

# Online Assessments...and other technological challenges in ECO220

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# Outline

- Overview of ECO220 (Syllabus, Quercus)
- Share approach/experience with online assessments in ECO220
- Walk through lecture & tutorial delivery
- Other topics of interest (Socrative, FSGs)
- Evaluate student opinion on assessments in ECO220
- Gather feedback and suggest improvements

# Characteristics of ECO220

- Enrolment:
  - Summer - 110 students, ECO220 (Fall/Winter) - 400 students
- Student type:
  - Econ, Management, Marketing, Accounting, Commerce
- Contact:
  - 2 hours of lecture and 1 hour practical (tutorial/lab) per week
- Assessment:
  - 35% Final Exam, 40% Term Tests (4 best of 5), 15% Data Projects, 10% Practical Submission, 2% Socrative Bonus
- Challenges?
  - Diversity of Majors, Software, Large Core Course

# Topics covered in ECO220

- **Topic 1 - Descriptive Statistics**
  - ▶ Frequency Tables & Distributions, Measures of Central Tendency, Correlation
- **Topic 2 - Random Variables & Probability**
  - ▶ Set Theory, Probability Theory, Expectation & Variance Operator
- **Topic 3 - Theoretical Probability Distributions**
  - ▶ Uniform, Geometric, Binomial, Poisson, Exponential, Normal, t,  $\chi^2$ , F
- **Topic 4 - Statistical Inference I**
  - ▶ LLN vs. CLT, Sampling Dist., Hypothesis Testing, CIs, Power of Tests
- **Topic 5 - Statistical Inference II**
  - ▶ Difference of Means Testing, Variance Testing, CIs for these
- **Topic 6 - Linear Regression - Estimation & Inference**
  - ▶ Ordinary Least Squares (OLS), Residuals, Predicted Values, Coefficient of Determination, Confidence Intervals for Coefficients, t-testing, F-testing
- **Topic 7 - Linear Regression - Further Issues**
  - ▶ Classical Assumptions, Heteroskedasticity, Serial Correlation, Omitted Variable Bias, Multicollinearity, Dummy Variables, Logs, Polynomials

# So what changed this summer?

## Most significant changes to ECO220

- Term tests were online synchronous
- Term tests one to three were Quercus quizzes
- Term tests four and five were delivered using Crowdmark
- All term tests were invigilated online using Zoom
- Final exam is online synchronous using Crowdmark and invigilated with ProctorU

## Motivation behind this?

- 1 Assessments are rigorous and fair already → minimize the impact from shift to online
- 2 How will I manage significant change in 220 → minimize the impact on my other courses and responsibilities
- 3 Last term I already gained experience with online synchronous testing and invigilation so it felt realistic

## How did my team deliver Zoom invigilation?

- 4 TAs each hosted a Zoom chat with approx. 25 students
- I hosted a Zoom chat with 2-3 accessibility students
- students were required to attend Zoom chat and on-board in advance of test start (Zoom started 30 min ahead of test)
- I made a either a quercus quiz or crowdmark self administered test, an assignment to upload recordings, and an ungraded quiz to upload rough work for each term test
- students were told to share screens and record webcams and were responsible for uploading their recordings once the Zoom chat closed or their tests would not count
- TAs were given a set of instructions to on-board students
- I kept my role flexible to deal with issues that arose in real time
- Students were given two practice sessions ahead of the actual tests
- Approach was designed around my experience with ProctorU

## Instructions for TAs

- Introduce yourself and give them cell phone number to contact
- Allow all participants to screen share and give students permission to record (must be done individually)
- Ask all students to screen share and record.
- Call on any students directly who have not done this
- Ask them all to hold up T-cards and verify with attendance sheet (Individually in 1st test and as a group after that)
- If any Zoom names do not match T-cards have them rename
- Ask them to hold up cheat sheets or blank pages
- Ask students to direct web camera around room and show workspace
- Message Prof. once on-boarding is complete and wait for all clear
- Once test starts TAs should cycle through student screens
- On Crowdmark TAs will need to tell students to stop when time is up
- Ask students to hold up all work & rough work to be recorded

# What does Zoom invigilation look like?

视图 历史记录 书签 用户 标签页 窗口 帮助

Outlook x Crowdmart x ECO220Y5 Y LEC0101 20205 x +

ark.com/student/assessments/test-5-d976c

students first viewing the online material. You have a random sample from  $ECU220$  of two students and find the sample average is  $0.1$  (on average the students in your sample view the lecture  $0.1$  of an hour after the term test). Your two students have a sample variance of  $3$ .

