

Lunch summary – Dr. Adam Lee on Transforming a Discrete Structures Computer Science Course

Dr. Adam Lee is transforming CS 0441 Discrete Structures because the class size is increasing. He is using various methods such as “flipping” some of the course content, creating a question bank for formative assessments, and incorporating clickers into the classroom. Some of the attendees had the following suggestions:

- David Lawrence Hall has classrooms which accommodate large class sizes but have tables as opposed to auditorium style seating. If possible, this room could be used for a large classroom that is interactive – the professor (and UTAs) have more room to walk around and interact with the students.
- Learning catalytics is a clicker system that also allows students to answer open ended questions (in addition to multiple choice questions). The computer science department may be interested in asking open ended questions to identify students’ common difficulties in programming.
- For the flipped content, students watch a video before class and take a multiple choice quiz (questions are taken from the quiz bank). It was strongly recommended that students get some type of credit for taking the quizzes, otherwise, they may not take them seriously and engage in learning while watching the videos. Perhaps the students can get 15% credit for answering correctly, and a smaller amount of credit for answering incorrectly.
- In the question bank, if students answer a question wrong, they get hints and feedback (e.g., think about the product rule, see section X in the text book, look over questions 9 – 11 in the text book, etc.) However, if the book changes, the section numbers and question numbers may also change. It was suggested that the section title be typed out instead of referenced by number. Also, homework questions could be typed out and students get a link to the question instead of looking in the text book for a particular question.
- To “flesh out” the question bank, it was suggested that students themselves create clicker questions as a homework bonus. Students can be told that their clicker question might be used in class, and this could motivate them to create very thoughtful clicker questions. TAs and UTAs can also be asked to create clicker questions.
- In addition to content based assessments which compare between the control group and the transformed group, it was suggested that attitudinal surveys be given to the students. This might reveal to what extent the students like the flipped format, did their attitudes about learning computer science improve (or stay the same), and did they feel like they got personalized attention even though they were in a larger class. Some of the attitudinal surveys are national surveys, so the results of these assessments for the control group and the transformed group can also be compared to national averages.
- Since the class sizes are increasing and the professor cannot give personalized attention to each student, it was suggested that UTAs be utilized in the course. Each UTA should be encouraged to get to know a smaller group of students in the course and give them more individualized feedback.