Course and Professor Evaluations (CAPEs) Analysis

Team 21:
Aditya Kulkarni
Joshua Florez
Tunglin Yang
Tina Kafel

Goals

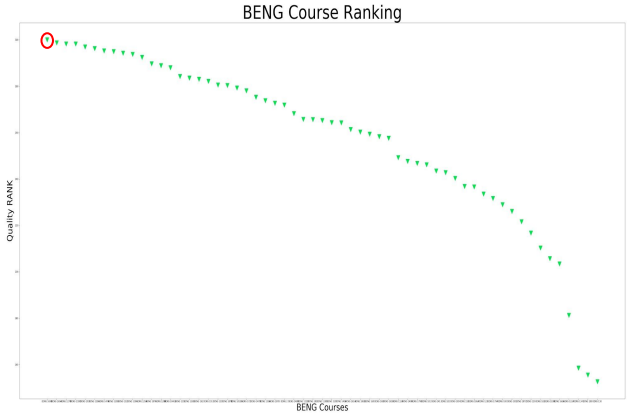
- Engineering classes are hard!
- Wanted to analyze Course and Professor Evaluations (CAPEs) for ECE, CSE, MAE, and Bioengineering departments
- Wanted to determine the quality of the engineering classes at UCSD

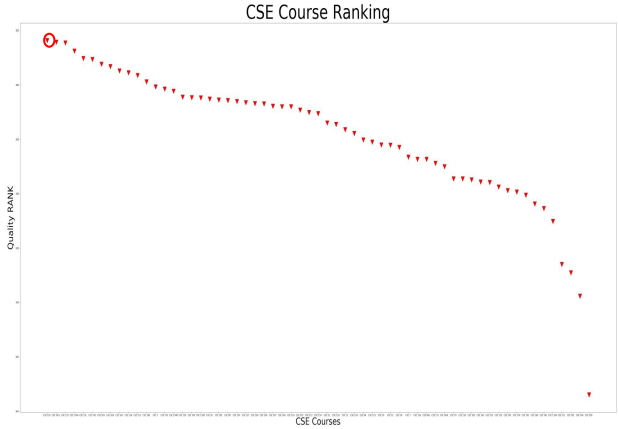
Datasets and Methodology

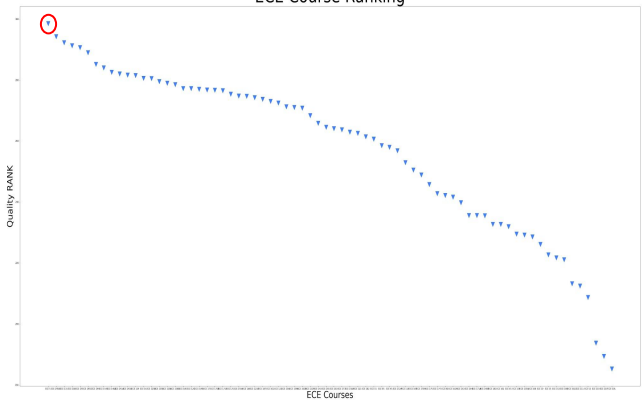
- Data is from cape.ucsd.edu
  - Dataset includes professors, courses taught in various quarters, class size, average expected grade, average received grade, and overall recommendation of the professors
  - Total number of students **enrolled**: 378055
  - Total **evaluations made**: 183966
  - That's means 48.67% of all students fill out CAPEs
- Methods for processing data:
  - Used Pandas to clean and preprocess the data
  - The dataset was then separated into four different groups based on the department and further analysis took place

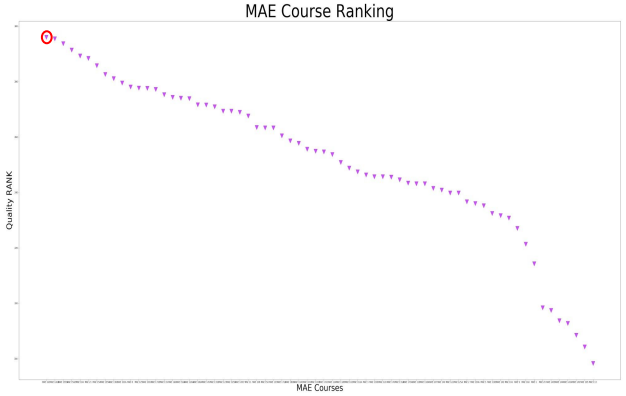
Best Course in Each Department?

- The ranking of these courses are based on **student feedback**
- Classes with most feedback and ***highest*** **recommended instructor**, **course**, and **grades received**



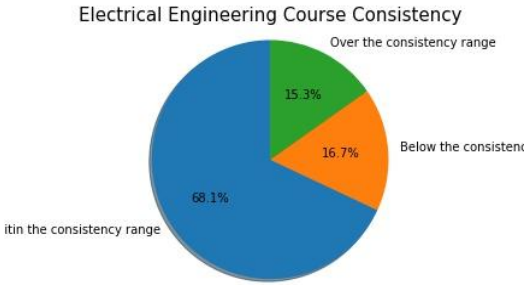


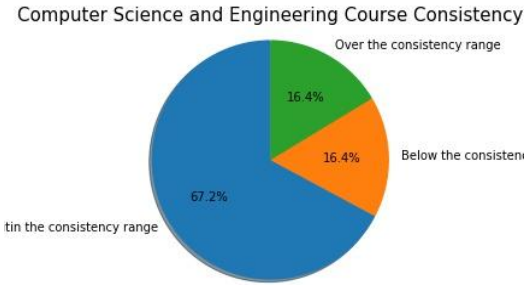


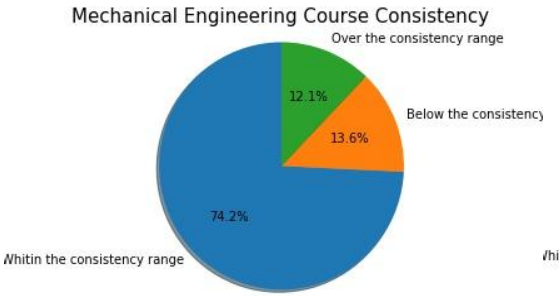


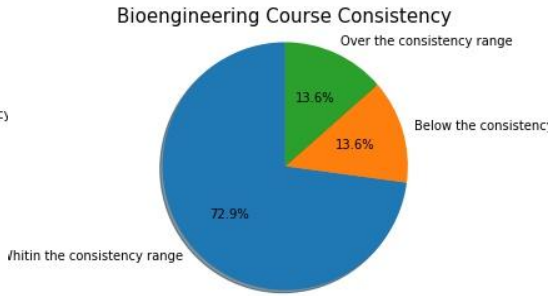
Which Department is the Toughest Grader?