+

Drag and drop your files or click to browse...

**Q1 a) (5 points)**

Assume you are curious if viewing the online lecture follows the standard normal distribution (mean zero and population variance of 1) for the population of students. At the 1% level of significance, test if you can reject the idea that  $X$  follows the standard normal distribution.

+

Drag and drop your files or click to browse...

**Q1 b) (5 points)**

Assume now you actually believe the  $X$  variable has a higher variance than the standard normal distribution. Test this belief at the 1% level of significance

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**Q1 c) (5 points)**

Time left [Hide](#)  
1:21:53

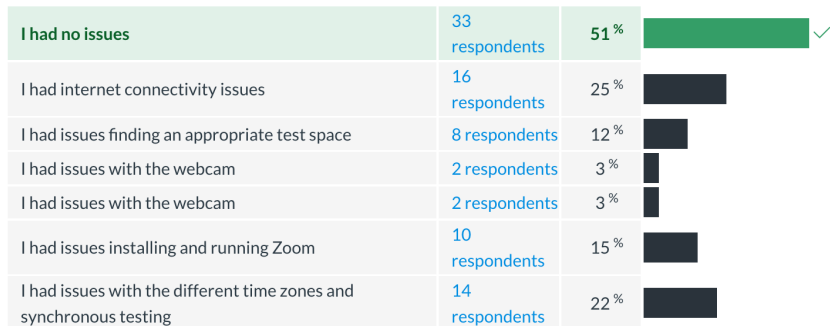


## Issues/takeaways

- You need to make sure your TAs all choose the gallery setting in recording options
- Ask students to make sure they change settings to record their webcam (not active screens)
- Have your TAs audibly call out students who drop screen sharing → use breakout rooms if needed
- Make sure to restrict private chats, mute all participants on entry and allow all participants to screen share
- You will get a couple students with tech issues every couple tests → have a plan for this
- You will get a couple students with recordings that fail to render → have them provide "mug shots" with their work immediately
- You might need to discuss privacy concerns → best to include a statement on this in syllabus

# Did students have any serious issues with online synchronous assessments?

Did you face any of the following issues during your online term tests? Choose the answers that best apply (Note: You can select multiple answers).



## Student feedback on issues faced

*I personally feel really **uncomfortable with webcam during the test***





***I cannot see the graph of the question in one of the term tests,** that made me feel nervous and wasted lot of time to deal with that.*

*One instance of an issue I experienced was that **while I submitting my rough work, my laptop froze** (Im assuming from the long zoom on-going recording) and thus my test recording could not be processed. Prof. Zammit was kind enough to waive the issue with an alternative means so it was an otherwise smooth transition*

*I think there's generally just a lot of anxiety I had in regards to the test taking software. **I wish the rules were more clear on what happens if your webcam, internet, laptop cuts out.** Are there penalties for things outside of your control? This is a random side story but during one of my online exams in a different class I found a wasp in my room and I am grateful the online exam wasnt recorded because I had a whole freak out and had to change rooms in order to finish the exam.*

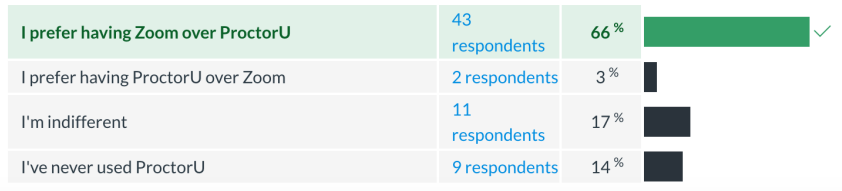
# How did students find Zoom for invigilation?

Based on the fact we had to have an online test assessment, how do you rate your experience with Zoom as the method of invigilation?

Poor	2 respondents	3%	
Fair	25 respondents	38%	
Good	25 respondents	38%	
Very Good	13 respondents	20%	

# Do they prefer Zoom invigilation?

Based on your experience in this course and other online courses, comment on your preference for Zoom relative to ProctorU for online invigilation.



