# CMPE 481 Data Analysis and Visualization

**Fall 2021-2022**

| **Instructor** | **Email** | **Office Location & Hours** |
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## Course Content

Part I - Data Analysis
- Introduction to Data Analysis
- Data Ecosystem
- Data Gathering, Wrangling/Munging
- Statistical Data Analysis
- Data Transformations (Attribute selection, discretizing, projections, sampling, cleansing, rescaling)
- Knowledge Representation (Tables, Linear Models, Trees, Rules, Clusters)
- Exploring One- and Two-Dimensional Data
- High-Dimensional Data Analysis
- Dimensionality Reduction for Visualization

Part II - Data Visualization
- Introduction to Information Visualization
- Principles of Human perception and Cognition in Visualization Design
- Data Abstraction
- Fundamental Graphs and Data Transformation
- Graphical Components and Mapping Strategies
- Working with Different Data Types (Temporal, Spatial, Spatio-Temporal, Networks, Trees, Text)
- Interactive Visualization
- Annotation and Composition
- Communicating Data-driven Findings

## Course Material

- Data Visualization - A Practical Introduction, Kieran Healy, 2019, Princeton University Press
- Data Science from Scratch, Joel Grus, 2015, O'Reilly

## Grading

- Projects, Assignments, In-class Assessments (70%)
- Final Take-Home Exam (30%)