

PUBH6670: COVID-19 PANDEMIC RESPONSE COURSE SYLLABUS

COURSE DESCRIPTION

On March 11, 2020, the World Health Organization publicly characterized COVID-19 as a pandemic. This outbreak has now become one of the most significant public health emergencies of our century. As medical students and key members of the medical community, it is our responsibility to be informed with supported scientific data in order to better advise our patients, family, friends, and community as a whole.

The goal of this course is for medical students to learn about the biology, epidemiology, and clinical course of SARS-CoV-2, the virus that causes the disease referred to as COVID-19, and then provide a variety of opportunities for students to apply this learning. Modules will be centered around virology, epidemiology, and clinical management to provide medical students with a broad understanding of the challenges faced with this pandemic. Materials consist of select readings, videos, podcasts, websites and key resources to help medical students gain a better understanding of the virus and resulting pathogenesis. You will test your knowledge with quizzes and participate in constructive and engaging e-conversations with peers through the use of discussion tabs and wiki pages within Canvas. Students then have the opportunity to apply their learning by selecting and focusing on one of the following four pillars: Bioethics and Medical Humanities, Education, Research or Service Learning.

The purpose of this course is for all students to stay up to date with the information surrounding the COVID-19 pandemic as the situation quickly evolves and to be able to respond and use this information to improve the health of the community. To ensure medical students are active participants in responding to the pandemic, community service is a required portion of the course. Opportunities range from calling patients remotely to acquiring patient samples in the clinic. To learn more about this requirement, please refer to the service-learning team for detailed information. Please note that content for this course is created in real-time and is subject to change based on on-going advances in medical research. Thus, we advocate for students to take initiative in remaining intellectually open-minded to the information that is evolving around the SARS-CoV-2 virus.

LEARNING GOALS

- Acquire an appreciation and understanding of the development and spread of this virus through a public health perspective in terms of prevalence, incidence, etc.
- Expand critical thinking skills, including the ability to review current scientific articles, and explain this knowledge in terms that are understandable for patients, the general public, and close family and friends
- Acquire and/or improve the ability to critically evaluate data presented throughout the course related to the COVID-19 pandemic

TOPICS

- Virology
- Pathogenesis
- Epidemiology
- Clinical presentation, diagnostics, prognosis and treatment
- Societal and economic consequences of COVID-19
- Active learning through selection of 1 of 4 Pillars: Bioethics and Medical Humanities, Education, Research, or Service Learning

COURSE MATERIALS

Select course materials will be available for each topic and will include a combination of required and/or optional videos, readings (e.g. primary literature, websites) and/or podcasts. Selected journal articles will be provided.

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COURSE OVERVIEW

The course is composed of a combination of an online study of select module activities, Part A, and an active learning 'pillar' experience, Part B. This course was developed rapidly in response to the COVID-19 pandemic. As such, the course schedule is dynamic as pieces are being developed and implemented concurrently. As a result, taking ownership of assignment due dates and deadlines is of paramount importance. Students should utilize Canvas to determine and adhere to assignment deadlines.

PRE- AND POST-WORK

- A variety of pre-work activities will be offered to allow for adequate preparation for the course. Examples of pre-work will include, but not be limited to, educational videos, recommended journal articles, and/or concept-relevant podcasts.
- A variety of post-work activities may also be assigned to solidify course content discussed during virtual class meetings and/or within Canvas discussion boards to reinforce and extend learning. Examples of post-work, depending on assignment, will be to work alone or in teams to create summary statements of an assigned portion of a journal club article or to produce a reflective writing assignment.

PART A. ONLINE LEARNING

MODULES

1. Mass General Hospital Grand Rounds

This module is a video of the Mass General Hospital Grand Rounds titled, "A Coordinated, Boston-Wide Response to COVID-19." This video details information about the virus such as virology, epidemiology, clinical presentation, and the generous philanthropy that has allowed this research to move forward.

Learning goals

- Develop the knowledge and skills required to translate basic virology and epidemiology surrounding COVID-19 to inform others about the pandemic
- Acquire an appreciation and understanding of the development and spread of this virus through a public health perspective in terms of prevalence, incidence, etc.

Learning objectives

- Summarize the virology surrounding COVID-19, including protein structure, mechanisms of cellular entry, viral replication cycle, etc.
- Describe the epidemiology of the COVID-19 virus such as the mode of transmission and prevalence of disease severity

2. American College of Physicians (ACP) – Novel Coronavirus: A Physician's Guide

This module from the American College of Physicians provides background knowledge of the biology of the virus, clinical illness script, and patient management. Details on physician wellness and protective personal equipment are also reviewed.