# Should I use ProctorU for the Final?

## Advantages:

- Relies less on the TAs to do everything correctly
- Has a more advanced on-boarding system to check ID and facial recognition
- Monitors gaze and flags incidents TAs would not catch
- Provides easier review method to check for incidents later
- Provides a stronger disincentive to cheat since students fear it

## Disadvantages:

- Students fear it and it stresses them out
- It was largely beta last term and still has some issues (has crashed several times with larger courses)
- You need to be very clear with students in advance on what level of 'lockdown' they are under
- No way to communicate with students during exam

# Should I eliminate synchronous tests and give a take home?

## Advantages:

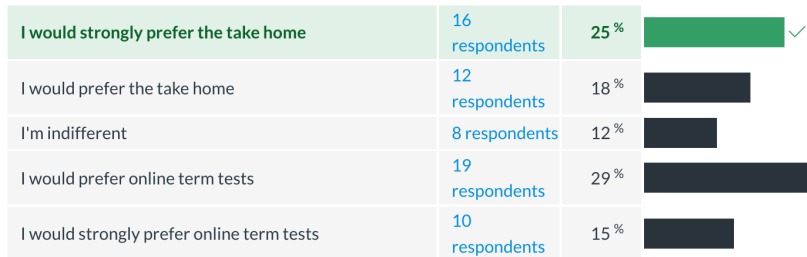
- Avoids having to invigilate which is a big job
- Some students feel less stressed with this assessment method
- Solves the issue of accessibility and technology limitations
- Solves the issue of privacy concerns

## Disadvantages:

- More opportunity to work collaboratively and alter assessment goals?
- Usually more effort to write a take home test/assignment → I did this for last years final
- Grading is often more burdensome → more questions, more essay responses etc.
- Many students actually find it more taxing

# Do students prefer a take home?

What would you prefer if you were offered a more difficult take home test or assignment instead of the online term tests held in this course?





# Should I use Quercus quizzes or Crowdmark with Zoom?

## Advantages to Quercus Quizzes:

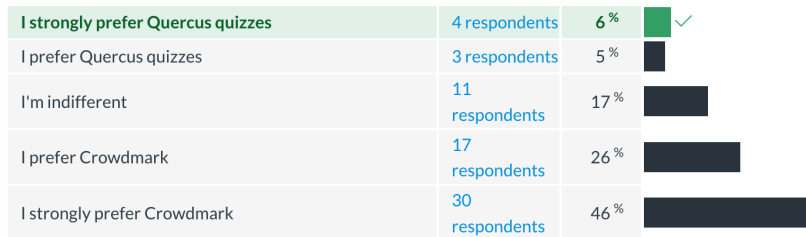
- Allows you to record the actual test page
- You can restrict use of outside materials more fully (rough work)
- Auto grader gives reasonably accurate results immediately (reduces marking hrs)
- Provides a clear end time without coordinating TAs

## Advantages to Crowdmark:

- Students are far more comfortable as its closer to in-person testing
- Writing the tests is far less time consuming and more flexible
- Students always have a complete hard copy of their work in case of tech issues
- Students get more detailed individual grading feedback

# Did students prefer testing in Quercus or Crowdmark?

Term tests 1-3 were delivered online using Quercus quizzes and term tests 4-5 were delivered online using Crowdmark. Comment on your preference between these options in the online assessment format.



## Student feedback on testing platform

**I strongly preferred Crowdmark test**, as the questions were more fair in reflecting material that we learned, as **the format was similar to what we covered**. The Quercus test were very long, and also the format of the questions were also mostly different from what we were used to.

*I HIGHLY HIGHLY HIGHLY recommend using the Crowdmark method of testing rather than the the Quercus Quizzes. I found the Crowdmark method a lot more fair and the closest method to a normal test. Being able to submit my handwritten answers made the process a lot easier. I even noticed a big jump in my grades once we began using Crowdmark (which I expected to happen before even getting the grades).*

*Term tests were great in terms of using Zoom and Quercus. I preferred the Quercus quiz over crowd mark because I would rather do a multiple choice question rather than many long answers.*

# Other adjustments to ECO220 this summer?

## Lectures:

- I wanted to maintain the most "normal" experience
- Mix of pre-recorded and "live" online lectures
- Pre-recorded lectures on Monday cover theory and live lectures in Bb on Wednesday cover practice questions
- Both lecture types are posted to YouTube and linked to Quercus

## Practicals:

- Tutorials are in Bb and TAs walk through problem sets
- Labs are in Bb and use Stata and cover coding those problem sets
- Students are given "in-class" questions to submit for practical grade
- Submission window changed from right after practical to every Friday
- Citrix instructions, Install Citrix and Run Citrix

## Issues/takeaways

- Students want pre-recorded lectures early
- Students value pre-recorded lectures being posted to YouTube with more viewing options
- Students like to have the notes and/or transcript from pre-recorded lectures
- Students want live lectures recorded and posted due to time zones
- Live lectures are difficult if you allow students to unmute and ask questions
- Chat window is hard to manage and teach the lecture

# How did students find pre-recorded lectures?

Monday lectures were prerecorded and shared on Quercus. Based on previous courses, how do these compare with usual face-to-face lectures in terms of your learning experience?

