

# DATA SCIENCE AND DESIGN FOR SOCIAL GOOD

ECE 491/FA 310

SYLLABUS, SPRING 2019

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## Instructors:

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Thursdays  
6:00 PM - 9:00 PM

Room 506CS

## Course Description and Objective

Information sourcing and visual communication play an integral part in helping non-profits identify and solve problems. In this interdisciplinary course, art, engineering and architecture students will collaborate with each other to utilize visual communication and machine learning to create infographic posters, websites, or installations. All data is provided by non-profits in the greater New York City Area.

This course will encourage students to stretch beyond their known field of study to create more complex and engaging forms of data visualization.

Lectures and guest critiques will provide insight into the world of information design and give a real-world context to the work made in the course.

## Attendance

Attendance is mandatory for every class. Projects must be completed and ready for presentation at the beginning of class. There will be a 5% grade deduction if a student has an unannounced or unexcused absence.

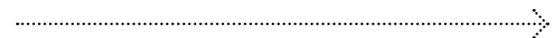
## Evaluation Criteria

70% Projects: By the end of the semester, groups are required to submit a minimum of 4 infographics and 2 short documents summarizing their methods and outcomes. See “Project #1” and “Project #2” on the following page.

20% Participation: All students are heavily encouraged to share their opinions and insights during group critiques.

10% Presentation: It is essential that groups maintain a professional approach while giving presentations to both internal parties and our non-profit partners. It is mandatory that all parties in the group speak during their presentations.

PROJECTS AND  
COURSE SEQUENCE



## PROJECTS

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### **Project #1: Exploratory Data Analysis Exercise**

**Assigned: January 17**

**Questions Due: January 24**

**Infographic Due: January 31**

Students will be placed into groups of 5-6 and will be assigned a random non-profit's dataset to explore. Through their exploration students must generate a minimum of 3 questions concerning the dataset. Students must then answer 1 of those 3 questions by generating an infographic (the result can be presented in either poster, interactive demo, or other appropriate formats.)

### **Project #2: Final Data Analysis Infographics**

**Assigned: January 31**

**Final Due: May 2**

Students will choose which non-profit they would like to work on the rest of the semester. As a group, students must investigate and propose a solution to all of the problems presented by their non-profit of choice. These results must be presented in either poster, website, interactive demo, or other appropriate formats. Groups must create a minimum of three infographics per group depending on group size and problems needed to be solved.

There will be two formal presentations to the class, project partners and other interested parties; A midterm solution proposal presentation and the final non-profit presentation.

### **Papers (2)**

**Assigned: January 31**

Groups must provide 2 short documents summarizing their methods and outcomes. These should be 1-3 pages that describe the following.

- **Midterm Solution Proposal Paper**

**Due: March 7**

- 1) A brief project description and goals
- 2) The methods of investigation

- **Final Paper**

**Due: May 2**

- 1) A brief project description
- 2) The methods of investigation
- 3) The biggest difficulties in this investigation
- 4) The particular solutions chosen and why
- 5) The results.

## COURSE SEQUENCE

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### **Week 1 January 17**

**Introduction to class / Non-profit presentation:** an overview of the course syllabus and expectations. Followed by a breakdown of the nonprofits and the questions they have prepared along with their data.

**Assignment:** Groups of 5-6 will be randomly assigned a nonprofit to create Project#1. They will split into those groups for the remainder of the class.

**Due:** Week 3 (January 31)

**Ice Breaker:** Groups will be tasked with collecting data about one another and their connection to Cooper. Students will then have the remainder of class to create an infographic sketch to present to the class.

**Week 2**  
January 24

**Data visualization presentation:** An in-depth look at the wide range of information design examples and applications.

**Machine Learning overview:** An overview of machine learning and its role in information design.

**Questions Due:** Group presentation / discussion

**Week 3**  
January 31

**Project #1,** Exploratory Data Analysis Exercise - Due. Class critique of Project #1

**Class Survey:** Students choose a non-profit to work on the rest of the semester. New groups will be announced before the end of class.

**Assignment:** Project #2 - Final Data Analysis Infographic s + Papers 1 and 2.

**Due:** Various Dates

*Time slots will be chosen for individual group meetings.*

**Week 4**  
February 7

Individual group meetings with instructors.

**Week 5**  
February 14

**Group critique:** Updated sketches that consider notes from the previous meeting.

**Week 6**  
February 21

**Group critique + Guest:** Updated sketches that consider notes from previous group critique.

**Week 7**  
February 28

**Guest lecture:** Will Shapiro and Topos.ai

**Week 8**  
March 7

**Midterm critiques + Guest:** Students must have a minimum of one finished infographic to present by this time accompanied by a clear plan for the rest of their infographics.

**Midterm Solution Proposal Paper Due**

**Week 9**  
March 14

SPRING BREAK

**Week 10**  
March 21

**Group critique:** Rough mock sketches of remaining infographic ideas.

**Week 11**  
March 28

**Guest lecture:** The Pudding

**Week 12**  
**April 4**

Women in engineering night

**Week 13**  
**April 11**

**Group critique + Guest:** Updated sketches that consider notes from previous group critique.

**Week 14**  
**April 18**

**Group critique:** Updated sketches that consider notes from previous group critique.

**Week 15**  
**April 25**

**FINAL Group critique + Guest:** Updated sketches that consider notes from previous group critique. The minimum of 3 infographics must be presented at this time.

**Week 16**  
**May 2**

**LAST CLASS:** Final non-profit partner presentations.