

CS:2420 Analyzing Data for Informatics

Instructor: Inés Zigrino Curto, PhD

E-mail: ines-curto@uiowa.edu

Time: 3:30P - 4:45P Tuesday & Thursday E246 [AJB](#)

TA & instructor office hours: please see ICON

Description

The course introduces data analytics through an understanding of data analysis pipelines including data extraction and collection, data modeling and organization, and the use of tools for data analysis. Topics include the collection of data from a variety of sources, mapping of data to appropriate data structures, basic relational database concepts and use, analysis through probability and statistics, use of basic data mining and machine learning tools, and an understanding of privacy issues. The course emphasizes the use of Python Data Science modules for data analysis and visualization.

zyBook (inclusive access)

www.zybooks.com

Book Code: UIOWACS2420CurtoSpring2024

zyBook title: Analyzing Data for Informatics

Assignments and percentage weights on grade

In-class Projects.....	29 %
In-class Exercises	23 %
zyBook Participation Activities.....	6 %
Participation & Att	2 %
Quizzes	16 % on ICON (MC, short prog)
Final Exam.....	24 % on ICON (MC, short prog)

Grading System

+/- grading scale, the class is graded on a curve.

Course Organization

- Numpy arrays
- Pandas series, dataframes
- Vector operations
- Data visualization
- Seaborn
- Pivot, melt, maps, lambda functions, bins
- Data acquisition

- Data cleansing
- Descriptive statistics, outliers
- Joins, concatenations
- Databases, SQL
- Standardization and normalization
- Dimensionality reduction
- Principal component analysis PCA
- Supervised and unsupervised learning
- Evaluating models
- Linear and logistic regression
- K Neighbors classifier
- K Means clustering
- Decision tree classifiers
- 3D visualizations

Late Assignments

5% will be deducted for lateness after the due date and time. Assignments that are overdue by more than 2 days will not be accepted.

Excuses in general

Any documented excuses for missing class and/or not participating in an activity will not transform in gradebook points

Course documentation

Documentation for the course (including syllabus, reading materials, links, laboratory assignments, grade records and announcements) can be found on-line. You must check the Course ICON frequently, to keep track of current information and announcements. *You must check your grades at least once a week, to spot any data entry errors or problems that may occur. We will not change grading information that is older than one week.*

Excused Absences, missing an assignment

General university policy applies to documented excuses (illness, death, and athletic trips.) Among the authorized activities covered by the University of Iowa's policies on excused absences from examinations are mandatory religious obligations (for a list of recognized occasions please see the Registrar's Office site). Excuses must be given prior to the event.

Missing classes for more than a week

If you would be missing three or more classes for a reason that corresponds to the University of Iowa's policy on "Excused Absences from Examinations" you must call the Registrar's Office about your situation. The Registrar's Office will send proper notification to all your instructors.

What Constitutes a Valid Excuse?

If you wish to be considered for an excused absence, as a first step you should complete an Absence from Class form available at <http://registrar.uiowa.edu/absence-class>

Chain of Command

For any problems or concerns related to this class, please discuss the issue first with me; I will make every effort to find a satisfactory solution. If not happy with my solution, and a second instance is required, please contact Prof. Segre, alberto-segre@uiowa.edu.

Disabilities

The University of Iowa is committed to providing an educational experience that is accessible to all students. A student may request academic accommodations for a disability (which includes but is not limited to mental health, attention, learning, vision, and physical or health-related conditions). A student seeking academic accommodations should first register with Student Disability Services (SDS) and then meet with the course instructor privately in the instructor's office to make arrangements. Reasonable accommodations are established through an interactive process among the student, instructor, and SDS. For more information, see <http://sds.studentlife.uiowa.edu>.

Academic Honesty

The College of Liberal Arts and Sciences expects all students to do their own work, as stated in the [CLAS Code of Academic Honesty](#). Instructors fail any assignment that shows evidence of plagiarism or other forms of cheating, also reporting the student's name to the College. A student reported to College for cheating is placed on disciplinary probation; a student reported twice is suspended or expelled.

All programming assignments are individual and *must be done entirely by the student submitting the assignment*. Any sharing or copying of files at any stage of the development of those files is considered cheating! Making changes or adding more work to a copied source file does not change the situation, it is still a copied file. All students involved in copying files will be reported to the college. Hiring a tutor to do your work or paying to a website to do your programs is considered cheating. However, you might discuss assignments with other students at lab and ask questions to the TA. Getting help is Ok, as long as you do not copy someone else's work. No collaboration is allowed on quizzes and exams.