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Course design for resilience

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This is what a computer scientist looks like

Musings on teaching, research, technology, and diversity by someone who doesn't look the part.

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posted in teaching by acdalal

Last week, I participated in two simultaneous online workshops around the same topic: resilient course design. One workshop was part of an ongoing series of online workshops around rethinking course design put on by the Associated Colleges of the Midwest (https://www.acm.edu/index.html) (ACM, of which Carleton is a member). The other was a Carleton-specific "design challenge" sponsored by our Perlman Learning and Teaching Center (https://www.carleton.edu/ltc/) (LTC).

The ACM workshop followed the same format as the others in the series: a Monday webinar, with content presentation and a bit of small group discussion in breakout rooms; and Friday smaller group discussions around a more specific subtopic. For instance, the discussion groups last week focused on lecture courses, discussion courses, lab courses, research seminars, and arts/performance courses. (I participated in the lecture group since that seemed to be the closest fit. Turns out, most people in the group shared similar inclinations to lecture/activity split as I do, so it was indeed a good fit.) Sometimes, there is homework assigned Monday for the Friday discussions, as there was this week. Last week, we designed a typical week in our course as homework, paying attention to a set of guiding questions about student participation in various modes.

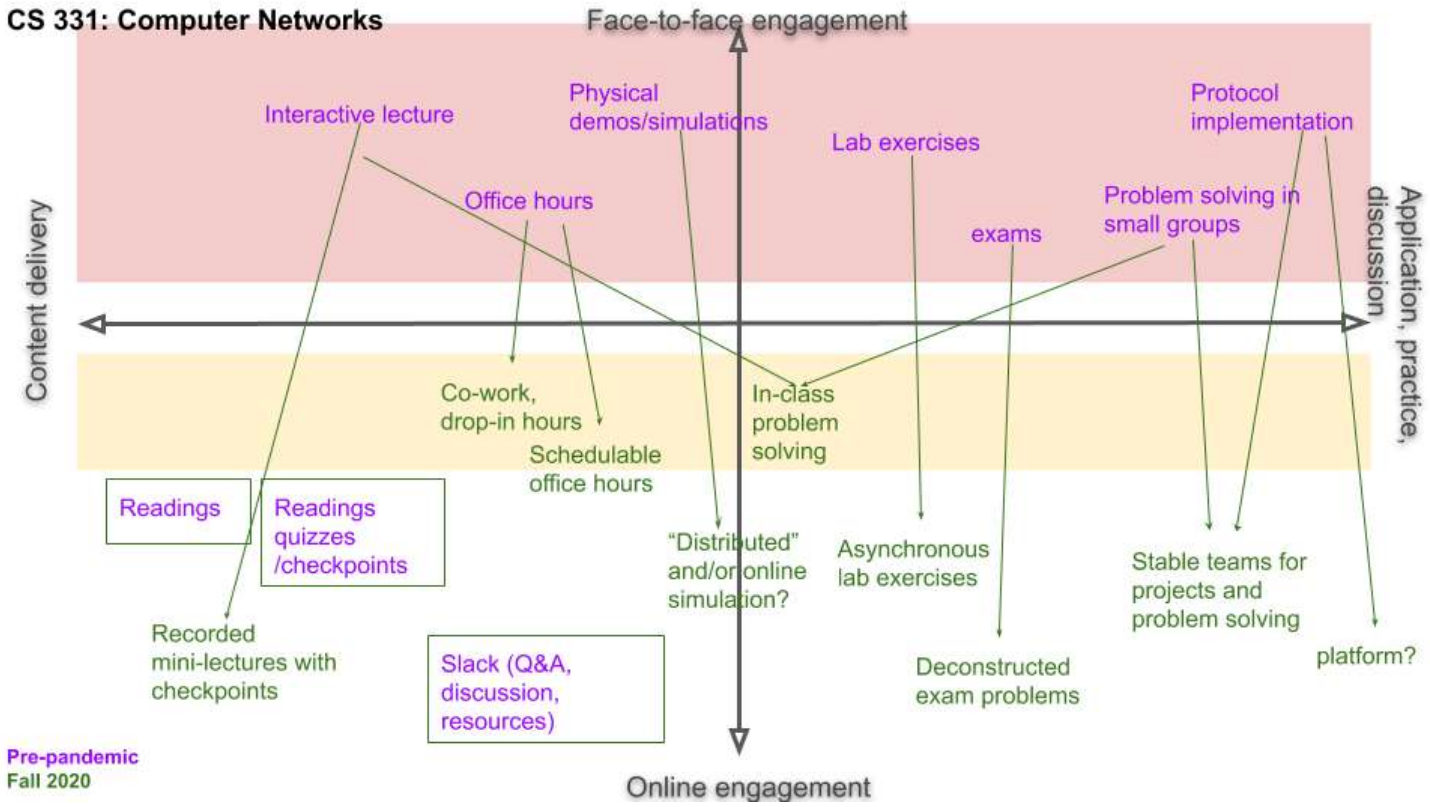
The LTC challenge included participation in the ACM workshop, or at least viewing the Monday webinar/recording, and asked us to do the same homework as in the ACM workshop. In addition, the challenge included discussion forum postings (some in the larger group, many in smaller assigned teams), a couple of synchronous discussions, an entire day of drop-in sessions with various staff and faculty on specific aspects of course design (Moodle, Panopto, thinking through learning goals and activities, etc.), and a final reflection. The challenge setup mimicked a mini-course setup, allowing us to experience aspects of an online course from a student's perspective.