Learning goals

- Develop the knowledge and skills required to translate basic virology and epidemiology surrounding COVID-19 to inform others about the pandemic
- Acquire an appreciation and understanding of the development and spread of this virus through a public health perspective in terms of prevalence, incidence, etc.

Learning objectives

- Describe the comorbidities that predispose patients to a greater risk to develop severe or critical disease

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- Describe the characteristic clinical features, such as patient presentation, crucial diagnostic tests, treatments and patient prognosis

3. Colorado Department of Public Health and Environment (CDPHE) COVID-19 Updates

This module provides students with links to the Colorado public health page to familiarize themselves with the local COVID-19 pandemic. Students can explore current infection rates as well as other related information that the CDPHE is providing to the community. <https://covid19.colorado.gov/>

Learning goals

- Develop the ability to discern the difference between accurate resources that inform and misinformation that can mislead the general public during challenging and uncertain times
- Acquire and/or improve the ability to critically evaluate data presented throughout the course related to the COVID-19 pandemic
- Understand the COVID-19 pandemic in the State of Colorado

Learning objectives

- Translate Colorado public health data into digestible knowledge for family and friends
- Analyze the COVID-19 pandemic in Colorado and compare it to other areas in the United States

4. Federal Emergency Management Agency (FEMA)

This module includes three courses from the Federal Emergency Management Agency (FEMA). The courses included are IS-100.C: Introduction to the Incident Command System, IS-520: Introduction to Continuity of Operations Planning for Pandemics, and IS-700.B: An Introduction to the National Incident Management System. These courses provide students with foundational knowledge of the national management of emergencies and specifics on how the United States government plans for pandemics.

Learning goals

- Describe the role of the Federal Emergency Management Agency
- Understand how the United States government plans for pandemics

Learning objectives

- Describe the public health aspects involved in responding to pandemic situations
- Explain how governmental agencies and the public synergize to reduce the burden of disease
- Apply the concepts of emergency preparedness delivered from FEMA modules

5. Personal Protective Equipment (PPE) Overview via Softskills

These modules are offered through Softskills, which is provided by the university of Colorado system, provide students with necessary information on PPE. Students will gain knowledge on how use PPE without self-contamination and further be able to determine when a N95 mask is needed for use in the healthcare setting.

Learning goals

- Understand the importance of the effective use of PPE in the healthcare setting
- Gain an understanding of proper techniques to safely and effectively wear PPE

Learning objectives

- Understand the importance and effective use of PPE in the healthcare setting
- Understand the limitations of PPE in the healthcare setting

6. Social Determinants of Health, Ethical and Legal

The Social Determinants of Health, Ethical, and Legal Considerations module aims to explore the impact that the COVID-19 pandemic has in our society. This module will provide you with information about the different

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public health and executive orders aimed to prevent the spread of disease as well as the impact those have on our vulnerable populations.

Learning goals

- Gain conceptual knowledge presented in the course to understand complex social, ethical and economic implications of the pandemic on society, particularly related to human health (e.g. such as justice of medical care and vulnerable populations)
- Explore how human health outcomes during a pandemic are regulated by both governmental and business entities

Learning objectives

- Summarize the ethical, legal, and social determinants of health aspects that are currently occurring during the COVID-19 pandemic

7. Wellness and Mindfulness

This module allows students to explore ideas provided to pediatric residents at the Children's Hospital of Colorado on how to maintain wellness in this pandemic event. Students will write a short summary indicating what they can implement to improve/maintain their wellness during their participation in the COVID-19 course and the current pandemic.

Learning goals

- Gain exposure to different methods of maintaining wellness

Learning objectives

- Explain methods of supporting personal wellness from various activities such as meditation, mindfulness, gratitude and writing reflections during stressful world events such as pandemics

8. Weekly Reflections / Narrative Medicine

This module aims to provide students with a creative venue to describe their feelings regarding the COVID-19 pandemic. Students will be provided with weekly prompts aimed to evoke thought-provoking writing. This module will encourage students to explore their ideas, emotions, and societal events to help them cope with this pandemic in a creative and healing manner.