<b>Prerecorded lectures were worse</b>	2 respondents	3%	
Prerecorded lectures were generally worse, but there were some advantages	14 respondents	22%	
I'm indifferent	9 respondents	14%	
Prerecorded lectures were generally better, but there were some disadvantages	22 respondents	34%	
Prerecorded lectures were better	18 respondents	28%	

## Student feedback on pre-recorded lectures

*I feel that pre recorded lectures were very helpful as it **allowed us as students to pause the recording whenever we needed time to write information down**, also allowing to rewined backwards if we needed to hear a concept again to understand it better. It **offered a lot of advantages over in person lectures**, as we are more rushed and likely to miss information during in person lectures.*

*I found the pre-recorded lectures extremely useful specifically for ECO220 because a lot to the times the (heavy) **material was a lot easier to learn when I was able to repeat the recorded explanations more than once.***

*For the lecture recording, sometimes the screen is limited for some technical issues and some notes cannot be seen*

**I think that the earlier you post the lectures the better it is for everyone**, because it gives us time earlier in the day to listen to them. *I work in the late afternoon/evenings, so that helps.*

# How did students find live lectures lectures?

Wednesday lectures were online synchronous (live) using Bb Collaborate. Based on previous courses, how do these compare with usual face-to-face lectures in terms of your learning experience?

<b>Live online lectures were worse</b>	4 respondents	6%	
Live online lectures were generally worse, but there were some advantages	14 respondents	22%	
I'm indifferent	17 respondents	26%	
Live online lectures were generally better, but there were some disadvantages	15 respondents	23%	
Live online lectures were better	15 respondents	23%	



## Student feedback on live lectures

*I enjoyed live lectures, because **it gave us a sense of in person lectures, with being able to engage with you, to ask questions during the lecture, while also allowing to engage with other student's and allowed us to hear questions that other students had.***

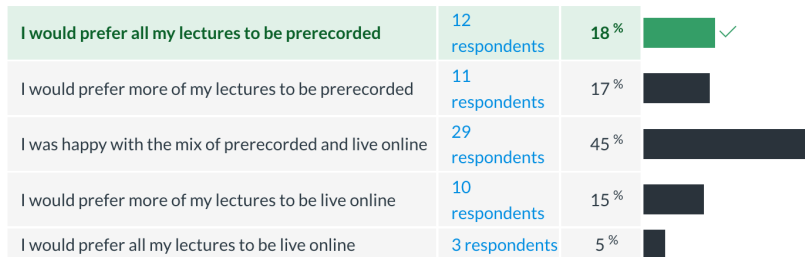
***I think live lectures are better.** You can post the recordings afterwards.*

***Add 5-10 minutes of question time during the live lecture.** This will help the students ask specific questions that they are having problems with*

***You shouldn't answer kids questions until after you've covered the material** or let the TA do it while you're teaching.*

# How did students find the mix of lectures?

After experiencing both prerecorded and live online lectures which statement best describes your feelings on the remote lecture options.



## Student feedback on the mix of lectures

*I would prefer all my lectures to be prerecorded.*

*The lecture recordings are going very well. The only thing I can say is about the **overweight between prerecorded lecture and live lectures.***

***You should continue to do the live lectures as this is a great opportunity for students to ask questions. I suggest you change the prerecorded lecture, I feel like its not motivating to listen to them and sometimes hard to understand, maybe make it live also.***

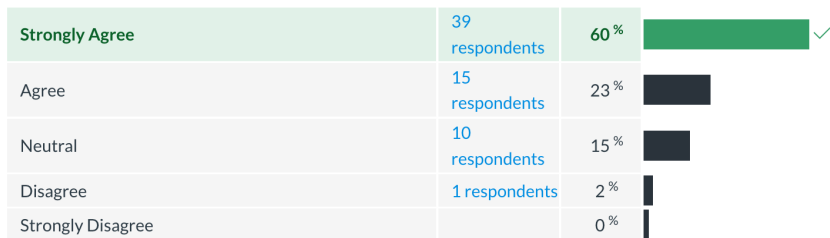
*I think it would be **better to have live on both days***

# How did students feel about asynchronous access?

Wednesday lectures were online synchronous (live) using Bb Collaborate. These lectures were also recorded and posted to Quercus.

