

Developing an Asynchronous COVID-19 Course in Response to the Pandemic at the University of Colorado



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Background

- In March 2020, medical students were removed from clinical work for safety and PPE.
- Medical students needed to be equipped with the most up-to-date knowledge regarding the SARS-CoV-2 virus.
- Students and faculty developed a novel course at the University of Colorado School of Medicine (CU SOM) to instruct on COVID-19 and serve our community during the pandemic.

Innovation Objective

To design and implement an interactive virtual course that effectively teaches future providers about SARS-CoV-2 and meets the needs of students, patients, and communities affected by the virus.

Methods

- 336 third and fourth-year medical students enrolled in this two-part four-week course:
 - Part A: Knowledge-based learning
 - 8 asynchronous learning modules covering SARS-CoV-2 pathophysiology, clinical presentation, epidemiology and evolving treatment modalities.
 - 4 synchronous weekly lectures focusing on epidemiology, crisis leadership, public health and societal impacts, and scientific strides in managing COVID-19.
 - Part B: Self-selected experiential learning:
 - Research
 - Medical Education
 - Bioethics and Medical Humanities
 - Service Learning
- Students completed two sets of evaluations:
 - Knowledge-based pre-/post-tests on COVID-19 biology, epidemiology, and clinical course.
 - Post-pre survey assessing COVID-19 specific attitudes.

Results

Curriculum Structure

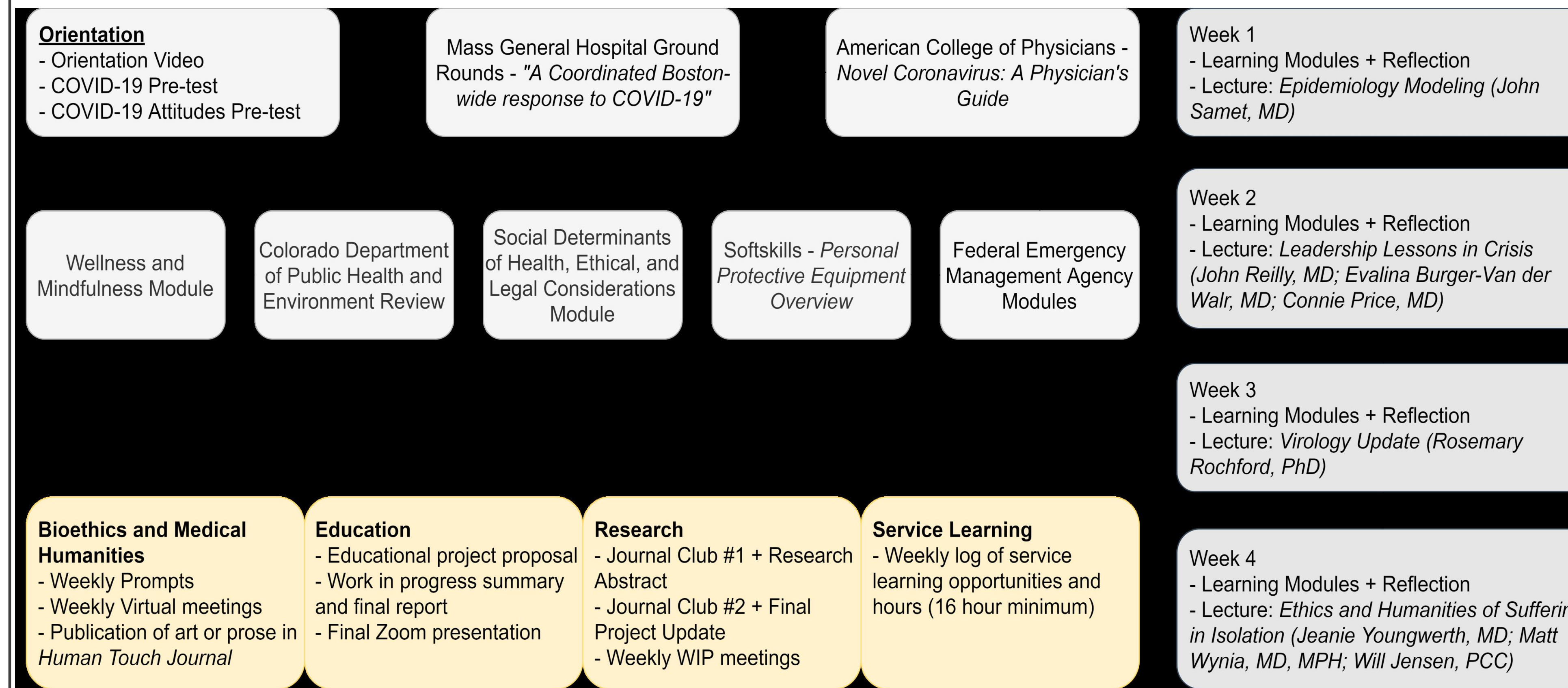


Figure 1. Overview of the course structure

Curriculum Evaluation: Knowledge Test

Pre-Test Survey (n=289)	Post-Test Survey (n=230)	p-value
66.0%	88.9%	<0.0001

Table 1. Pre- vs. post-course knowledge-based test scores

Curriculum Evaluation: Attitudes Survey

Please respond to the below statements using the following agreement scale (strongly disagree, disagree, somewhat disagree, somewhat agree, agree, strongly agree)	Mean Before (n=221)	Mean After (n=221)	p-value
I see myself as a leader.	4.40	4.55	0.0816
I feel a deep sense of purpose in the work that I do.	4.62	4.87	0.0079
I appreciate that role that physicians can play outside of clinical work.	4.85	5.23	<0.0001
I can advocate for patients and communities.	4.76	4.99	0.003
I can critically evaluate the evidence emerging about COVID-19.	4.33	5.08	<0.0001
I can translate Colorado public health data into digestible knowledge for family and friends.	4.46	5.20	<0.0001
I am able to apply clinical learning to real-world scenarios.	4.83	5.08	<0.0001
I can support community members, families, and colleagues in the health profession during a pandemic response.	4.28	4.99	<0.0001
I can describe the role of public health in responding to pandemic situations.	4.32	5.18	<0.0001
I can summarize the implications of ethics and social determinants of health outcomes during COVID-19 pandemic.	4.24	5.14	<0.0001

Table 2. Summary of Post-pre survey comparing pre- vs. post-course attitudes

Student Projects

Bioethics and Medical Humanities	Medical Education
<ul style="list-style-type: none"> Online repository of reflective writing and narrative pieces Weekly coffee house events to share work Weekly small group discussions on ethical implications of the pandemic 	<p>K-12:</p> <ul style="list-style-type: none"> Flyers Educational Videos Lesson Plans Coloring Books Educational Curriculum <p>Clerkships:</p> <ul style="list-style-type: none"> Interactive TBLs Shelf Exam Prep
Research	Service Learning
<ul style="list-style-type: none"> Journal Clubs 68 students-faculty connections for both COVID and non-COVID sponsored research 	<ul style="list-style-type: none"> > 4900 service hours PPE distribution Meal Distribution Phone Banking Child and Pet Care

Discussion

- CU SOM leadership effectively and efficiently mobilized to develop a broad, adaptable curriculum during the COVID-19 pandemic.
- This unique curricula allowed students to:
 - Self-select into one of four central pillars to create individualized learning goals.
 - Directly apply course content to real-world applications and enrich their communities.
- This work highlights the positive impacts of medical student involvement in curriculum development, the application of experiential learning opportunities, and collective class efforts in supporting community projects.

Acknowledgements

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