- Consistency:
  - How often do students actually get the grades they expect in each department?
  - Courses with ratios closest to 1 are “most consistent”
- Results depend on:
  - Student feedbacks
  - Average of grades for all the unique courses
- Winner:
  1. **MAE**
  2. **BENG**
  3. **ECE**
  4. **CSE**



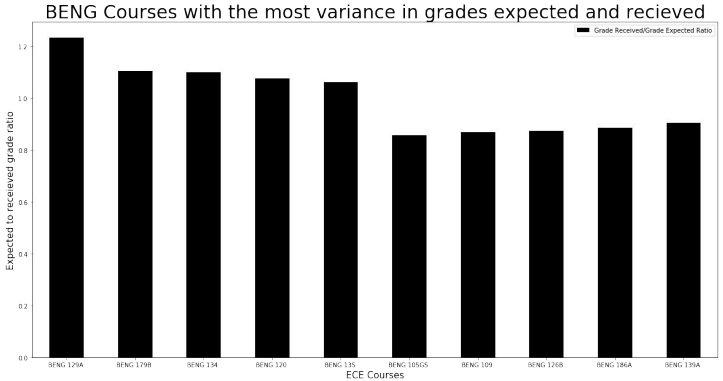


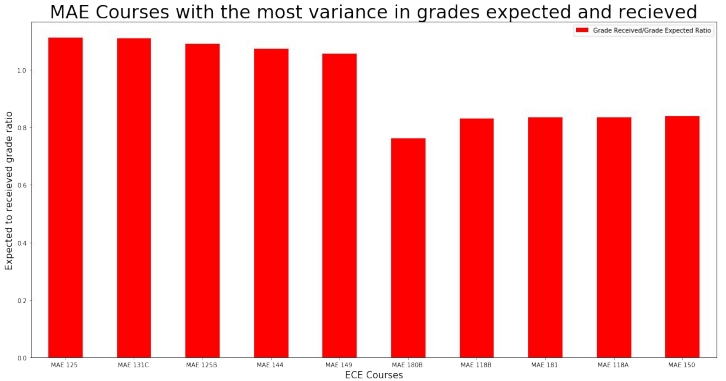


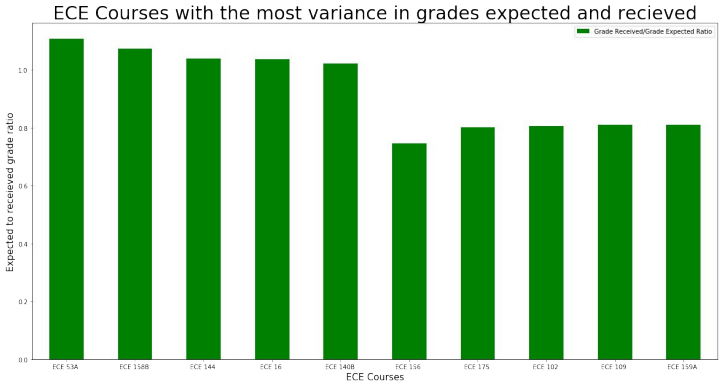


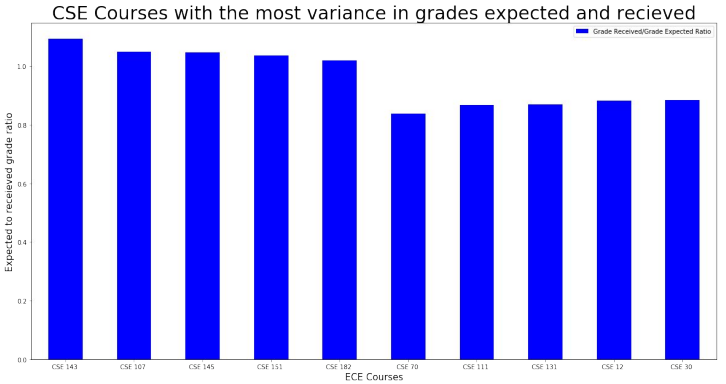
Easiest and Hardest Courses in Each Department:

- Engineering classes are HARD!
- Our definition of a tough class:
  - Students received lower grade than they thought they would
  - More study hours
  - Larger class size
- ECE:
  - **ECE153A** | **156**
- MAE
  - **125** | **180B**
- CSE:
  - **CSE143A** | **CSE70**
- BENG:
  - **129A** | **105GS**







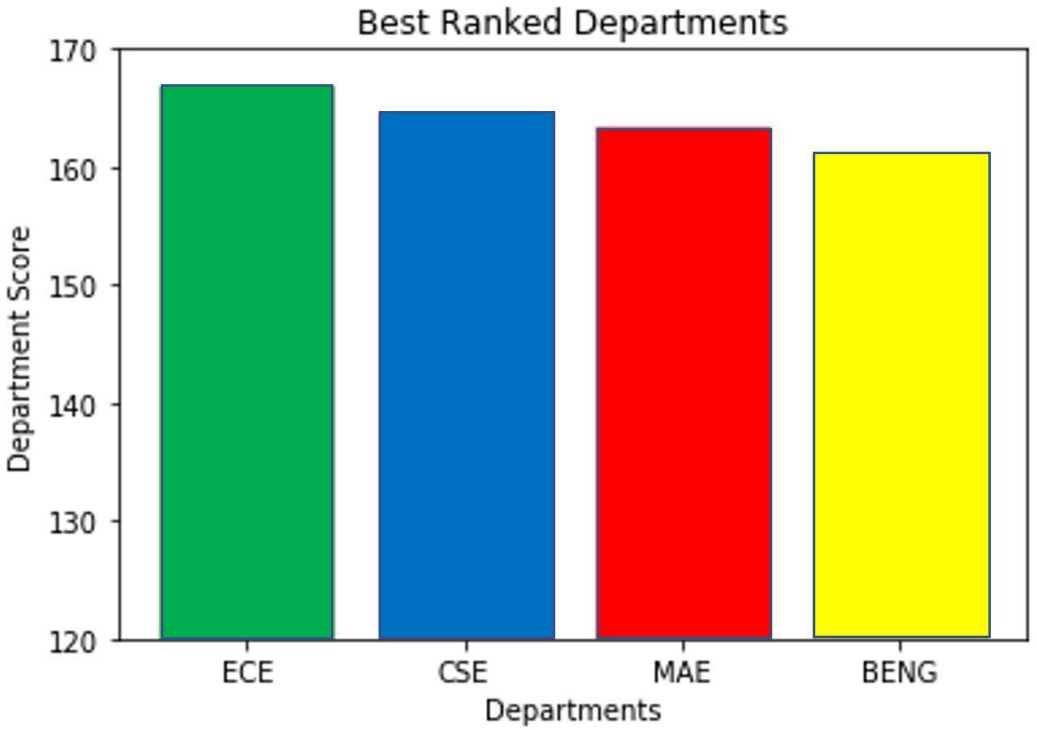


Overall Department Rankings

Calculated a “score” for each department:

avg of grades received + avg instructor recommendation percentage + avg course recommendation percentage - avg hours studied