Learning goals

- Demonstrate the ability to create through-provoking written content
- Describe the tension and diverse range of feelings that may arise during a difficult time such as a pandemic

Learning objectives

- Utilize writing as an outlet during stressful life events
- Provide clear communication to others regarding thoughts, feelings, and attitudes during stressful events
- Process difficult events through a creative medium such as writing or art

Mandatory Lecture Series

This lecture series aims to provide students with up-to-date information on a range of essential topics in a pandemic situation. Lectures will encompass topics such as epidemiology, crisis leadership, virology, and ethics and humanities.

Epidemic Modeling

Dr. John Samet, MD, Dean of the Colorado School of Public Health

Leadership Lessons in Crisis

Dr. John Reilly, MD, Vice Chancellor for Health Affairs and Dean, School of Medicine

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Dr. Evalina Burger-Van der Walt, MD, Professor of Orthopedic Surgery

Dr. Connie Price, MD, Professor of Medicine, Division of Infectious Disease

Virology Update

Dr. Rosemary Rochford, PhD, Professor of Immunology and Microbiology/Environmental and Occupational Health

Ethics and Humanities of Suffering in Isolation

Dr. Jeanie Youngwerth, MD, Associate Professor of Medicine, Division of Palliative Care

Dr. Matt Wynia, MD, MPH, Director of the Center for Bioethics and Humanities

Will Jensen, Palliative Care chaplain Reverend

Learning goals

- Acquire an appreciation and understanding of the development and spread of this virus through a public health perspective in terms of prevalence, incidence, etc.
- Develop an understanding of relevant structures and functions of various viral structures and how current research indicates it interacts with cells in the human body
- Develop an understanding of the integrated components and function of the viral structure and its similarities to other coronavirus' such as MERS and SARS
- Explain how medical leadership evolves to meet the need during a public crisis such as a global pandemic
- Describe the concepts presented in the course in order to explain complex social, ethical and economic implications of the pandemic on society, particularly related to human health (e.g. such as justice of medical care, vulnerable populations)

Learning objectives

- Describe the epidemiology of the COVID-19 virus such as the mode of transmission and prevalence of disease severity
- Describe the public health aspects involved in pandemic situations and how governmental agencies and the public synergize to reduce the burden of disease ("flattening the curve")
- Summarize the virology surrounding COVID-19, including protein structure, mechanisms of cellular entry, viral replication cycle, etc.
- Translate medical terminology into a format that is informative and understandable to the general public
- Summarize the how medical leadership evolves during a public health crisis such as a pandemic
- Summarize the ethical, legal, and social determinants of health aspects that are currently occurring during the COVID-19 pandemic

PART B. ACTIVE LEARNING and the selection of a focused 'PILLAR'

This course will allow students to choose the Pillar they would like to participate in during the course.

Pillar Options (4)

Students will choose from 1 of 4 four categories: Bioethics and Medical Humanities, Education, Research or Service Learning. See the 'Module Tab' for each Pillar in Canvas for a detailed description and instructions. A summary of the Pillar options are listed below:

1. Bioethics and Medical Humanities Pillar

Learning goal

- Explore the pandemic intellectually and emotionally in a safe learning environment

Learning objectives

- Express thoughts, feelings and opinions on the COVID-19 pandemic
- Summarize current ethical dilemmas and social determinants of health

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- Share information and creative works surrounding the current pandemic with colleagues

The Bioethics and Medical Humanities Pillar will be a combination of the following: 1) required editorial responsibilities for the content generated by the large group, and 2) individual contributions within a smaller group of pillar students in a workshop. The entire course can be conducted from home and online, for those who need to prioritize remote learning during these difficult times. This is a generative workshop and course; we are open to all suggestions.

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2. Education Pillar

Select one of the 3 tracks within the pillar; Community Education, Medical Education Clerkships, or Medical Education Research.

Learning goals

- Provide students exposure to educational modalities and develop COVID-19 curricula for the local Denver community
- Provide medical students with an opportunity to engage with an area of medical education that aligns with their career trajectory

Learning objectives

Community Education

- Develop components of an educational curriculum related to COVID-19 and the resulting pandemic
- Summarize information regarding the COVID-19 virus and resulting disease for a specific, target audience
- Translate medical knowledge into a meaningful and an easy-to-understand format for the general population

Medical Education Clerkships

- Design online learning modules and resources for future clerkship students
- Demonstrate the ability to adapt clinical learning to non-clinical formats
- Describe the regulations mandated by the LCME regarding accreditation for medical school clerkships

Medical Education Research

- Apply research knowledge to the development of professional medical education
- Describe the methods used to disseminate medical education research
- Analyze literature in the field of medical education research
- Communicate research findings to medical peers

Gathering reliable information during a global event like the COVID-19 pandemic can provide a challenging situation for the greater community. In this pillar, we aim to develop educational materials that can be provided to educate the Denver and Aurora areas during these stressful and unpredictable times. For this pillar, students will draft a lesson plan for one of the following groups: K-6, 7-12, medical students or the general public and develop associated content. Students can be creative and use different medias to provide COVID-19 educational content such as videos, podcast scripts, newspaper commentaries, blogs, informational handouts for patients, etc. Students have an option to meet with the course educational leadership to review their project and find interested public works that would potentially use the developed content.

