

#NUTEXP019

# Live-Coding via Webcam

Collaboratively & Remotely Teaching DS2000 @ NCH



## DS2000 (Programming with Data)

<https://course.ccs.neu.edu/ds2000sp19nch/>

- *If you're only going to take one programming class ever, what would it be?!*
  - Apply programming techniques (in Python) to solve problems
  - Integrate data-analysis libraries and tools within a project
  - Utilize computation as a tool in analyzing and visualizing datasets
  - **Assumes no mathematical/programming background**
- Pairs 2 credits of lecture with 2 credits of DS2001 Practicum
  - Taught by instructors in other units (e.g., **Criminology**)



## (Technological) Support Needs

- Content delivery: application/data-driven, interactive live coding
  - Low-latency AV, crystal-clear code + results... from home/NU + travel (HI, MN)
- Learning to code takes time and practice!
  - Sustained student engagement (competing with London!)
  - Frequent feedback, in-context support

## NCH Setup

- Smart TV
- High-quality mic + camera
- Wired Internet

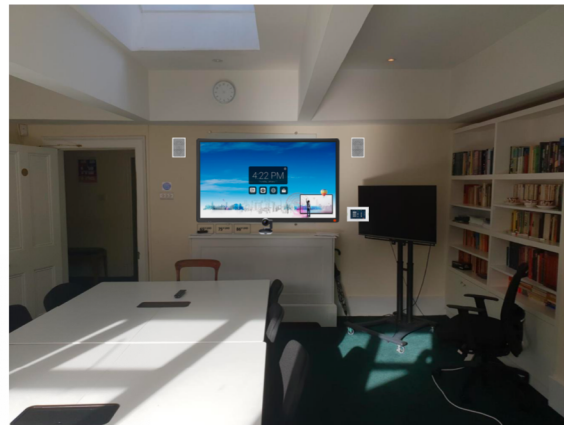
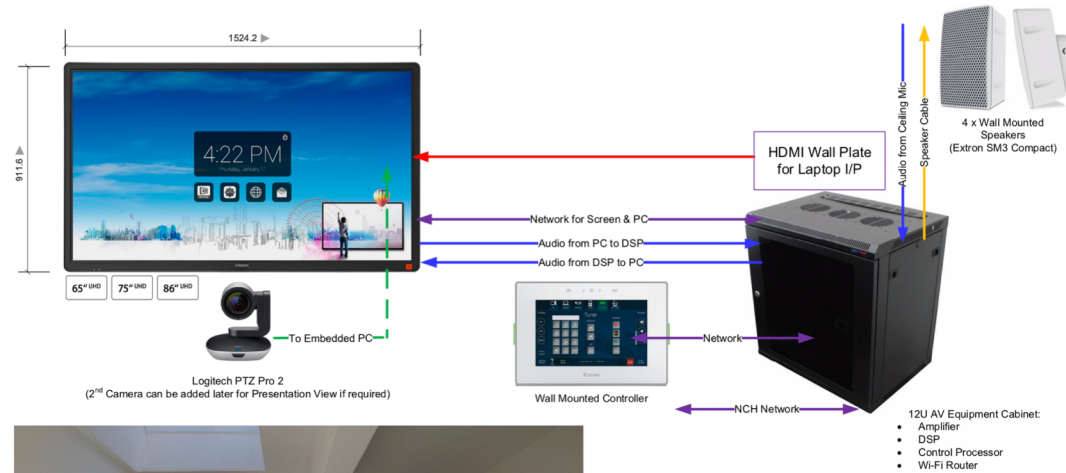


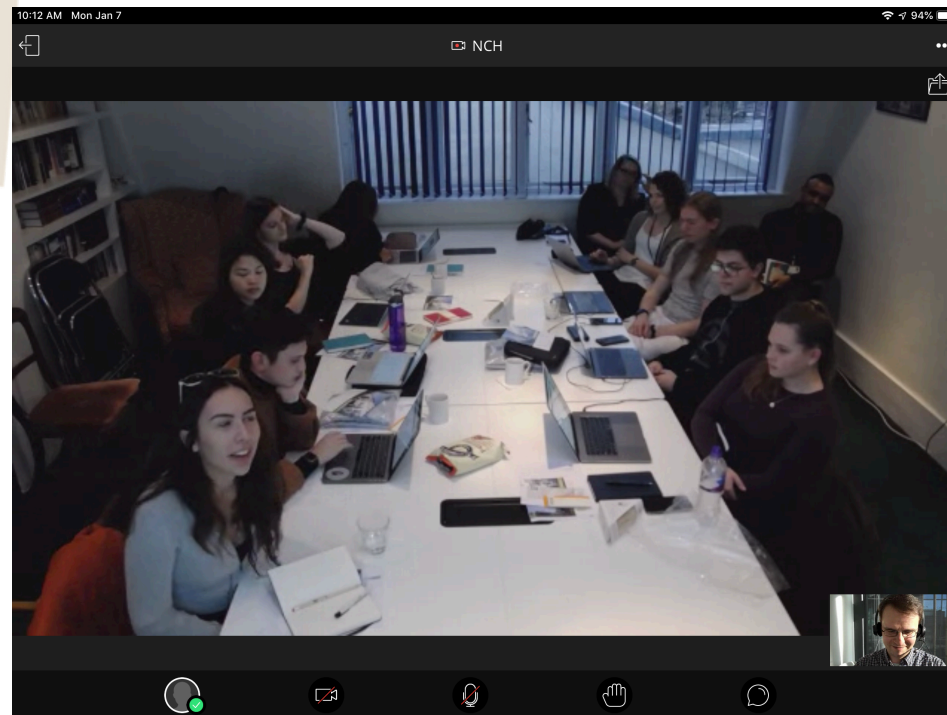
Table to be moved over in alignment to screen  
Equipment Rack to replace trolley



Sennheiser Ceiling Mic Array - Position TBD  
New Blinds required for Window  
Rear speaker positions TBD

## The Class :)

- 8 students (1 CS major)
- No TAs
- Mostly online, two 1-week visits



## Technological & Pedagogical Approach

- Blackboard Collaborate (with BlueJeans backup)
- Laptop=Remote Access (Bomgar), iPad (via Duet)=Class View
- Blackboard quizzes\*
- Student-driven unit testing
- Interactive, online textbook
- (Partial) flipped classroom via weekly pre-class quizzes
- Weekly instructor/staff meetings with eye/ear for adaptation
- Pair programming
- Predictable scheduling with deliberate selection of due dates, office hours, lecture v practicum, visits

## Lessons Learned

- Have plans/scripts (and backup plans) + on-the-ground support
  - Daily IT challenges
- Engagement/communication over distance is **hard**
  - Probably will increase future on-the-ground presence, but grew to embrace peer-instruction/support
  - Co-located class & office hours maintained peer/class cohesion
- Time is complicated
  - Time zones (DST vs British Summer Time; no Blackboard support)
  - Snow days, holidays, breaks
  - But relative time of peak engagement luckily worked out :)