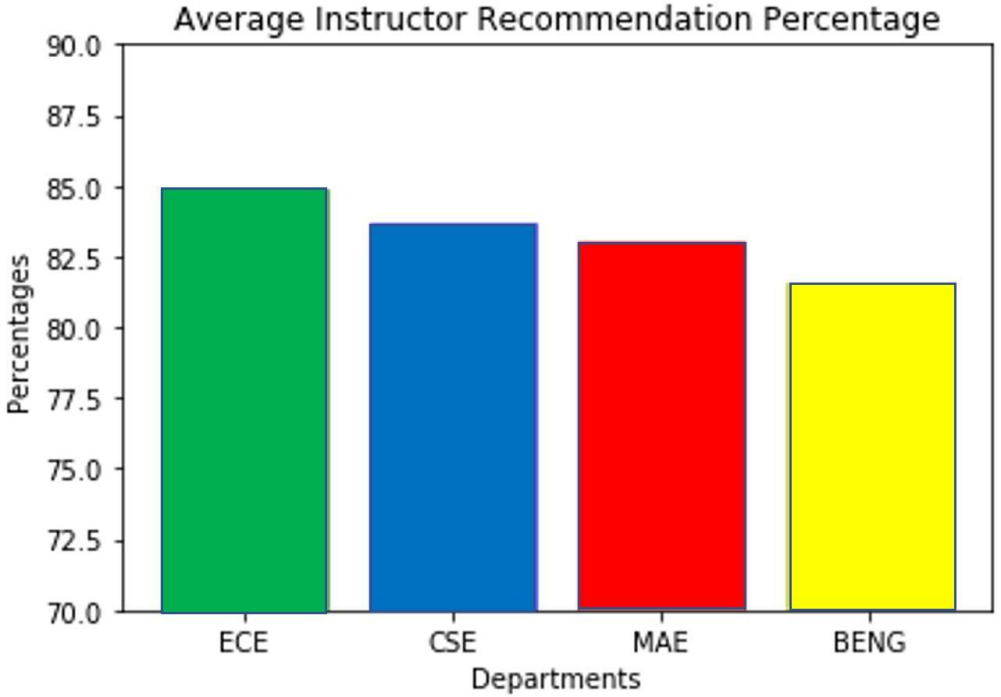
ECE Wins!



What Department Has the Highest Rated Instructors on Average?

The ECE department has the **highest recommendation percentage** on average.

The Bioengineering department has the **lowest** on average

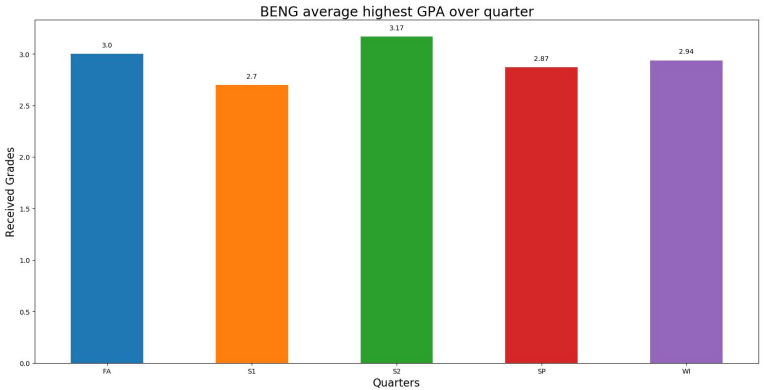


Quarter with lowest grades in each department

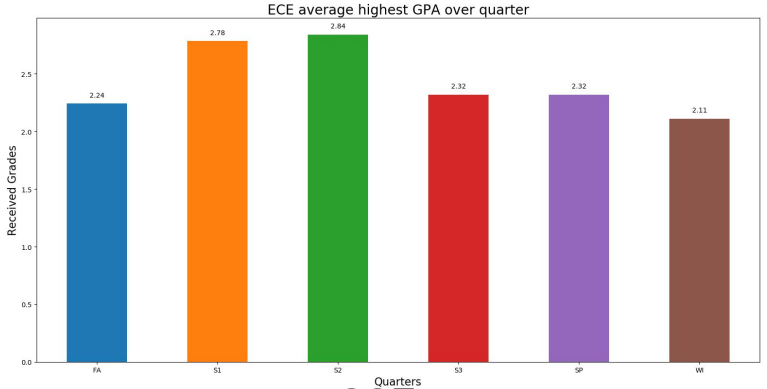
Lowest gpa in each quarter on average.
Winter has a lower gpa

