

## SCRB 210. COVID-19: Science, Medicine, and Therapeutics

### Instructors:

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### Description:

The course will address molecular, cellular, and physiological aspects of SARS-CoV-2, along with the therapeutic, epidemiological, clinical choices, and ethical implications of COVID-19. The pandemic serves as an excellent example of the challenges in making new medicines, in this case, in the middle of a crisis.

### Course Website:

<https://canvas.harvard.edu/courses/78794>

### Class Meetings:

2 hour block broken up most days into topic lecture (~40 minutes), topic discussion (~20 minutes), break (~20 minutes), and paper discussion (~40 minutes).

### Time:

10:00am to 12:00pm (noon) Eastern

### Dates and Topics:

Wednesday, August 5th:

- Historical account of SARS-CoV-2 / COVID-19.
- Guest: [Nitin Nohria](#) (HBS)
- Guest: [Adam Feuerstein](#) (STAT)

Thursday, August 6th:

- Epidemiology.
- Guest: [Michael Mina](#) (HSPH)

**Assignment #1 due Friday, August 7<sup>th</sup> by 5:00pm Eastern.**

Monday, August 10th:

- COVID-19 the disease.
- Guest: [Benjamin Medoff](#) (MGH)

Tuesday, August 11<sup>th</sup>:

- SARS-CoV-2 genome and the ACE-2 receptor / RNA viruses in general.
- Guest: [Don Ganem](#) (UCSF)

Wednesday, August 12<sup>th</sup>:

- Vaccines.
- Guest: [Dan Barouch](#) (BIDMC)

Thursday, August 13<sup>th</sup>:

- Economics of treatments – how much to charge, etc.
- Guest: [Amitabh Chandra](#) (HBS / HKS)

**Assignment #2 due Friday, August 14<sup>th</sup> by 5:00pm Eastern.**

Monday, August 17<sup>th</sup>:

- Vaccine manufacturing, regulatory / compliance.
- Guest: [John Markels](#) (Merck)

Tuesday, August 18<sup>th</sup>:

- Planning for the next coronavirus or plague.
- Guest: [Pardis Sabeti](#) (HSPH / FAS)

Wednesday, August 19<sup>th</sup>:

- Diagnostics.
- Guest: [Michael Springer](#) (HMS)

Thursday, August 20<sup>th</sup>:

- Student presentations.

**Assignment #3 due Friday, August 21<sup>st</sup> by 5:00pm Eastern.**

Grading:

The course grade will take into account student participation, three written assignments, and a presentation.

Please submit written assignments using the Assignments tab on the course website. The details for each written assignment are as follows:

Assignment #1 (due Friday, August 7<sup>th</sup> by 5:00pm Eastern):

- Write a paper describing the history of SARS-CoV-2 / COVID-19. In short, what went right versus what went wrong? This should be written as a popular science piece similar to what might be found in [The New Yorker](#) or [The Economist](#). The audience would be the general public.

Assignment #2 (due Friday, August 14<sup>th</sup> by 5:00pm Eastern):

- Write a paper reviewing vaccine efforts or another therapeutic modality underway for COVID-19. This should be written with venture capitalists as the target audience and similar to what might be found in [FierceBiotech](#).

Assignment #3 (due Friday, August 21<sup>st</sup> by 5:00pm Eastern) / Presentation (due Thursday, August 20<sup>th</sup>):

- Assignment #3 is tied to the proposals at the end of class. Both work products involve the following:
  - Assume you are head of research for a large biotech/pharma company. Write a \$1 billion proposal to the board of directors aimed at addressing the next pandemic.
- You will work in groups for this overall challenge.
- Your written proposal, worked on and submitted individually, will include one component of that overall plan.
- The group presentation will include your component, plus those from teammates who wrote on a different component of that overall plan.

All written assignments should be 3-5 pages. Successful submissions will be clearly and concisely written, demonstrating an impressive depth of insight and analysis. The writing will contain a logical progression, presenting appropriate details. Care will be taken that terminology is appropriately used, avoiding grammatical or spelling errors.

For the presentation, each person should plan to present their component of the proposal in 7 minutes using just 5 slides with minimal text. There will be 3 minutes for questions and answers per person.