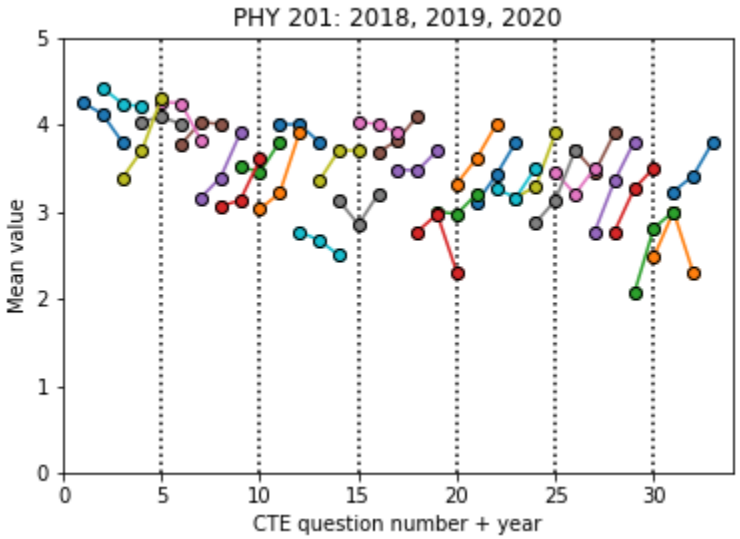
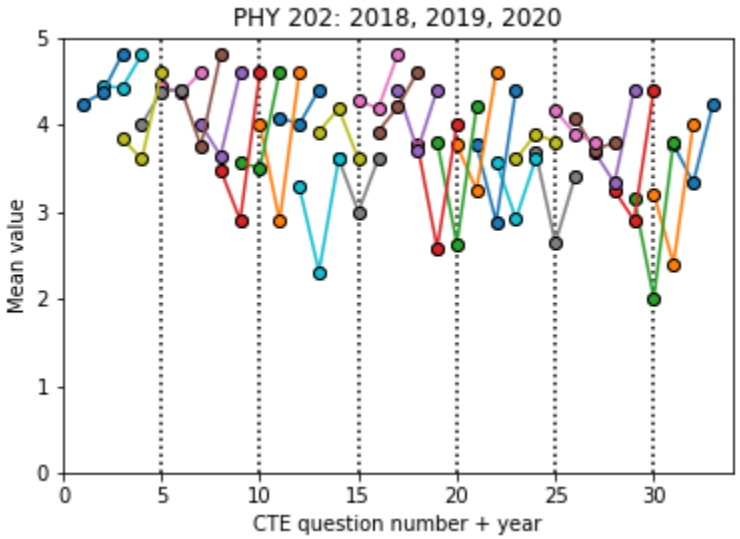
Summary of CTE Scores

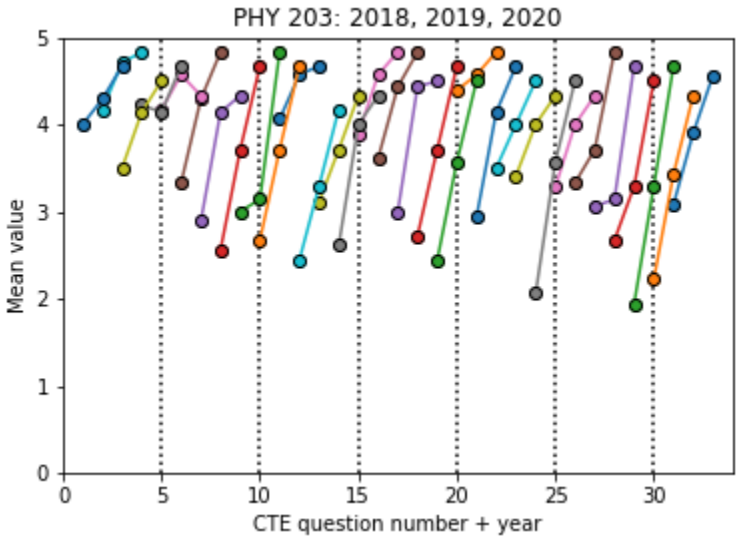
This document presents a visual representation of my performance as measured by CTEs, presented as a function of time for each course I have taught. A brief explanation of the presentation format follows.

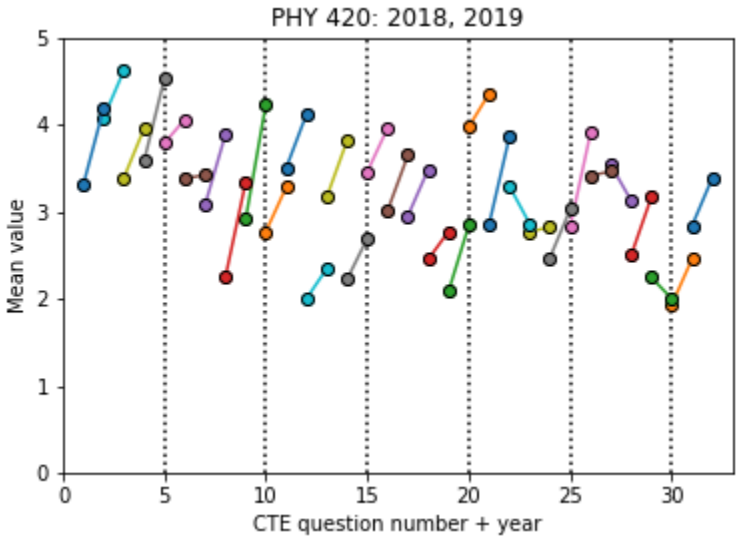
A list of the CTE assessment categories presented here can be found at the end of this document, where each question in that list is associated with a number. The time evolution of the CTE score for each question, broken down for each course, is represented by a colored data series. The change in time is shown by incrementing the abscissa value by 1 for each year greater than 2018.

