**Lisa Shay's Notes from Online Pedagogy Discussion – Teaching**

**Tuesday, 24 March 2020, 10-11AM and 2-3PM**

**Morning Session:**

Students:

- We haven't heard from most of our students. Various faculty have emailed classes with 50% or lower response rate.
- Students who are employed by the School of Engineering but can't do their normal jobs have been offered the option to become "Technology Sherpas" to help faculty with technology issues. The Dean's office will publish this list of students.

Organizing Microsoft Teams:

- Some faculty are organizing channels by week, much the way Moodle is set up.
- One faculty member is creating groups by teams for senior design, rather than week-by-week.
- One faculty is looking to make a private channel for each students so they can hand in work to be graded and the faculty member can grade it electronically.
- Note that Moodle can also accept and return work. A faculty member can download all files into a zip file, unzip into one folder, grade locally and upload a zip file back to Moodle. Based on the filename, Moodle will return the graded work to the correct student.
- Some faculty who used to use Moodle will now use Teams for everything. The two platforms can do pretty much the same things, each has pros and cons.
- Can use notebooks in Teams. That only a student and you can work on. Sven used Teams at work before coming to Cooper.
- Each of us has a comfort level at this point, so we're doing what we can in the short term.
- Cosmas emailed some useful training videos from Microsoft:
    - How to organize our online classes: https://microsoftteams.eventbuilder.com/event/14964/recording
    - Select the 3rd one "Special: Online classes & lectures with all your students" and then Register to watch the recording https://microsoftteams.eventbuilder.com/MicrosoftTeamsforEducationWebinars-OnDemandRecordi Cosmas found the 2nd half of this 61 minute video very useful to understand how to use Teams for our online classes.

Quick discussion about assessments:

- Some faculty will try Oral exams for students. They will have multiple options for students in various time zones.
- Other faculty are thinking about asynchronous exams to accommodate students in different time zones.
- Exams via a browser are awkward if we want students to draw diagrams or write equations.

Technology-based teaching aids:

- What about tablets or document cameras? Jen Weiser and Ben Davis are using https://www.monoprice.com/product?p_id=10594

- A tablet takes a bit of getting used to, as your pen is moving across a gray surface, so you have to look at the screen to see where the stylus is writing.
- Only one person in a Teams meeting can share their screen at a time.
- Some faculty are going to use their laptop and an iPAD or Android. It is possible to log into the same Teams meeting from two different devices using a single account.
- If you have an iPAD, you can share your entire screen and use the iPAD stylus to draw, as if it were a whiteboard.

What about polling during class?

- Some faculty had used PollEverywhere, but there is a report that it isn't working right now.
- Teams has a connection to the "Polly" app. See the "Apps" icon in the bottom left of the Teams screen.

How will our students take notes?

Some faculty teach using slides with gaps. Students would bring paper copies of slides to class and fill in the blanks. But students may not have the capability print out notes.

- Some students are already using tablets, so they could annotate the slides directly.
- Students could just take notes on a pad of paper.
- Some faculty are planning on still making the slides with gaps available, along with the full PowerPoint.
- Each class is likely to be different - faculty may want to survey students.
- One faculty member does everything in PowerPoint with equation editor. He will use PowerPoint to annotate his own slides during class.

How will we keep our students' attention during a 3-hour blocked class?

- Check out Daniel Lepek's webinar: https://youtu.be/eDnv5bYF_vM
- Consider having one hour be asynchronous – for one hour they watch a video and answer discussion questions. Or give them an activity in the middle hour.
- Could we switch class times? If the students have a mutually-agreeable alternate time, it might be possible. But if everyone does this, we will have chaos.

**Afternoon session**

Team Creation issue:

Faculty want separate teams for senior design projects, but right now faculty can't create Teams, only channels.

- They want a team because there is less functionality in a channel
- IT Support will create these Teams, but they don't have the time to do it now. Please give them a few days.