ECE	WI	2.11
CSE	WI	2.36
MAE	WI	2.5
BENG	S1	2.7

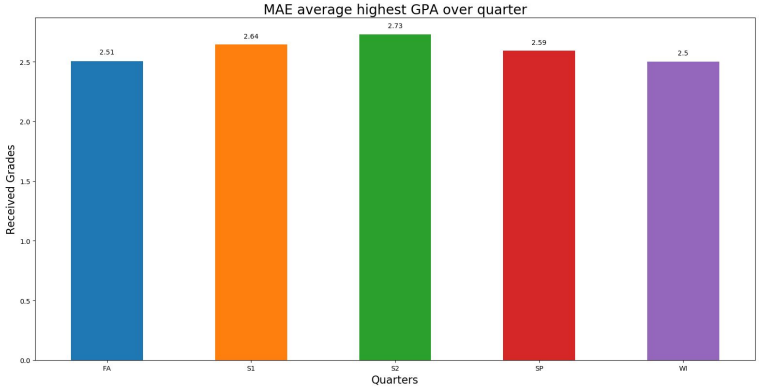
BENG



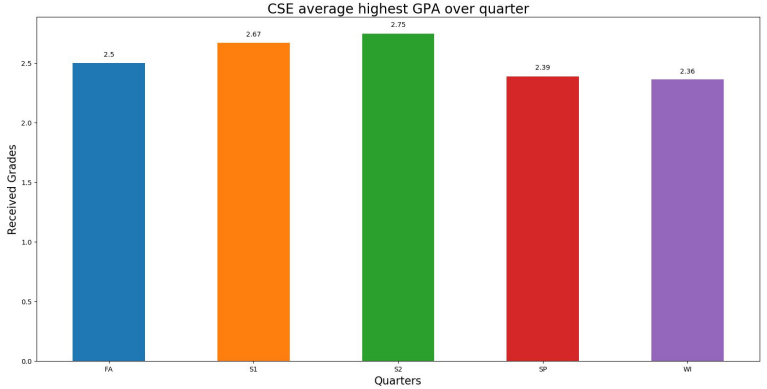
ECE



MAE



CSE

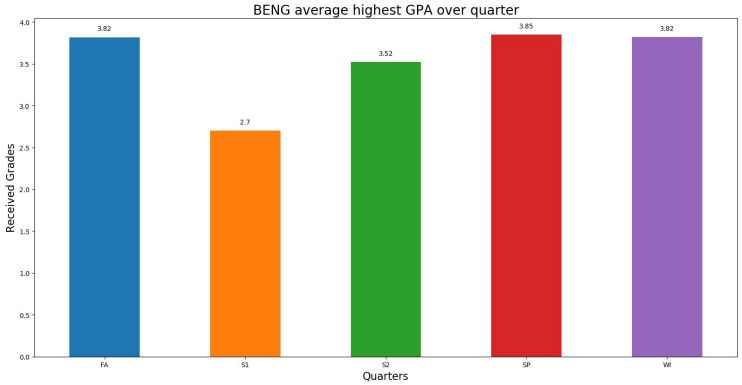


Quarter with Highest Grades in each Department

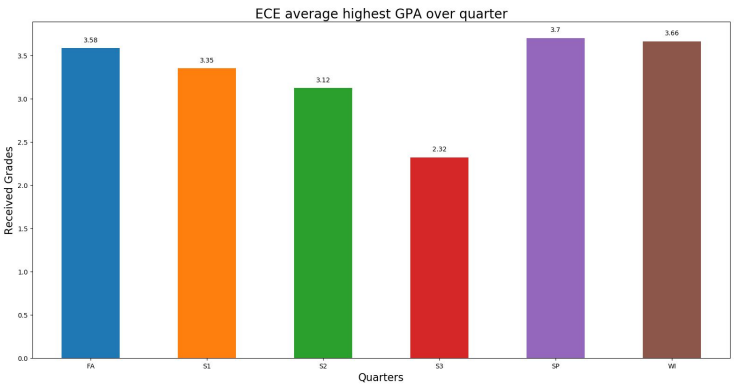
Highest gpa in each quarter on average.

Spring has higher grades.

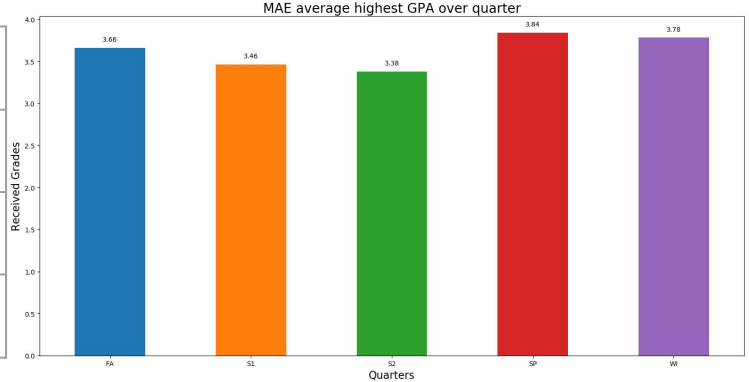
BENG



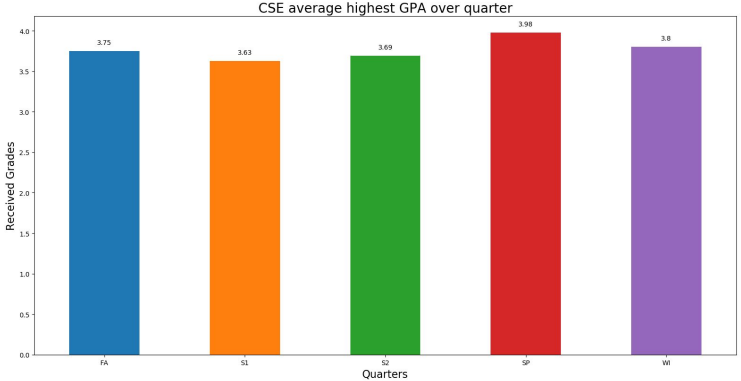
ECE



MAE



CSE



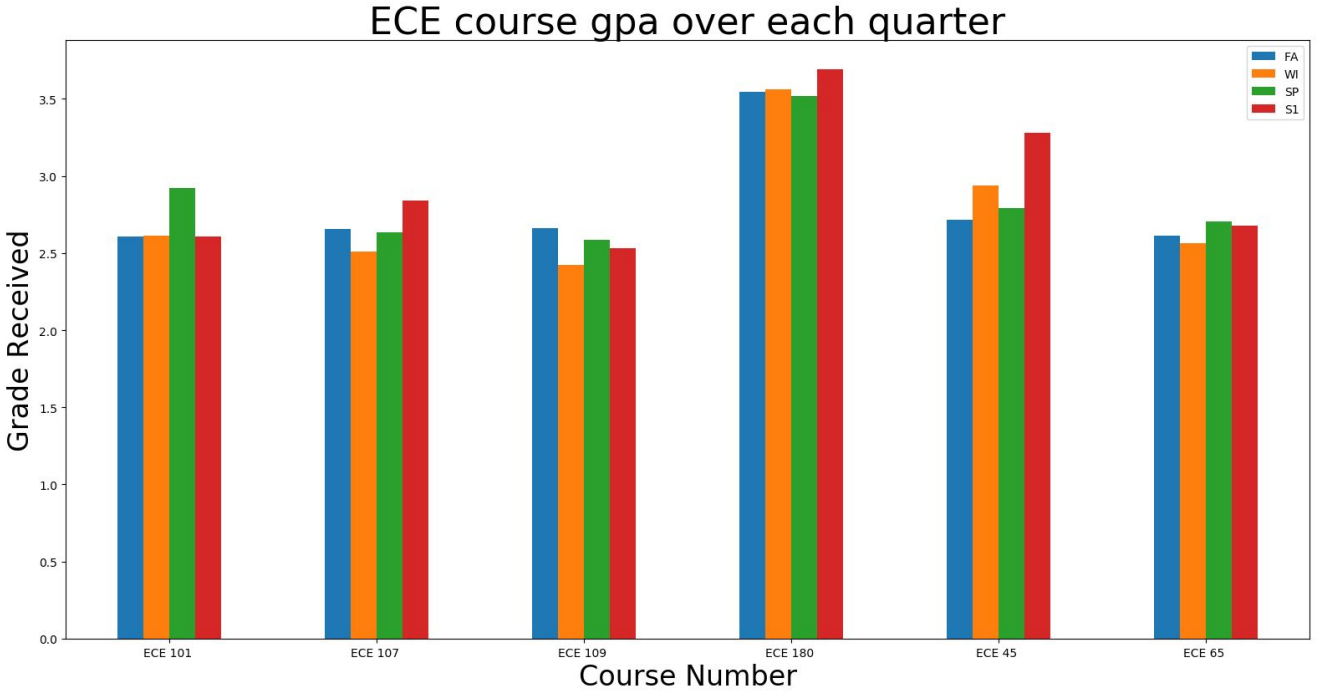
ECE	SP	3.7
CSE	SP	3.98
MAE	SP	3.84
BENG	SP	3.85

