How to conduct laboratories in the COVID-19 period: Solutions from METU

Prof. Kursat Cagiltay
Director, Distance Education Application and Research Center

odtuzem.metu.edu.tr
Moving from F2F to Distance Education

- METU’s ICT infrastructure was ready for Covid-19
- Courses successfully conducted Synch/Asynch ways

- Assessment: Online exams, Projects, Assignments
  - Exams given for thousands of students

- Labs:
  - Computer labs (programming, using SW, etc) are handled in distance
  - How about hands on labs? Physics, Chemistry, Engineering (Mechanical, Electrical, Civil, Metalurgical)
Quality Online Higher Ed is Possible

The Open University

- http://www.open.ac.uk/
- Science, Technology, Engineering and Mathematics
- Arts & Social Sciences
- Business School
- Wellbeing, Education and Language Studies
Successful Remote Labs...

The OpenEngineering Laboratory

Practical lab-based teaching at a distance covering engineering, electronics, control, materials, and robotics.

- Lab bench equipment accessed in real-time.
- Ultra-low latency for instantaneous experience.
- Students explore and learn as if the equipment is on a bench with them.
- Capacity for over 300 individual bench stations available simultaneously.
- 5 collaborative robot stations.
- Video and data streaming from test grade engineering rigs.

https://learn5.open.ac.uk/course/view.php?id=2#
Video Recordings of Experiments (Since 2011)

Open Education Consortium’s Best Video Lectures Award, 2011

General Chemistry Laboratory Experiments (English)

General Physics Laboratory Experiments

Experiment 1: Uniform Motion with Constant Velocity
Video Samples from Labs

~ 30 experiments in Chemistry and Physics

Chemistry Lab Videos were also used by other universities in Turkey during Covid-19 term
Remote Electron Microscopy @ METU

Scanning Electron Microscope at Department of Metallurgical and Materials Engineering
Future: Labs with Immersive Technology - VR

Costly:
~ USD 5-10 K per system
Future: Labs with Cheap Immersive Technology

Working on funding with UNESCO
Future: Home Experiment Kits?
Thanks for Listening

For more info: kursat@metu.edu.tr
odtuzem.metu.edu.tr