The Math Department prefers Zoom

- More mathematics friendly. AMA recommends it.
- Ability to do breakout sessions in Real Time. Faculty can jump into each breakout session.
- Whiteboard feature is more seamlessly integrated. (Note: the shared whiteboard in both Teams and Zoom is accessible to students.)
- Robert Smyth: sharing windows is easier in Zoom than Teams.
- In Pro version there is greater functionality, with students able to "raise hands" and ask questions.
- Question of cost. Referred to CTO.
- Zoom has different modes for presenting: webinar, online learning.
- Possibly better recording options.
- There is a concern about stability, especially now that Zoom is free for K-12 educators. Also, there is institutional tech support and training for Teams but not for Zoom.

Issues with tutorial videos

- Are there different versions of teams from the video? The instructions in the video doesn't seem to match.
- Hard to add faculty to each class.
- How to schedule meetings within a channel within Teams?

What about recordings?

- Everyone in the Team meeting will know if it is being recorded and by whom.
- There is a CUFCT memo being negotiated about faculty consent.
- ~~If students record, the faculty can't get rid of it.~~ The originator of the meeting can delete any recording made by any Team member by going to the Microsoft Stream and deleting it there.
- How do we stop students from hijacking the screen in Teams? Anyone can take control during a presentation and all Team members have access to the shared whiteboard. (In Zoom the whiteboard is also shared). No answer yet.
- Can we make a video in a Team and then not have the students join? Yes you can create a meeting in Teams with just you, record that meeting and then post the link from Microsoft Stream into whatever channel or Team you like.

Other Questions/Comments

- Can a team have more than one owner? Yes. And so can a channel. The owner of a Team can promote members.
- Who is the central point of contact for tech support for this? The Cooper IT Department. There are still 1-on-1 sessions available this week. There will also be "Technology Sherpas" from among our student employees. And Lisa Shay is willing to host online pedagogy discussions periodically so we can share ideas.
- What about whiteboards? How can I make my camera window take up the whole screen? To show the whole whiteboard. Robert Smyth has a document camera in a Linux environment that he pipes to the screen. No better answer right now.
- Students need to download the Teams App rather than using in a browser environment. The whiteboard is not visible from the browser.
- An instructor who uses headphones and a mic tends to produce better audio quality than using the mic built into the PC.
- Everyone should be on mute except the instructor or the student asking a question.

**Lisa Shay's Notes from Online Pedagogy Discussion – Assessment**

**Tuesday, 25 March 2020, 10 – 11AM and 2 – 3PM**

**Morning Session:**

Ideas for exams:

- Post an exam in PDF or Word format. Have students keep their camera on, they answer on their own paper, take photos and submit the work to the instructor via Moodle, Teams (private channels), or email
- We could have students sign a statement that they are doing their own work. There's no way to totally prohibit cheating.
- We could make open-book tests, to alleviate worries about references.
- We could give one problem that takes half an hour, plus a little leeway to return exam back. It's a bit hard to cheat if the exam is conceptual.
- Maybe just give a short quiz, rather than big exams.
- Some faculty are not going to do 2-hour long classes, but 1-hour lecture and group work.
- One Department Head has given take home exams in the past and never had issues with cheating. He even had students leave questions blank on a take-home exam.
- We could turn exams into a project instead.
- We could have a one-on-one concept interview, maybe 10-15 minutes per student, at a mutually-agreeable time, especially if the student is in a very different time zone.
- If faculty and students were proficient using Equation Editor, they could do some formula entry on PowerPoint or Word in real-time.
- Some faculty already use the Moodle quiz functionality.
- We can't expect adjuncts to invest a lot of time and effort into these tools. There is a possibility they will basically five take-home exams.

Weighting assessments

- Summative assessments might be smaller and more frequent.

Enforcement of attendance

- Recognizing that students have different circumstances, how do we handle students who don't even answer email? Raise the issue with the Dean of Students if a student doesn't come online by March 30th.
- Yesterday, 15 of 20 showed up to one class. The faculty member had each introduce themselves, going down the participant list, to make sure that the student was actually there.