Is It True That Classes are Easier If Taken during Summer?

- Let’s take a look at each of the common courses!
- Common Courses: Courses that appeared in fall, winter, spring quarter and summer sessions.

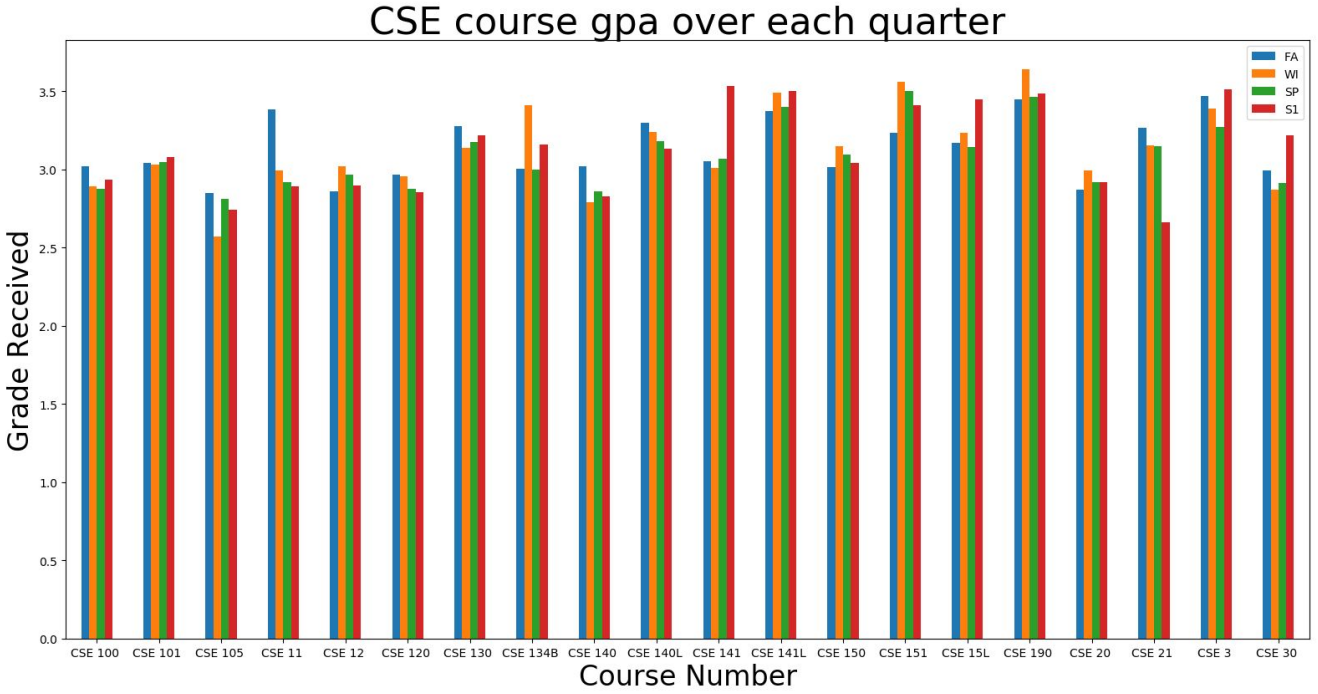
Is It True That Classes are Easier If Taken during Summer? - ECE

- Grades in summer are the **highest in 50%** of ECE courses



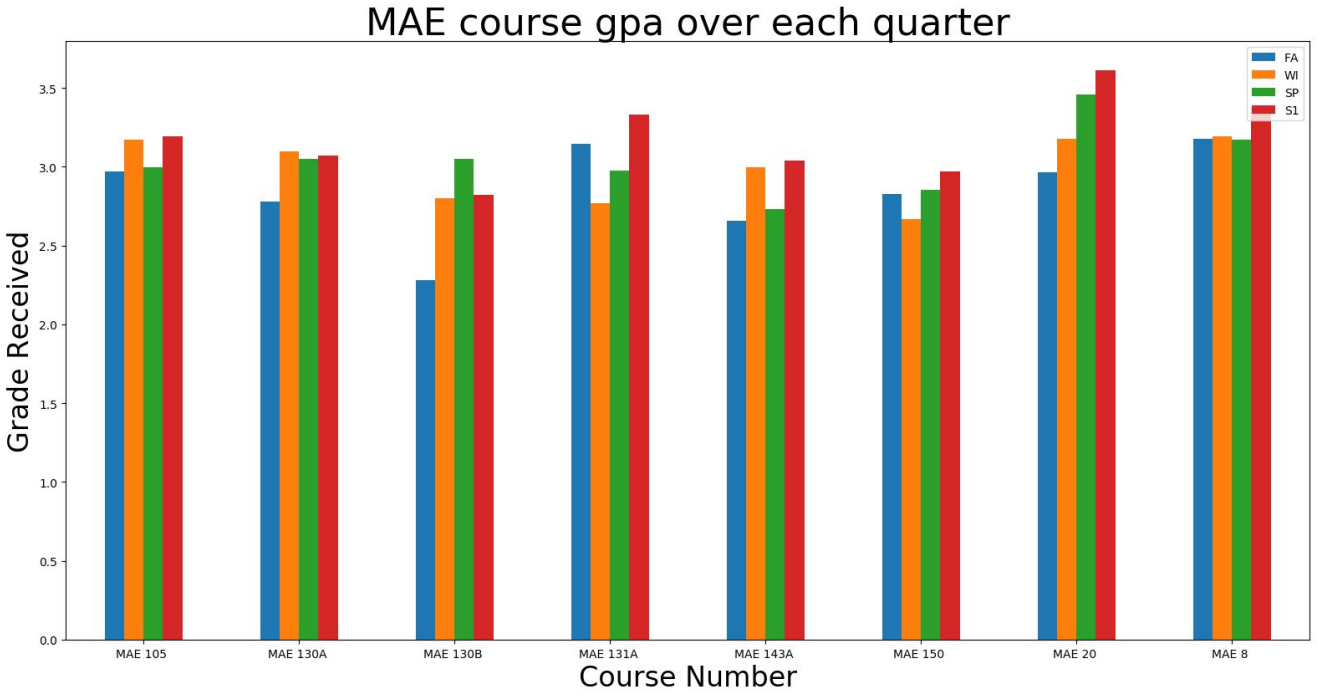
Is It True That Classes are Easier If Taken during Summer? - CSE