I took a LOT away from this experience, but I want to highlight a few areas in particular: rethinking engagement; weekly structure and flow; and the student experience.

(Note: The worksheets in the images in this post all come from the two challenges, and were used across both challenges.)

Rethinking engagement

One of our first activities had us remap our "typical", in-person course activities to activities more amenable to multiple modes of participation — fully or partially online, across time zones, taking into account student illness/quarantine/family circumstances, etc. My matrix, for the elective I'm teaching this fall, is pictured below. Entries in purple indicate what I traditionally do in this course; green entries show changes for Fall Term. The entries with purple text in green boxes indicate things I did pre-Fall 2020 that I plan to continue in the fall.



My course resilience matrix. Which is not resilient from an accessibility standpoint, as it uses color to convey meaning. Ack!

The x-axis moves (left to right) from content delivery to content application/practice; the y-axis moves (top to bottom) from face-to-face engagement to online engagement. Thus, the matrix gives us the opportunity to think through where course activities fall on each of these continuums. The red box includes activities that must be completed in person, the yellow box indicates online synchronous activities, and the white space at the bottom indicates asynchronous online activities.

Since Carleton students don't register until August, I literally don't know where in the world my students will be this fall. In designing my matrix, I assumed that students occupied a wide range of time zones, thus the prevalence of activities in the asynchronous zone. For the team activities, I plan to group students roughly by time zone and preferred time of day to work, as I did in the spring. This should help a bit with the time zone issues.

I still have a couple of thorny problems to work through. I'm still not sure how to replace the in-class, physical simulations of network phenomenon (routing, protocol specifications, access control, etc) that I rely heavily on in this course, although I now have some ideas to pursue. And I'm still playing around with course projects, so I can't decide on the development platform until I finalize the projects. Otherwise, I found it easier than I expected to map my activities to their online counterparts.

Structure and flow

Later in the week, we thought through "a week in the life" of our course, using two different formats: a week-at-a-glance, and a more detailed accounting of the work itself.

Here's my week-at-a-glance:

A week in CS 331, Fall 2020

Monday	Tuesday	Wednesday	Thursday	Friday
Formal class meetings/activities				
Q&A drop-in during class time (optional)		Synchronous class session		Synchronous Q&A/problem-solving
Self-scheduled small group problem solving/activities (asynchronous, ongoing)				
			Project deliverable due	
Informal connections & engagement options:				
Lab assistant hours	Office hours (scheduled or drop-in "co-work" time)	Lab assistant hours	Office hours (scheduled or drop-in "co-work" time)	
Review/preview video				
Slack: announcements, Q&A, reading reflections/questions, small group discussion				

Overview of a week in the course, showing the modes of engagement and what's happening each day.