Grading scheme?

- A decision on Pass/Fail will be forthcoming later this week.

What about ABET?

- As I said in the meeting, there's no issue with the temporary changes we are making. Any permanent change would need to be described in our next Self Study (5 years from now). If we made a really significant change, we would have to notify ABET. For instance, if we decided to keep online classes as a regular part of our program, that would be a substantial change to "Methods or Venues of Program Delivery"
- For more information, see https://www.abet.org/accreditation/covid-19-update/

The silver lining:

- There's a blessing in disguise in this situation: all the dialogue among faculty about pedagogy has brought us closer together.
- Many faculty (including me) expressed sentiments such as, "I've learned so much from my colleagues."
- Can we keep this good thing going? How about practicing classes with each other? It would be good to learn from each other. It will take a while to get a feel for this.
    - George Sidebotham has volunteered to run a class.
    - As have I.

The carrot and the stick:

- What about the incentive for students who are no longer getting A-D grades if we move to a P/F system? How do we prevent them from checking out? We have to be prepared to give F's! Incompletes are also an option.

Grade changes?

- What is the mechanism for change of grade? Can we just do this administratively?
- Lisa asked if anyone had heard the excellent discussion about this point in the Academic Steering Committee last week. Since no one had, she summarized:
- Recall that the whole point of moving to P/F is lack of confidence in the accuracy and precision of our grading compared to "normal" semesters. While some faculty may retain a "shadow grade," simply assigning this administratively to anyone who asks defeats the purpose of moving to a P/F system.
- Students may petition to retake a course that they passed. Students don't need to petition to retake a course that they failed.
- The ASC motion leaves faculty great freedom in what to do with a student who is approved to retake the course: they might sit for a final exam, complete a design project or other hands-on work, or sit through the entire course. If that same faculty taught this student in the P/F term, that faculty member already knows quite a lot about the student's capability in the subject.

**Afternoon session:**

International Students must be monitored for "active participation"

- It doesn't matter if they have gone home.
- Microsoft Teams doesn't make it easy to track participants, but a faculty member can take screenshots of the participant list.
- The Dean's office will provide faculty a listing of all international students.

Document transmission (also addressed in morning session):

- Both Moodle and Teams allow students to turn in assignments and receive feedback.
- Likewise, there are free PDF markup tools for providing feedback and the institution may be able to get Adobe Acrobat Pro free for the remainder of the term.
- Alternatively, faculty could print out, mark on paper, and scan.
- Microsoft Office Lens allows scanning to PDF from a smartphone and interfaces with Teams. https://www.microsoft.com/en-us/p/office-lens/9wzdncrfj3t8#activetab=pivot:overviewtab

Reimbursement for personal expenses?

- Possibly, if they are small. We were on a tight budget before this happened.
- The Dean's office will sent out a policy on this.

Keeping students engaged (also discussed in morning)

Assuming that we do go to P/F, how do we prevent students from checking out, or asking questions like "If I skip the last project will I pass?"

- Assignments can be mandatory even if the student has enough points to pass.
- Faculty could set the requirement that a student has to pass each major graded event to complete the course.
- Our syllabi often indicate the instructor can modify the grading scheme.
- An Incomplete or a Fail are both option
- But let's not raise the bar beyond what would normally be passing.
- Faculty feel it's important to keep a heartbeat on the students, to prevent students from drifting.
- We recognize it's going to take students a week or two to get into a groove.
- Use this as an opportunity to encourage students to value learning the material over just getting a good grade. This could be an opportunity to improve student mental health by detaching their self-esteem from their GPA.

Where do we store our video recordings?