- Grades in summer are the **highest in 30%** of CSE courses



Is It True That Classes are Easier If Taken during Summer? - MAE

- Grades in summer is the **highest in 75%** of MAE courses



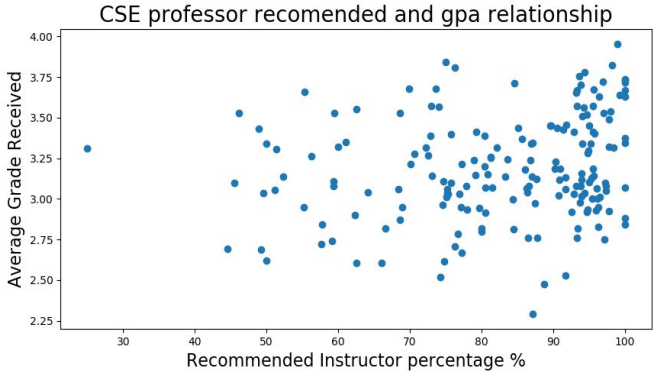
Is It True That Classes are Easier If Taken during Summer?

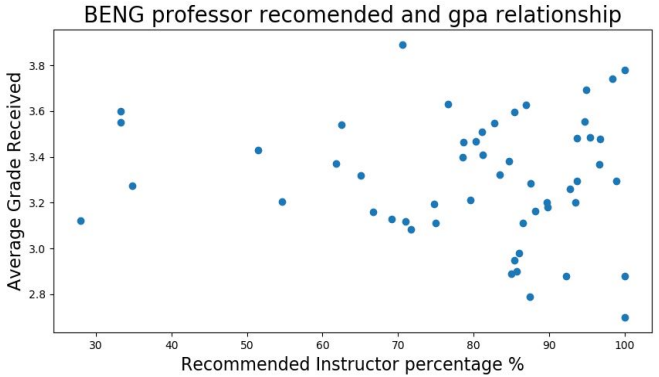
- True for 15 out of 34 courses
- Higher probability in ECE and MAE, less true in CSE
- Still depends on professor and students
- BENG has less data in summer so no result

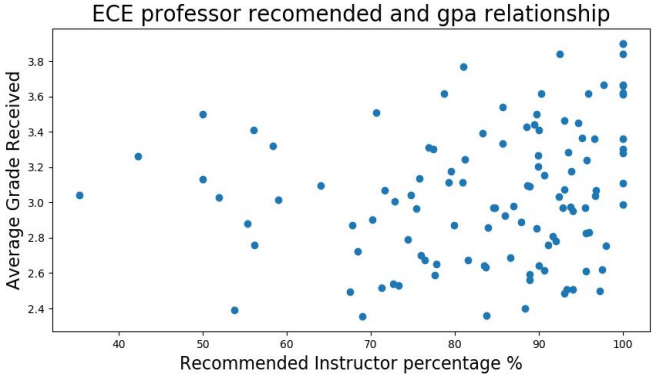
Is There a Relationship Between Grade Received and Whether the Professor is Recommended?

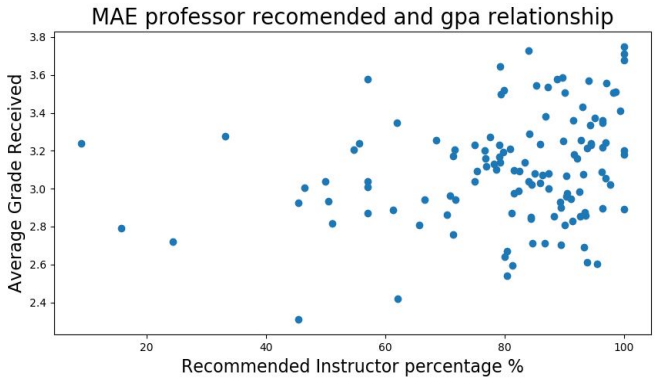
High professor recommendation does **not necessarily** lead to a high grade received