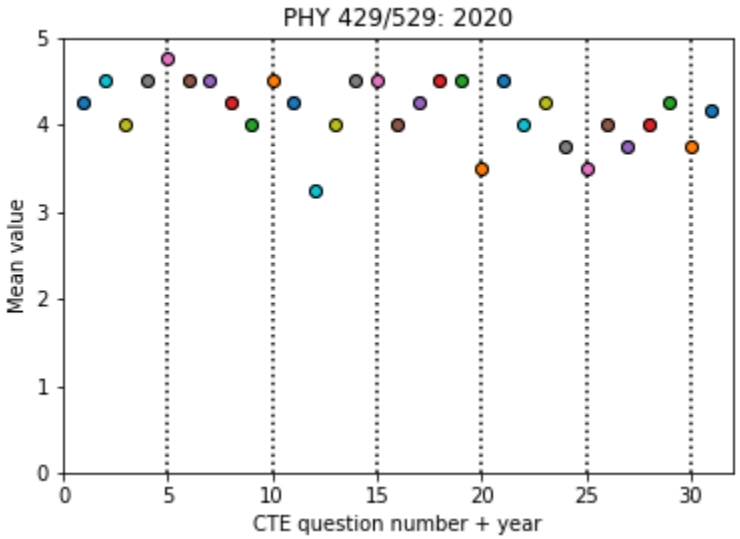
For example, question #10 ("This course builds understanding of concepts and principles," shown in orange) begins at a horizontal value of 10 for the 2018 data point, and moves to a horizontal position of 11 for the 2019 data, and concludes at a horizontal position of 12 for the 2020 data.






PHY 203: 2018, 2019, 2020
Mean value
CTE question number + year


PHY 420: 2018, 2019
Mean value
CTE question number + year


PHY 429/529: 2020
Mean value
CTE question number + year

The trends shown for the PHY 202 course are notably distinct from those of the other classes in that most questions exhibit a strong V-shape. The following comments address this unusual pattern.

1. I attribute this large decrease in scores seen in 2019 to the radical pedagogical changes that were implemented in the course as part of my Fine Teaching Award. The main thrust of that project was a complete overhaul of the laboratory exercises to introduce computer programming and "modern" technology such as the LED. Additionally, I simultaneously turned up the emphasis on the use of calculus, a decision made in response to my observations that student's abilities to use calculus in upper-division courses was very weak and needed lots of reinforcement throughout the curriculum. There was widespread frustration with the programming component, which I recognize was pushed too quickly in the interests of completing a pre-determined number of laboratory exercises, and students seemed unhappy with my redoubled emphasis on calculus in lecture and on exams.

2. Importantly, my CTE scores for PHY 202 for the Fall 2020 semester show a large rebound, which I believe is a result of refinements that allowed me to more effectively deliver the content of the laboratory exercises and implement calculus throughout the course. For the labs I provided more support through well-developed tutorials on the fundamentals of programming and use of class time for student sharing of circuits and code for critique and feedback. For the calculus component I regularly slowed the class down to focus on core calculus skills by working through integrals and reviewing concepts such as integration by parts. I was able to do this by using a partially flipped-classroom model where I offloaded parts of the theory to lecture videos for students to watch at home, typically this was about one per week. For extra support I occasionally created additional videos where I took time to work through all steps on calculus-based physics problems.

3. It should also be noted that many of the students from my Fall 2019 PHY 202 class went on to take PHY 203 with me in the spring of 2020. In comparison to the PHY 202 CTE scores for 2019, the CTE scores for the Spring 2020 PHY 203 course are some of my highest. This indicates that this cohort of students was commenting specifically more on their perception of the PHY 202 course content and delivery than they were commenting on myself as a teacher.

CTE questions presented in this analysis

1. My instructor displays a clear understanding of course topics.
2. My instructor speaks audibly and clearly.
3. My instructor draws and explains diagrams effectively.
4. My instructor writes legibly on the blackboard.
5. My instructor displays enthusiasm when teaching.
6. This course has effectively challenged me to think.
7. My instructor emphasizes relationships between and among topics.
8. My instructor helps me apply theory to solve problems.
9. My instructor makes good use of examples and illustrations.
10. This course builds understanding of concepts and principles.
11. My instructor is readily available for consultation.
12. Exams are used to help me find my strengths and weaknesses.
13. My instructor returns papers quickly enough to benefit me.
14. My background is sufficient to enable me to use course material.
15. I feel free to ask questions in class.
16. My instructor readily maintains rapport with this class.
17. Lecture information is highly relevant to course objectives.
18. This course contributes significantly to my professional growth.
19. My technical skills were improved as a result of this course.
20. This course is a valid requirement for my major.
21. The practical application of subject matter is apparent.
22. The amount of material covered was reasonable.
23. There is sufficient time in class for questions and discussions.
24. Exams are free from ambiguity.
25. Grades are assigned fairly and impartially.
26. The grading system was clearly explained.
27. The assigned reading is well integrated into this course.
28. I am generally pleased with the text(s) required for this course.
29. I am satisfied with my accomplishments in this course.
30. My instructor explains difficult material clearly.
31. Section overall