How do you feel about the following statement:

It was very important to me that synchronous (live) lectures were recorded and made available asynchronously



## Student feedback on asynchronous access

*I believe that the way this course was delivered was exceptional, during this pandemic I was an essential worker at the bank and usually did not have to time to watch lectures synchronously, **watching the monday pre recorded lectures allowed me to grasp the material before watching some of the live lectures at a later date.***

*To me **lecture recordings are great.***

*Recording is better if my internet is not good or the live session would be terrible*

## A couple other changes being made

### Socrative:

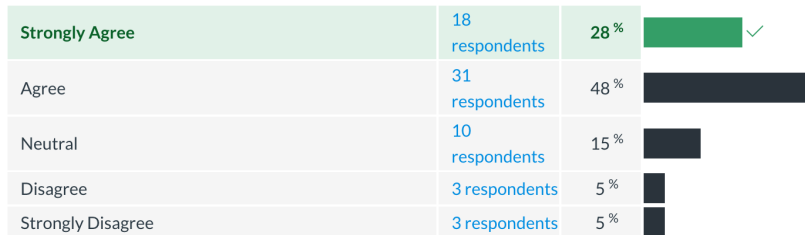
- During live lectures I launched Socrative quizzes → Socrative Example
- Students were given 10 mins to answer 3 questions
- Afterwards I walk through the solutions on the board in Bb
- I gave a 1% bonus each term for completing at least 50%
- Students have been very engaged with Socrative and immediately email when Socrative quiz results are not posted

### FSGs:

- FSGs will be running again starting this fall
- We successfully ran sessions over the past 2 years with strong attendance
- FSG leader meets with me to coordinate timing and coverage of material for sessions
- Tom Klubi from RGASC at UTM has created a Quercus shell and online training program for FSGs → FSG training

# Did students find Socrative useful with online lectures?

Do you feel Socrative quizzes helped keep you engaged during live lectures in the online learning environment?



## Overall Issues/takeaways

- Even when delivery method seems relatively similar there are still differences in pedagogy
- Students enjoyed online learning far more than I expected
- Students seemed happy with pre-recorded lectures vs live lectures
- Practicals were largely well received online
- There is no clear consensus on assessment methods even from the students
- Students and TAs adapted very quickly to online invigilation methods








# How did students find online practicals?

Practicals were online synchronous (live) using Bb Collaborate. Based on previous courses, how do these compare with usual face-to-face tutorials in terms of your learning experience?

<b>Live online practicals were worse</b>	3 respondents	5%	
Live online practicals were generally worse, but there were some advantages	12 respondents	18%	
I'm pretty indifferent	16 respondents	25%	
Live online practicals were generally better, but there were some disadvantages	16 respondents	25%	
Live online practicals were better	18 respondents	28%	

# Did students find online labs using Stata useful?

Practicals were online synchronous (live) using Bb Collaborate. Practical included both a tutorial and a software lab component. Answer the following on the success of the lab component.

<b>I would prefer not to have a software based lab component</b>	13 respondents	20%	 ✓
I would prefer to have a smaller software based lab component	20 respondents	31%	
I'm indifferent	22 respondents	34%	
I would prefer to have a greater software based lab component	7 respondents	11%	
I would prefer all practicals to have a software based lab component	3 respondents	5%	

## Student feedback on using Stata for Data Projects

*I think making us learn STATA is extremely extremely useful. I imagine a lot of people would disagree with this because its just extra work; however, to me it was a very important tool to learn, and I also noticed it was a really good asset to have when I was applying for jobs that involved some sort of statistical analysis*

*I did not face any issues with the data projects, the instructions were quite easy and simple to follow.*

*Data Project 1 was amazing. I was intimidated by thinking of combining STATA and a report together, but once I started playing around with the variables, I was amazed to see the real-life connections come together and they were all my code!*

*I truly despised the coding aspect of the course because it was never mentioned in class*

## Overall comments on course?

*Overall, this was a good course. Professor Zammit was very clear and taught the lecture material efficiently through the pre recorded sessions. I loved the way the course is structured with one prerecorded and one live session. Tests were good although many questions were unfair. Data projects should be worth less and there should only be one of them.*

*Do not let go of teaching STATA, the students may not realize it now but it will be very useful to them later on. However, offer more STATA help because the live tutorials were not enough. If you could pre-record some videos and share them with the students, I think that would be extremely useful*

*Everything is pretty good, thank you for the great teaching.*

*It's great to be part of this class.*

# Plans for Fall/Winter

- I will be offering dual delivery teaching
- pre-recorded lectures will be posted from summer
- live lectures will be in person and live streamed so online students can attend
- At least one TA will attend lectures to act as moderator from online to in person
- Practicals will be a mix of in person and online
- Assessments will be Crowdmark tests with Zoom invigilation
- Final exam will be a Crowdmark test with ProctorU invigilation