Department	Correction
ECE	0.197
CSE	0.198
MAE	0.249
BENG	-0.091



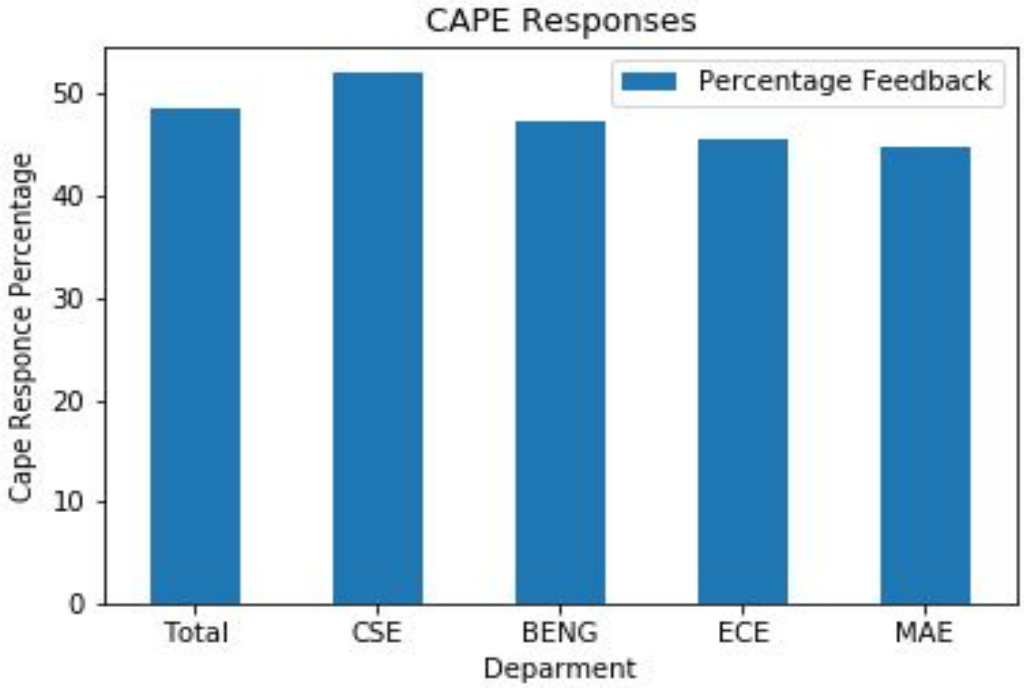






CAPE's Feedback Count

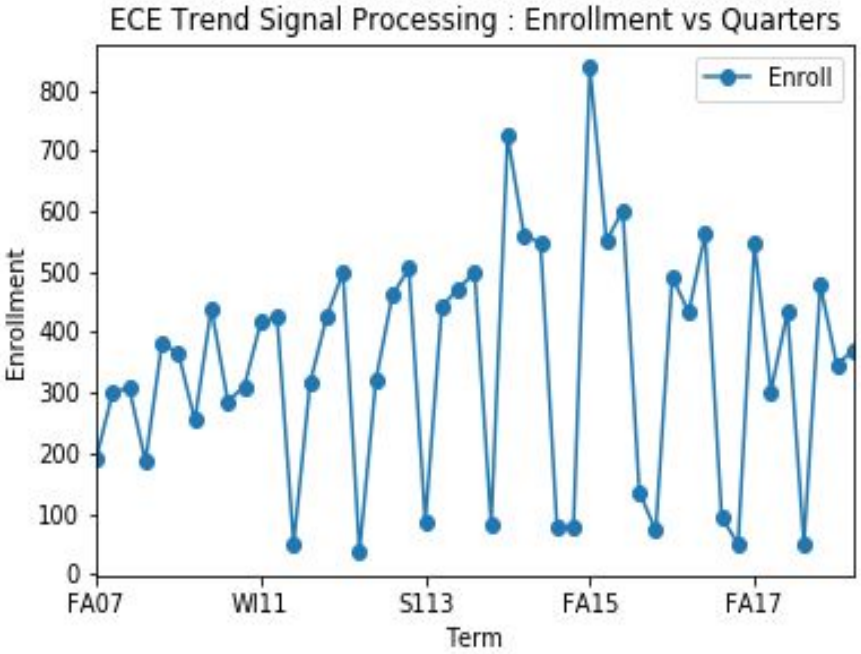
- Only ~50% students respond

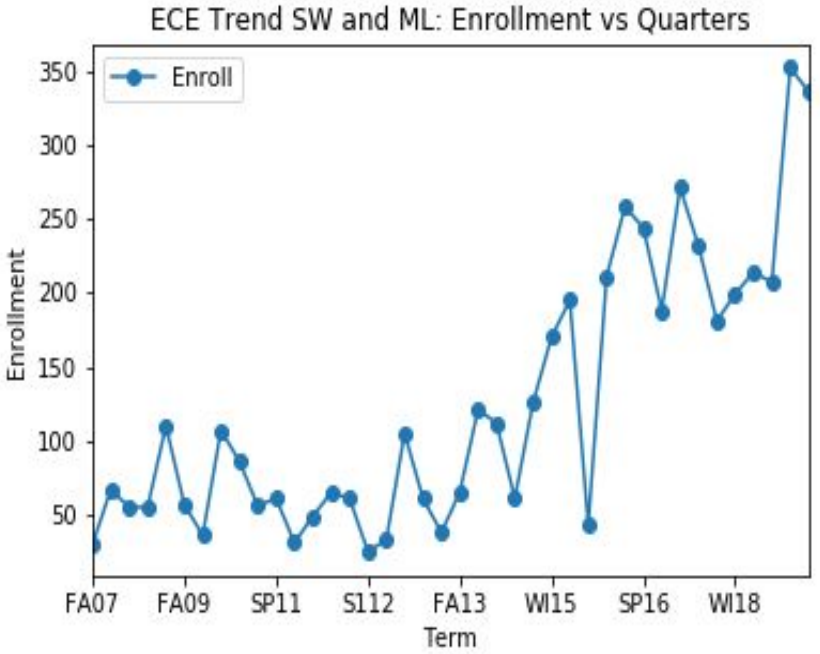


Largest Deviation in GPA Expected and Received

ECE	Deviation	CSE	Deviation	MAE	Deviation	BENG	Deviation
ECE 156	1.42	CSE 140	1.32	MAE 110A	1.23	BENG 100	0.76
ECE 65	1.37	CSE 8AL	1.11	MAE 20	1.11	BENG 140A	0.72
ECE 164	1.32	CSE 11	1.04	MAE 140	1.09	BENG 140B	0.71
ECE 35	1.23	CSE 140L	1.03	MAE 105	1.05	BENG 186A	0.71
ECE 109	1.18	CSE 191	1.0	MAE 101C	1.03	BENG 129A	0.68
ECE 154B	1.10	CSE 140	1.0	MAE 120	1.03	BENG 109	0.68

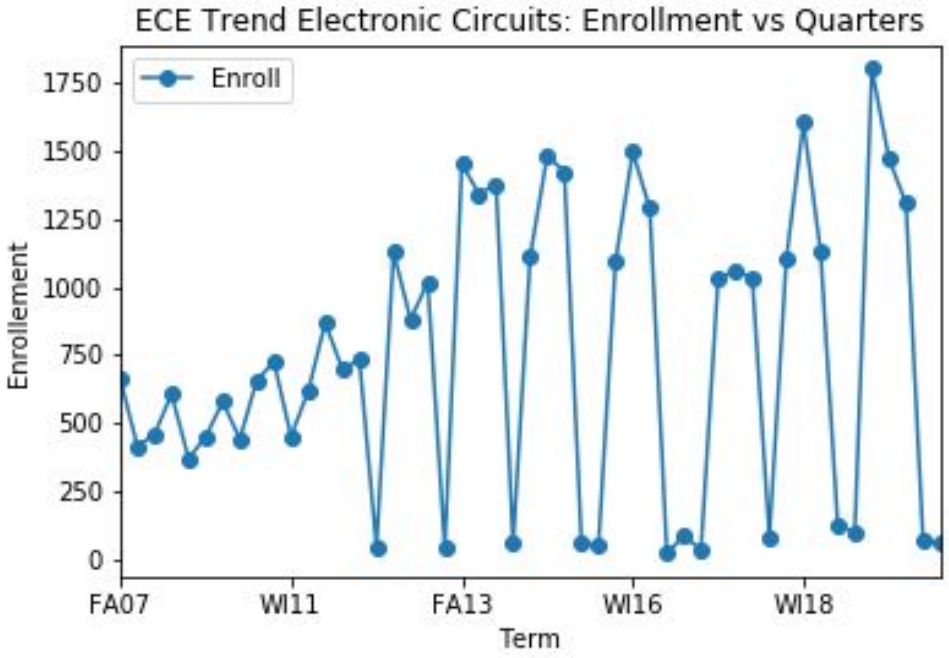
Interesting Trends in ECE Specializations 1





- Since 2015 a drop in the enrollment for traditional signal processing courses
- Software and Machine Learning courses receiving more attention!

