

# APPLIED DATA ANALYTICS AND VISUALIZATION (ADAV1-UC)

---

## ADAV1-UC 1000 Applied Data Analytics I (4 Credits)

*Typically offered Fall*

Data Science is the process of learning from data in order to gain useful predictive insights. This course introduces methods for five key aspects of data science: data munging: cleaning, and sampling; data management; exploratory data analysis; prediction; and communication of results.

**Grading:** UC SPS Graded

**Repeatable for additional credit:** No

**Prerequisites:** (ISMM1-UC 746 OR ISMM1-UC 702 OR MATH1-UC 1172 OR MATH1-UC 1180).

## ADAV1-UC 1001 Applied Data Analytics II (4 Credits)

*Typically offered occasionally*

The course focuses on data mining and machine learning algorithms for analyzing very large amounts of data. The emphasis will be on Map Reduce as a tool for creating parallel algorithms that can process very large amounts of data. Topics include: Frequent Itemsets and Association Rules; Near Neighbor Search in High Dimensional Data; Locality Sensitive Hashing (LSH); Dimensionality Reduction; Recommendation Systems; Clustering, Link Analysis; Large scale supervised machine learning; Data streams; Mining the Web for Structured Data; and Web Advertising.

**Grading:** UC SPS Graded

**Repeatable for additional credit:** No

**Prerequisites:** ADAV1-UC 1005.

## ADAV1-UC 1005 Data Visualization (4 Credits)

*Typically offered Fall*

Data visualization is the visual representation of data in the form of visuals, such as charts, maps, graphs, and diagrams. These infographics are used in nearly every industry, including journalism, entertainment, education, marketing, and business. This course introduces the fundamental principles that inform data visualization: creative processes, cognitive thinking, semiotics, and neuroscience.

**Grading:** UC SPS Graded

**Repeatable for additional credit:** No

**Prerequisites:** (MATH1-UC 1171 OR MATH1-UC 1172 OR ISMM1-UC 742).

## ADAV1-UC 1010 Designing Data: Infographics (4 Credits)

*Typically offered occasionally*

This course focuses on how to merge data, technology, and design in order to convey exciting, engaging, and informative imagery for a wide variety of businesses and organizations. Students learn how to gather data, identify significant "story" points, and use digital design tools to create infographics for target audiences.

**Grading:** UC SPS Graded

**Repeatable for additional credit:** No

## ADAV1-UC 1015 Visual Analytics (4 Credits)

*Typically offered occasionally*

Visual Analytics explores the advanced storytelling techniques that inform data visualization. In this course, we focus on the work of noted practitioners, review the artifacts most commonly associated with the visualization of data, and discuss the philosophy of a user-centered approach. The course immerses students in the creative process, the discipline of sketching and revising, and the use of tools required to discern engaging and informative forms of data visualization.

**Grading:** UC SPS Graded

**Repeatable for additional credit:** No

**Prerequisites:** ADAV1-UC 1010.

## ADAV1-UC 7990 Spc Tpcs in Applied Data Analytics and Visualization: (2-4 Credits)

*Typically offered occasionally*

This course provides an opportunity for intensive study of special topics in Data Analytics and Visualization. It focuses on a different theme each time the course is offered. The specific topic is listed in the course schedule for the corresponding semester. This course can be taken for 2 to 4 credits.

**Grading:** UC SPS Graded

**Repeatable for additional credit:** Yes

## ADAV1-UC 7991 Senior Project: Seminar (4 Credits)

*Typically offered occasionally*

The seminar allows students to develop a project under the guidance of a faculty mentor. The seminar requires regular class attendance to discuss projects and to document them, as well as individual meetings with the mentor. Projects must be the student's individual, original work and include the product, the technical documentation or bibliography and a learning experience essay summarizing the research methodology or process and skills used. Prerequisite: Completion of at least 90 credits.

**Grading:** UC SPS Graded

**Repeatable for additional credit:** No

## ADAV1-UC 7992 Senior Project: Internship (4 Credits)

*Typically offered occasionally*

The internship provides an opportunity for students to use knowledge gained in their major combined with the knowledge provided by professionals in a variety of industry settings. Students are required to complete a minimum of 100 hours in the internship during the semester.

In addition to hours at their placement, they meet regularly with the internship coordinator, maintain weekly logs or journals, and complete a final learning-experience essay summarizing their learning outcomes, including samples of work completed. (Students' full-time jobs cannot serve as internships.) Prerequisite: Completion of at least 90 credits.

**Grading:** UC SPS Graded

**Repeatable for additional credit:** No

## ADAV1-UC 7993 Independent Study (4 Credits)

*Typically offered occasionally*

Students are assisted in defining and undertaking an individually designed Senior Project. They complete a research paper or a project related to Applied Data Analytics and Visualization. Students meet regularly and work closely with a Senior Project faculty members. The final result is the summation of work done in the Bachelor of Science Applied Data Analytics and Visualization Program.

**Grading:** UC SPS Graded

**Repeatable for additional credit:** Yes