To be honest, I was worried about how well I'd be able to complete this set of activities, since I'm still trying to revise the learning goals for the course. I found instead that these exercises really clarified my thinking about the course as a whole. Specifically, it helped me think through *how* to spend our scheduled class time — and figuring that out helped other pieces, like asynchronous work, fall into place. In particular, I'm thinking of Wednesdays as the main days for synchronous engagement, with Fridays reserved for drilling down a bit more on applications of the content and Mondays for open-ended Q&A, on either the previous week's content or the current week's content.

The second part of this assignment asked us to define the set of activities in a particular week. I picked a random week in the middle of the course and came up with this plan:

Planning for a week (or module): Internet routing protocols

Helpful tool -- Rice University Course Workload Estimator: https://cte.rice.edu/workload

	What?	When?	How long?
Prep			Total: 3.25 hours
Read	Secton 3.4, "Routing": intro, Network as a Graph, and Distance-Vector (RIP)	M noon CT	1 hour
	Section 3.4, "Routing": Link State (OSPF)	W noon CT	1 hour
	Section 3.4, "Routing": Metrics	F noon CT	30 min
Watch	Mini-lecture/video demos on Distance Vector and Link State	anytime during the week, ideally by W class	45 min
Activities			Total: 2.5 hours
Class sessions	W: more formal problem-solving; F: informal problem-solving and review	W, F during class time	45 min each
Route This Data	Work in small groups to compute a fictional network's routing tables,	self-scheduled	1 hour
Assignments			Total: 4 hours
Reading quizzes	Short reading quizzes to test comprehension	M/W/F noon CT	20 min each
Router project	Forwarding table implementation (project groups)	Th 10pm CT	3 hours
Support			
Office hours	Drop-in "co-work"		1 hour each; stay as long or as short as you'd like!
	Schedulable		15 min slots
Lab assistant hours	Drop in	(link to schedule and/or list out hours)	n/a
Drop-in Q&A	Monday's class time is set aside for drop-in questions	class time M	1 hour

Course activities for a week in the middle of the term, including time estimates.
Which may not be accurate.

(Of course, after I completed this worksheet, we moved the scheduled course time, so now I have to revamp the due dates. Readings will now be due the night before class, instead of the day of class.)

This was perhaps the most eye-opening activity of the week. It's one thing to say "yeah, I'll have them watch some videos and take a reading quiz and maybe do a worksheet or two" and another to sit down and figure out how much time everything will take and why we want students to do these things in the first place. I settled on a rough pattern of preparing for class with targeted readings, reading quizzes to ensure comprehension, and mini-lecture videos. (Since the challenge, I've rethought this a bit — I may give students more flexibility in allowing them to read **and** watch content videos before attempting the reading quizzes.) Class and class-adjacent activities include engaging with the content formally (Wednesdays) and informally (Fridays), a team asynchronous activity (which might be the same one we tackle in class, expanding on the in-class work), and project work. I still need to figure out the appropriate mix, here.

In our small and larger group challenge discussions, we agreed that **students** may find these charts useful, too. I'm thinking of ways I can incorporate these views (a week in the life and the detailed accounting) into my course Moodle page. (This was a question I'd hoped to ask during the Moodle drop-in hours, but I had to leave before I could ask my question. More on this below.)

The student experience

Experiencing the design challenge as a student made me more sympathetic to the student experience, and I'm rethinking aspects of my course design as a result.

The first challenge: figuring out the challenge structure. What was happening each day? How do I submit my homework? What is the homework for today? How do I post/respond to just my small group? What is my small group? Why is this activity not marked complete if my teammate handed it in? Where's the Zoom link for today's discussion? If I, a seasoned educator and self-proclaimed Moodle power user, had trouble figuring some of these things out, then surely some subset of our students will, too! Lesson learned: **I need to be even clearer than I think I need to be, when conveying the *hows* and *whats* to my students.**

The second challenge: getting help! "Yay, drop-in hours!" I thought, as I skimmed the schedule at the start of the week. Come Thursday morning, I found myself in an internal dialog, which I tried to capture in this Twitter thread:

Today I found myself waffling over whether to attend virtual drop-in hours on fall term course design. Was my question "worthy" of stopping by to ask it? When should I show up — at the start, towards the middle, at the end? Am I wasting everyone's time? 1/2

And I realized OH MY GOD my students were likely having the SAME conversations about attending virtual office hours this spring! Now, the low attendance makes complete sense — and I need to think how to make attending office hours less scary/fraught.