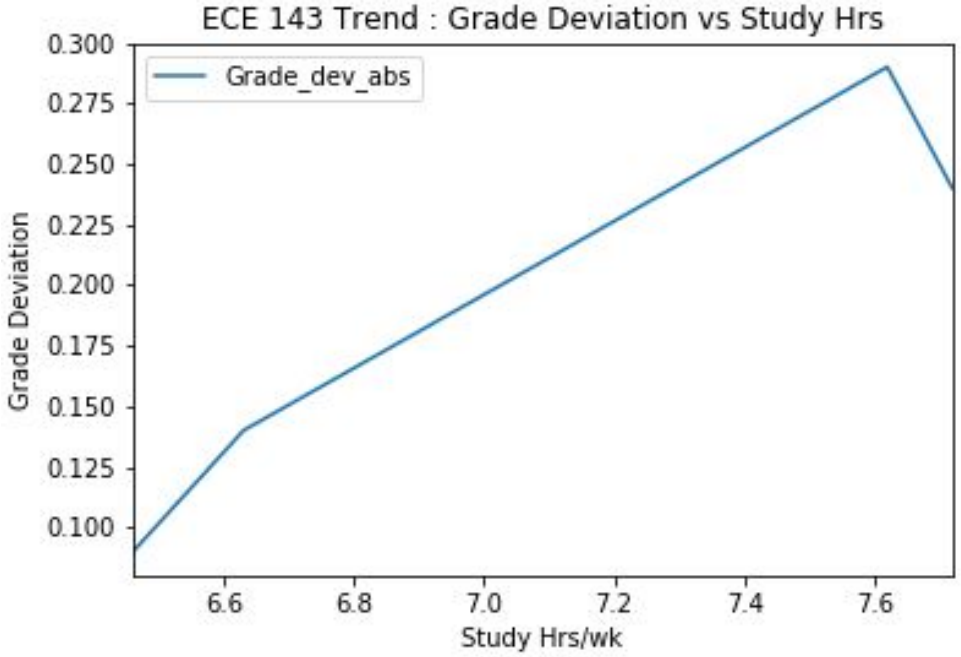
Interesting Trends in ECE Specializations 2



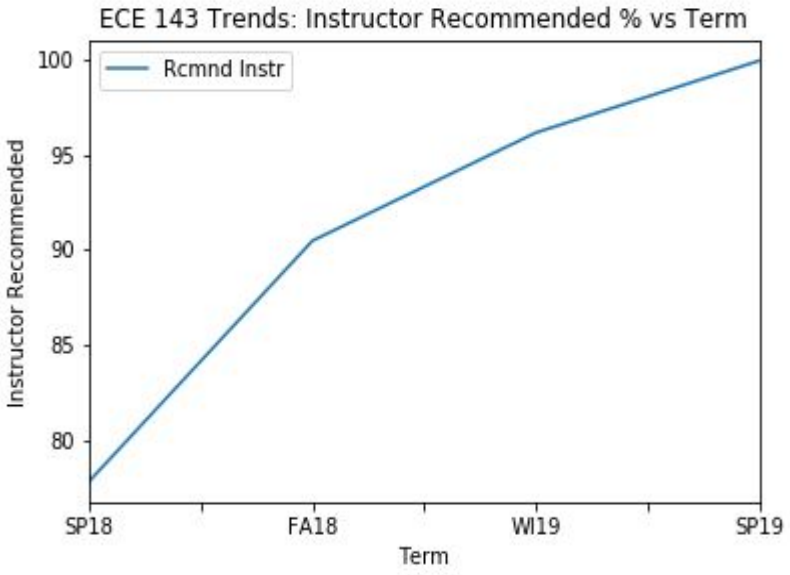
- Many students are interested in Circuit related courses
- Enrollment consistently increasing!

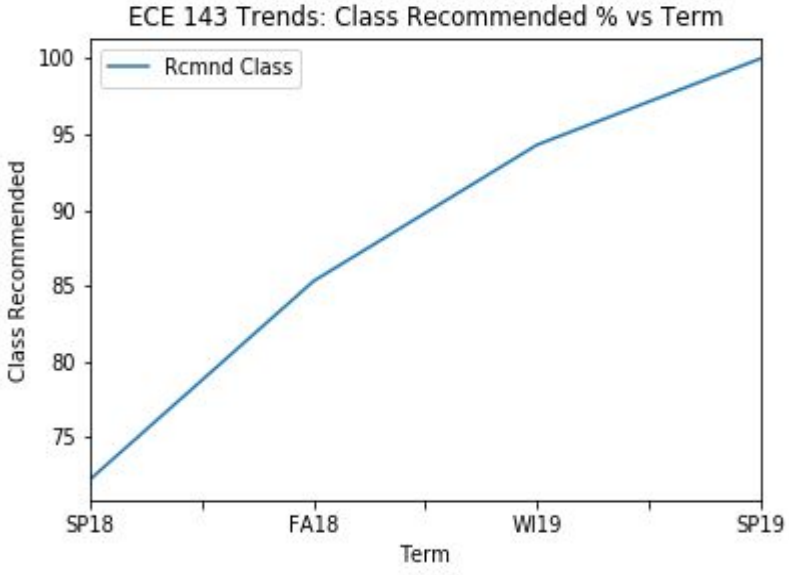
ECE 143 Grade Deviation Insights

- Grade Deviation = Grades Received - Grades Expected
- Effort Getting Paid Off!



ECE 143 Grade Deviation Insights





- Course quality increasing!

Overall Conclusions

- Overall, CAPEs provide high quality information about courses and instructors in the School of Engineering
- Grade expectations are mostly consistent
- Please fill out your CAPEs at the end of the quarter!

Thank you!
cape