- Faculty can use a private Teams meeting to record their lecture. That recording is automatically uploaded to Microsoft Stream. Then they can share that Stream link with their class.
- How much storage space do we have? Brian Cusack will check.
- We may need to delete old lectures after a period of time to free up space.
- Faculty could record lectures using Zoom or some other software that creates an *.mp4 or other format and upload to YouTube.
- It is possible to have an unlisted video on YouTube where only those who are given the link can view it. Daniel Lepek has done this.

**Lisa Shay's Notes from Online Pedagogy Discussion – Labs/Projects**

**Thursday, 26 March 2020, 10-11AM and 2-3PM**

**Morning Session:**

Ideas for projects and labs from each dept (Civil Engineering not present on the call):

- STEM Program bought the OSOYOO (Arduino-based 4-wheeled robot car) for each participant.
- In Mechatronics, normally 3-4 students design an autonomous SUOMO robot from scratch (including hardware) with dedicated programmer for Microchip.
    - Looking to use an Arduino instead, recognizing that the Arduino is a simpler architecture with a less complicated programming environment than the PIC architecture that is normally used.
    - The faculty member is looking to build an inverted pendulum apparatus in their house and have students compete writing PID controllers for it. The students will send their code to the faculty member who will run it and demo. The students will compete for the best controller.
    - Other suggestions: Tinker Cad's simulator or Fritzing or OnShape
- ChemE runs 4 experiments per semester
    - 2 already completed
    - Remaining 2: looking to provide old data or fictitious data. Old data is a problem for one setup which hasn't been used before. Students will write a 1-2 page memo discussing the experiment and analyzing the data.
    - Discussed having them write lab reports, but that's not the same.
      Are there videos of these experiments online? Yes, but watching is pretty boring.
    - Other schools are doing something similar.
- ChemE research
    - One staff member brought all the equipment for hydroponics research to a student's apartment over the weekend. The student will be able to do a modified set of experiments and may be able to fill in the gaps over the summer.
    - A couple seniors doing a research project on proteins were able to complete some of the research before the break and will now do some calculations based on the data they already have. They will also read important scholarly articles about "the SPIKE protein from SARS-COV-2 virus (virus causing COVID-19), use programs to analyze this protein, and make a protocol of an experiment where they would purify this protein and use for production of antibodies for a vaccine or screening of small inhibitory molecules to block the binding of a virus or give any other idea how they would use this protein to fight COVID-19." (from an email sent after the meeting – as an EE, I have no idea what this research actually involves!)
- Digital Logic Design
    - The faculty member gave students a list of parts to take with them during spring break so they could complete at least the second course project and possibly the final project.
    - Some students were unable to get the parts before the building closed, so the faculty member picked them up the weekend the building was open and is mailing them to students who need.
    - This course is fortunate in that the second project's parts cost under $25 and fit in a small box.
- Junior EE lab
    - Project will have to change, since it was based on equipment only available in the lab.

    - The instructor would like to put together kits for students
        - There are companies that will make kits (i.e. Jameco) or already have kits
        - The faculty member had questions about the logistics process.
        - The Dean's office has reservations about the budget! We will put together some guidance and suggestions for faculty.
        - There was a discussion about student lab fees – could they be used for this? We should recognize that lab fees support the overall program, not necessarily a specific student individually. Students benefit from the use of very expensive equipment that a $40 lab fee can't buy.
        - Lab and project courses that don't have a required textbook could require a parts kit purchase instead.
        - There may be an issue with shipping or shipping to certain locations. Some vendors are showing mid-April shipping dates even for parts in stock.
        - Some raised questions about the ethics of ordering parts in this time: are we unnecessarily putting delivery and warehouse people at risk?
    - The class will be doing more simulations. LT Spice is free and being used for class anyway.
- Mech E:
    - One faculty member brought home some pieces of equipment to run at home under the guidance of students who are watching remotely.
    - They can also use LabView on a computer with virtual equipment.
    - There is synergy between the junior projects course and the vibrations course which are being taken at the same time by the same student population: in junior projects students could do a more rigorous design for the project they will do in the vibrations course.
    - This can be an opportunity for students to analyze and design experiments around common household items: dishwashers, washing machines, hair dryers, power tools.
    - The junior projects course can still have the same level of rigor on the technical writing aspect and students can sill give presentations, though remotely.
    - This can be an opportunity for out-of-the box thinking Many engineering teams are global these days anyway. Let teams be creative.

