experience in programming language, like Java, Python, R or MatLab.

Enrollment requirement: MATH129 (or higher) or MATH263.

Student Engagement Activity: Discovery

Student Engagement Competency: Interdisciplinarity

DATA 375: Introduction to Statistical Computing (3 units)

Description: Basic computing skills including random variable generation, Monte Carlo integration, visualization, optimization techniques, re-sampling methods, Bayesian approaches, and introduction to statistical computing environments (R and Python). Material will provide hands-on experience with real world problems. It is expected that students have prior experience in a programming language, preferably Python.

Grading basis: Regular Grades

Career: Undergraduate

Course Components: Lecture Required

Course typically offered:

Main Campus: Fall, Spring

Online Campus: Fall, Spring

Enrollment requirement: MATH 363 or DATA 363 AND (MATH 313 or MATH 310 or MATH 215)

-SA represents a Student Abroad & Student Exchange offering

-CC represents a Correspondence Course offering

May Be Offered Departments may offer this component in some semesters. See the Schedule of Classes for term-specific offerings.

DATA 391: Preceptorship (1 - 6 units)

Description: Specialized work on an individual basis, consisting of instruction and practice in actual service to a department, program, or discipline.

Grading basis: Alternative Grading: S, P, F

Career: Undergraduate

Course Components: Independent Study Required

Repeatable: Course can be repeated a maximum of 4 times.

Course typically offered:

Main Campus: Fall, Spring, Summer

Online Campus: Fall, Spring, Summer

Field trip: NA>

Student Engagement Activity: Leadership

Student Engagement Competency: Professionalism

DATA 392: Directed Research (1 - 6 units)

Description: Individual research under the guidance of faculty.

Grading basis: Regular Grades

Career: Undergraduate

Course Components: Independent Study Required

Repeatable: Course can be repeated for a maximum of 12 units.

Course typically offered:

Main Campus: Fall, Spring, Summer

Online Campus: Fall, Spring, Summer

Field trip: NA

Student Engagement Activity: Discovery

Student Engagement Competency: Innovation and Creativity

DATA 393: Internship (1 - 10 units)

Description: Specialized work on an individual basis, consisting of training and practice in actual service in a technical, business, or government establishment.

Grading basis: Alternative Grading: S, P, F

Career: Undergraduate

Course Components: Independent Study Required

Repeatable: Course can be repeated for a maximum of 10 units.

Course typically offered:

Main Campus: Fall, Spring, Summer

Online Campus: Fall, Spring, Summer

Field trip: NA

-SA represents a Student Abroad & Student Exchange offering

-CC represents a Correspondence Course offering

May Be Offered Departments may offer this component in some semesters. See the Schedule of Classes for term-specific offerings.

DATA 395M: Career Exploration in Mathematics and Data Science (1 unit)

Description: Colloquium-style course designed to help advanced math and SDS majors with career preparation, applications to internships, research programs and graduate school. We will also introduce topics of current research interest in mathematics and data science.

Grading basis: Alternative Grading: S, P, F

Career: Undergraduate

Course Components: Colloquium Required

Also offered as: MATH 395M

Course typically offered:

Main Campus: Fall

Home department: Mathematics

Enrollment requirement: MATH 323 or 355 or MATH/DATA 363.

Course Equivalencies: Cross Listed

DATA 396T: Topics in Undergraduate Statistics & Data Science (3 units)

Description: Selected topics from modern statistics and data science. Content varies. The primary purpose of the course is to provide students the opportunity to gain knowledge, experience, and exposure to topics in modern statistics and data science beyond what is presented in the core subjects required for the major.

Grading basis: Regular Grades

Career: Undergraduate

Course Components: Seminar Required

Repeatable: Course can be repeated a maximum of 3 times.

Course typically offered:

Main Campus: Spring

Field trip: N/A

DATA 399: Independent Study (1 - 5 units)

Description: Qualified students working on an individual basis with professors who have agreed to supervise such work.

Grading basis: Alternative Grading: S, P, F

Career: Undergraduate

Course Components: Independent Study Required

Repeatable: Course can be repeated a maximum of 99 times.