Originally tweeted by Dr. Amy Csizmar Dalal (@drcsiz (https://twitter.com/drcsiz)) on July 16, 2020 (https://twitter.com/drcsiz/status/1283834649878450177).

I finally got over myself and hopped onto my first drop-in session, and had a lovely conversation with our outgoing LTC director on in-class simulations in an online environment. And commiserated with the faculty member who jumped on as we were finishing up, who, it turns out, conducted a similar internal dialog before joining the call. **I need to make seeking help, and participating in office hours, less scary and more natural this fall.**

Emboldened by my new-found confidence, I jumped onto a second drop-in session, on Moodle. There were already several people on the call, asking questions about assessment. I listened in and learned a few things that I made a note to try. But I had to jump off of the call to head to another meeting before the facilitator could answer my question on reproducing the spirit of the weekly plan (discussed in the previous section) on my course Moodle page. And it was not clear how I could seek out help on my question after the drop-in hours and/or after the challenge. **I need to think through how to accommodate multiple student questions during drop-in hours, and how to direct students to seek help outside of these hours too.**

Concluding thoughts

The challenge might be over, but planning for resilience continues. I find myself thinking through the intersection of resilient design with things like anti-racist pedagogy, time management (my students' and my own), assessment/grading, and maintaining boundaries while providing emotional support for students. I still need to do the hard work of translating my "week in the life of the course" for each week in my course, while I'm still wrestling with learning goals and the like. This challenge laid a strong foundation for this continued work.

Participating in this challenge, and in the other online ACM workshops this summer, brought an unexpected benefit, too: Confidence. I feel a lot more confident, and capable, of pulling off a strong and worthwhile online course this fall — and beyond, if it comes to that. Things I've learned directly translate into in-person offerings, too — the importance of clarity and structure, the value of providing choices to students to direct their own learning, the compassion of flexibility to accommodate student circumstances and acknowledge their struggles. The deep and prolonged reflection on my pedagogy is making me a more effective and more present educator.

course design, covid-19, teaching 3 Comments

3 thoughts on "Course design for resilience"

Janet Davis
August 3, 2020 at 9:04 am
Amy, I finally had some quiet time to read this, and now I'm going to be sharing it with everyone I know!

I have a possible answer to your question about office hours. This is a lesson learned from my colleagues Albert Schueller and Justin Lincoln, who this spring were teaching a course on Makerspaces, of all things.

What they did, and what I'm planning to do, is to schedule regular weekly meetings during class time with small groups of students. Then you're not depending on students to decide whether to show up to drop-in office hours: it's on their calendars. Depending on how I slice up my classes, I figure I can see every student at least once a week and perhaps as many as three times.

Students' main "classroom" engagement will be with these study groups, cohorts, or teams. I am planning to use CATME as a tool for group formation – your post reminds me that I need to see if it does time zones. For my discrete math course, I'm also thinking about asking students whether they prefer to work mostly alone or mostly with other people, since it's kind of optional whether students work together outside of meeting with me. I am thinking about how to adapt the Daily Scrum questions, since they've been super helpful this summer, and I am also planning to use your team agreement activity.

Reply

acdalal
August 3, 2020 at 2:58 pm
Thanks so much, Janet! I may try the small groups meetings — other colleagues are planning on trying something like this in the fall, too. I could see maybe meeting with the whole class on Wednesdays and then spreading the small groups over M/F. And I could combine smaller teams — so if I have teams of 3-4, each small group meeting could be with 2 teams (assuming I can get time zones to work out!).

And thanks for the reminder about CATME — every time I've tried to use it, the site's been non-responsive, but I should try again.

Reply

Janet Davis
August 3, 2020 at 5:16 pm
Yikes! Yeah, I've had no trouble using CATME.

The small group thing was in part a response to the need to plan hybrid classes; I liked that small groups could meet either online or in person. With Whitman's move to an entirely online fall, I've started thinking about whether I want some meetings of multiple groups or the class as a whole. That might be something I want to leave flexible.