<u>Some commonalities:</u>

- Departments are encouraged to pursue holistic solutions.
    - Can one course support another as design and vibrations in MechE are?
    - Can a department decide on a single kit that would work for all students in a given year?
    - Could fall courses be modified in such a way as to provide the hands-on content that students are missing now? For instance, could there be a period of hands-on instruction in senior design to remediate the skills the juniors are not getting this term?
    - Consider having students buy a required parts kit in lieu of a textbook purchase. Other schools do this.
- Can we use this as an opportunity to develop distributed teaming skills in our students?
    - Some universities use Trello for distributed project management, including for capstone projects.
    - Teams also has resources for this: create a channel for each project team so they can share documents, use a shared whiteboard, hold Teams meetings, etc.
- Departments are encouraged to make the best use of available resources.

    - The IT staff at Cooper have published links for student versions of many software packages –
        - Autodesk – Please go to https://www.autodesk.com/education/home and sign-up with your Cooper e-mail address.
        - Matlab – Please go to https://www.mathworks.com/academia/tah-portal/the-cooper-union-30530717.html and sign-up with your Cooper e-mail address.
        - Ansys - https://www.ansys.com/academic/free-student-products (Click on Ansys Student) [note: Cooper labs have Ansys 2019 installed. If you want to download and install Ansys 2019R2, please click on "prior versions" and select 2019R2)
        - Altair Hyperworks - https://altairuniversity.com/free-altair-student-edition/
        - Solidworks – https://www.solidworks.com/sdk (use SDK code 9SDK2019)
        - Adobe CC apps (all apps) - please use the form listed above
    - The IT staff is making other computers with full versions of software accessible via VPN. More information about this coming soon.
    - There are free versions of simulators for some of the things we do – check vendor websites to see if there are special offers for COVID-19.
- Consider having a single experiment executed by a faculty or staff member with some reduced level of student participation?
    - Currently not possible with the NY PAUSE executive order in effect.
    - In the future, it might be a possibility, but this will depend heavily on state and local directives.
- Remote desktop/computer control through Teams
    - If a student shares their screen in a teams meeting, the faculty member can request control of their computer and do things on their end.
    - The student needs the installed version of Teams and not the web version.

**Afternoon session:**

Use of previously-obtained data:

- Several faculty in multiple departments are providing previously-obtained laboratory data for students to analyze
- Consider randomizing some of the data so different lab groups receive slightly different data sets

Project presentations:

- Consider having students create an integrated video presentation that the students compile, rather than trying to present "live" over Zoom or Teams.
- Some classes already require students to submit a short video (that was previously used for other purposes such as recruiting).
- Students could give live presentations over Zoom or Teams if they spend some time rehearsing.

Opportunities:

- This could be an opportunity to work across timezones, similar to what is done in industry. Be creative about this!
- One adjunct is using Teams at work and starting to play with channels. What we are doing is mirrored in industry.

Senior design:

- ChemE capstone design
  - The design process is well set up to switch to virtual.
  - It was always designed to be student led. They already had developed schedules for team presentations.
  - Software access – virtual machines will help.
  - Each group has its own channel which has been a good way to share files.
- MechE senior design
  - Considering how to do the poster session, virtual or otherwise at the end of the year.
  - May have students submit a video in lieu of a presentation.
- Lab tech involvement
  - ChemE will have conferences with students with lab techs present to pose and answer questions.
  - Faculty at this session would not be comfortable asking a lab tech to come in to do anything in the lab. Concern about the commute. Would rather do virtually or remotely.

Will these types of discussions continue?

- Absolutely! I will set up a doodle poll.
- Also thinking of ways to distribute notes.