Course typically offered:

Main Campus: Fall, Spring, Summer

Online Campus: Fall, Spring, Summer

Field trip: NA

-SA represents a Student Abroad & Student Exchange offering

-CC represents a Correspondence Course offering

May Be Offered Departments may offer this component in some semesters. See the Schedule of Classes for term-specific offerings.

DATA 399H: Honors Independent Study (1 - 5 units)

Description: Qualified students working on an individual basis with professors who have agreed to supervise such work.

Grading basis: Regular Grades

Career: Undergraduate

Course Components: Independent Study Required

Repeatable: Course can be repeated a maximum of 99 times.

Course typically offered:

Main Campus: Fall, Spring, Summer

Online Campus: Fall, Spring, Summer

Field trip: NA

Enrollment requirement: Student must be active in the Honors College.

Honors Course: Honors Course

DATA 462: Financial Math (3 units)

Description: Analysis of cash flows from an actuarial viewpoint. Interest theory, annuities, bonds, loans, and related fixed income portfolios, rate of return, yield, duration, immunization, and related concepts.

Grading basis: Regular Grades

Career: Undergraduate

Course Components: Lecture Required

Also offered as: MATH 462

Course typically offered:

Main Campus: Spring

Home department: Mathematics

Enrollment requirement: MATH 223.

Honors Course: Honors Contract

-SA represents a Student Abroad & Student Exchange offering

-CC represents a Correspondence Course offering

May Be Offered Departments may offer this component in some semesters. See the Schedule of Classes for term-specific offerings.

DATA 467: Introduction to Applied Regression and Generalized Linear Models (3 units)

Description: An applied course in linear regression, analysis of variance, and generalized linear models for students who have completed a course in basic statistical methods. Emphasis is on practical methods of data analysis and their interpretation, using statistical software such as R. Course content includes model building; linear regression; regression and residual diagnostics; basic experimental designs such as one-factor and two-factor ANOVA; block designs and random-effects models; introduction to exponential families and generalized linear models, including logistic and Poisson regression. Some emphasis will be devoted to matrix representations and efficient computational techniques.

Grading basis: Regular Grades

Career: Undergraduate

Course Components: Lecture Required

Course typically offered:

Main Campus: Fall

Field trip: None

Enrollment requirement: (MATH 313 or MATH 310 or MATH 215) and (DATA 363 or MATH 363).

DATA 468: Applied Stochastic Processes (3 units)

Description: Applications of Gaussian and Markov processes and renewal theory; Wiener and Poisson processes, queues.

Grading basis: Regular Grades

Career: Undergraduate

Course Components: Lecture Required

Equivalent to: STAT 468

Also offered as: MATH 468

Co-convened with:

Course typically offered:

Main Campus: Spring

Home department: Mathematics

Enrollment requirement: MATH 464.

DATA 491: Preceptorship (1 - 6 units)

Description: Specialized work on an individual basis, consisting of instruction and practice in actual service to a department, program, or discipline.

Grading basis: Alternative Grading: S, P, F

Career: Undergraduate

Course Components: Independent Study Required

Repeatable: Course can be repeated a maximum of 10 times.

Course typically offered:

Main Campus: Fall, Spring, Summer

Field trip: None

-SA represents a Student Abroad & Student Exchange offering

-CC represents a Correspondence Course offering

May Be Offered Departments may offer this component in some semesters. See the Schedule of Classes for term-specific offerings.

DATA 492: Directed Research (1 - 6 units)

Description: Individual research under the guidance of faculty.

Grading basis: Regular Grades

Career: Undergraduate

Course Components: Independent Study Required

Repeatable: Course can be repeated a maximum of 99 times.

Course typically offered:

Main Campus: Fall, Spring, Summer

Online Campus: Fall, Spring, Summer

Student Engagement Activity: Discovery

Student Engagement Competency: Innovation and Creativity

DATA 493: Internship (1 - 10 units)

Description: Specialized work on an individual basis, consisting of training and practice in actual service in a technical, business, or government establishment.

