
DATA SCIENCE: METHODS AND CONTEXT in Spring 2021 (CS1060)

Course Code	CS1060	Professor(s)	Claudia Roda
Prerequisites	None	Office Number	PL-1
Class Schedule	F: 15:20-16:40 in Q-704 T: 10:35-11:55 in Q-704	Office Hours	by appointment
Credits	4	Email	croda@aup.edu
Semester	Spring 2021	Office Tel. Ext.	701

Course Description

In today's data-driven world, having the basic skills needed to think critically and ethically about problems using data is a requirement for many intellectual quests, creative pursuits and careers.

This project-based course introduces data science thinking by looking at the whole cycle of activities involved in data science projects: data acquisition, cleaning, management, analysis, presentation and preservation. Based on real world applications of data science, we will consider the challenges involved in, for example, "asking good questions", "appropriately collecting data", "telling a compelling and useful data-based story". We will explore the ethical questions posed by many data science related endeavours while also practicing skills and using tools for manipulating data. Throughout this process students engage with questions and acquire skills essential for modern communication while also reflecting on what it takes to act responsibly in a culturally and socially diverse world. Students will become acquainted with several tools for computer-mediated collaboration. By the end of the course students will be able to think about problems with rigor and creativity, will be capable to ethically apply data science skills to address those problems, and will have a good understanding of the theoretical, mathematical and computational challenges involved in data science.

Course Learning Outcomes

General Education

GLACC

The Global Liberal Arts Core Curriculum (GLACC) degree requirements include the following categories of courses:

- Integrative Inquiry (coded CCI)
- Experiential learning (coded CCX)
- Research, Interpretation, and Writing (coded CCE)
- Digital Literacy and Communication (coded CCD)
- Disciplinary Research Methods and Writing (coded CCR)
- Quantitative Reasoning (coded CCM)
- Experimental Reasoning Course with Lab (coded CCS)
- Expression Française (coded FR)
- AUP Capstone (coded CCC)

This course can be used to fulfill the CCI requirement and as such has the following learning outcomes:

- Exploring and Engaging Difference: Students will think critically about cultural and social difference; they will identify and understand power structures that determine hierarchies and inequalities that can relate to race, ethnicity, gender, nationhood, religion, or class. (GLACC LO3)
- Civic and Ethical Engagement: Students will demonstrate awareness of ethical considerations relating to specific societal problems, values, or practices (historical or contemporary; global or local) and learn to articulate possible solutions to prominent challenges facing societies and institutions today so as to become engaged actors at various levels in our interconnected world. (GLACC LO4)

Course Outline

A detailed description of the course is available on the course Web site:

<http://ac.aup.fr/roda/cs1060>. Note that content schedule, assignments, readings, etc. are updated online during the semester therefore you should make sure you check the course site regularly.

The course is roughly organized in the following parts:

PART I (about three weeks):

- The place of data and data science in our society
- Simple tools to perform basic data manipulation and visualization
- Privacy
- Data Science Process: data acquisition, preparation, exploration/analysis and presentation.

PART II (about three weeks):

- visualization through geographical information systems
- QGIS (QGIS is a free and open-source cross-platform desktop geographic information system application that supports viewing, editing, and analysis of geospatial data)

PART III (about two weeks):

- Research methods
- Data acquisition
- Surveys methodologies and tools

PART IV (about four weeks)

- Introduction to data manipulation with Python

PART V (about two weeks distributed over the semester)

- Ethical and environmental issues related to data science

Textbooks

This course doesn't have any textbook.

Attendance Policy

Students studying at The American University of Paris are expected to attend ALL scheduled classes, and in case of absence, should contact their professors to explain the situation. It is the student's responsibility to be aware of any specific attendance policy that a faculty member might have set in the course syllabus. The French Department, for example, has its own attendance policy, and students are responsible for compliance. Academic Affairs will excuse an absence for students' participation in study trips related to their courses.

Attendance at all exams is mandatory.

IN ALL CASES OF MISSED COURSE MEETINGS, THE RESPONSIBILITY FOR COMMUNICATION WITH THE PROFESSOR, AND FOR ARRANGING TO MAKE UP MISSED WORK, RESTS SOLELY WITH THE STUDENT.

Whether an absence is excused or not is ALWAYS up to the discretion of the professor or the department. Unexcused absences can result in a low or failing participation grade. In the case of excessive absences, it is up to the professor or the department to decide if the student will receive an “F” for the course. An instructor may recommend that a student withdraw, if absences have made it impossible to continue in the course at a satisfactory level.

Students must be mindful of this policy when making their travel arrangements, and especially during the Drop/Add and Exam Periods. IT IS NOT POSSIBLE TO RESCHEDULE THE FINAL EXAM.

Covid-19 temporary amendments:

Students studying at The American University of Paris are STILL EXPECTED TO ATTEND ALL scheduled classes. Due to the Covid-19 pandemic, students will have the option of attending classes remotely when special circumstances apply. For example, when students are placed under quarantine by the French authorities or by their doctor, or when students present symptoms of Covid-19 and are directed, by their doctor or the AUP Health Office, to remain home. It is still the student's responsibility to be aware of any specific attendance policy that their professor might have set in the course syllabus. In particular, Students attending remotely from distant Time Zones should check with their professors about the specific attendance policy for remote learners.

Grading Policy

Class tests and assignments 25%

Midterm project 20%

Class participation 10%

Final project 45%

Typically, a grade of A will be above 90% and F below 50%.

Other