Grading basis: Alternative Grading: S, P, F

Career: Undergraduate

Course Components: Independent Study Required

Repeatable: Course can be repeated a maximum of 99 times.

Course typically offered:

Main Campus: Fall, Spring, Summer

Online Campus: Fall, Spring, Summer

Field trip: NA

DATA 496T: Advanced Topics in Undergraduate Statistics & Data Science (3 units)

Description: Selected topics from modern statistics and data science. Content varies. The primary purpose of the course is to provide students the opportunity to gain knowledge, experience, and exposure to topics in modern statistics and data science beyond what is presented in the core subjects required for the major.

Grading basis: Regular Grades

Career: Undergraduate

Course Components: Seminar Required

Repeatable: Course can be repeated a maximum of 1 times.

Course typically offered:

Main Campus: Spring

-SA represents a Student Abroad & Student Exchange offering

-CC represents a Correspondence Course offering

May Be Offered Departments may offer this component in some semesters. See the Schedule of Classes for term-specific offerings.

DATA 498: Senior Capstone (1 - 3 units)

Description: A culminating experience for majors involving a substantive project that demonstrates a synthesis of learning accumulated in the major, including broadly comprehensive knowledge of the discipline and its methodologies. Senior standing required.

Grading basis: Regular Grades

Career: Undergraduate

Course Components: Independent Study Required

Repeatable: Course can be repeated a maximum of 3 times.

Course typically offered:

Main Campus: Fall, Spring, Summer

Field trip: NA

DATA 498A: Capstone for Statistics and Data Science (3 units)

Description: A capstone experience that exposes students to the development, analysis, evaluation, and communication of statistical and data-scientific analyses for physical, biological, social, and other data-analytic problems.

Grading basis: Regular Grades

Career: Undergraduate

Course Components: Lecture Required

Course typically offered:

Main Campus: Spring

Enrollment requirement: DATA 375 AND MATH 464 AND DATA 467. Must also be co-enrolled in or have completed MATH 466.

Student Engagement Activity: Discovery

Student Engagement Competency: Professionalism

Writing Emphasis: Writing Emphasis Course

DATA 498H: Honors Thesis (3 units)

Description: An honors thesis is required of all the students graduating with honors. Students ordinarily sign up for this course as a two-semester sequence. The first semester the student performs research under the supervision of a faculty member; the second semester the student writes an honors thesis.

Grading basis: Regular Grades

Career: Undergraduate

Course Components: Independent Study Required

Repeatable: Course can be repeated a maximum of 3 times.

Course typically offered:

Main Campus: Fall, Spring, Summer

Field trip: NA

Enrollment requirement: Student must be active in the Honors College.

Honors Course: Honors Course

Writing Emphasis: Writing Emphasis Course

-SA represents a Student Abroad & Student Exchange offering

-CC represents a Correspondence Course offering

May Be Offered Departments may offer this component in some semesters. See the Schedule of Classes for term-specific offerings.

DATA 499: Independent Study (1 - 5 units)

Description: Qualified students working on an individual basis with professors who have agreed to supervise such work.

Grading basis: Alternative Grading: S, P, F

Career: Undergraduate

Course Components: Independent Study Required

Repeatable: Course can be repeated a maximum of 1 times.

Course typically offered:

Main Campus: Fall, Spring, Summer

Field trip: NA

DATA 499H: Honors Independent Study (1 - 5 units)

Description: Qualified students working on an individual basis with professors who have agreed to supervise such work.

Grading basis: Regular Grades

Career: Undergraduate

Course Components: Independent Study Required

Repeatable: Course can be repeated a maximum of 99 times.

Course typically offered:

Main Campus: Fall, Spring, Summer

Field trip: NA

Enrollment requirement: Student must be active in the Honors College.

Honors Course: Honors Course

-SA represents a Student Abroad & Student Exchange offering

-CC represents a Correspondence Course offering

May Be Offered Departments may offer this component in some semesters. See the Schedule of Classes for term-specific offerings.