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3. Research Pillar

Learning goal

- Summarize the overall impact of current research related to SARS-Cov-2

Learning objectives

- Analyze current literature on SARS-CoV-2
- Interpret figures and diagrams commonly utilized in scientific literature
- Evaluate the scientific methods used within the literature on SARS-CoV-2
- Apply the scientific method in a real-life application through the production of an abstract, grant, or engagement in on-going research

The current pandemic has affected students' ability to continue their learning and formal training in both the classroom and hospital setting. In Dean Reilly's letter to the University, he encouraged students to use this time to take charge and learn about this virus and the larger situation at hand. In light of this, we hope this COVID-19 course will provide students with the opportunity to take learning into their own hands, become an expert on the topics surrounding coronavirus, and be of service to our community.

The research component of this course will challenge students to think critically about what they learned during the knowledge acquisition phase (Part A) of this elective course. For the research component, students will have the opportunity to explore the current literature surrounding coronavirus to develop a better understanding of the basic science and public health areas as it pertains to COVID-19. Further, students will develop their own research abstract entailing a research question and a testable hypothesis. We hope that this exercise will be beneficial down the road as many students will apply for grant funding later in their career. Ultimately, we hope this course will allow students to look back on this situation and say they spent their time in a meaningful way.

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4. Service Learning Pillar

Learning goal

- Participate in the public health response to the COVID-19 pandemic

Learning objectives

- Apply the knowledge of fellow health care professionals and community members to an interactive experience
- Develop inter-professional education and organizational leadership skills
- Support patients, families, community members, and colleagues in the health professions and public health during a pandemic response.

The service learning pillar provides students learning opportunities related to the COVID-19 pandemic response. Students who elect this pillar will be asked to assist in a variety of service-learning roles that directly and indirectly support health care and public health operations. Once enrolled in the course, students will receive credit towards course completion for their fulfillment of these roles. Though the list of available service-learning opportunities changes by the day, examples of roles that students can sign up for include visitor screening at local hospitals, PPE distribution, phone triage, and assisting with telehealth capabilities. These opportunities are available at a variety of different clinical and public health sites in Denver and Colorado Springs, and will be fulfilled in conjunction with Part A, the educational component, of the COVID-19 curriculum.

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CITIZEN SCIENCE PROJECT: COVID-19 FREQUENTLY ASKED QUESTIONS (FAQS)

Learning Goal

- Utilize the collective knowledge of the medical community to advance our understanding of the COVID-19 pandemic

Learning Objectives

- Work collaboratively to generate answers surrounding frequently asked questions related to SARS-CoV-2 and COVID-19
- Extend the knowledge of the individual through the collective participation of the whole

The 'Citizen Science Project' provides students with an opportunity to generate answers to scientific questions surrounding SARS-CoV-2 and COVID-19. Questions will be added to Canvas through the use of a wiki-style page format to encourage students to answer questions in a collaborative and editable manner. Using this wiki-style format, students will also be encouraged to add their own questions to the project. Further, student moderators will connect with experts in various fields to procure their answers to the seeded questions in either written form and/or a brief video interview that will be added to the 'Citizen Science Project' section of Canvas.

EVALUATION

You can expect to be evaluated on all aspects of the course. The information in the assigned pre- and post-work will be supplemented with the active engagement of the course material during the pillar portion of the course. Information regarding this pandemic is dynamic and changes rapidly. This course was developed to provide a foundation for further reading and synthesis of new information that emerges from this global event. As a result, you can expect that these assessments will test your ability to think critically, analyze thoughtfully, and express yourself effectively for your own personal knowledge, and for the variety of people (i.e. peers, patients and community members) whom you interact with daily. **The course is Pass/fail** and in order to pass students need to show completion of the quizzes and assignments. The percent correct on the quizzes/assignments do not dictate the points received, if the quiz/assignment is completed the student will be provided full credit for that section.

PRE- AND POST-COURSE ASSESSMENTS AND SURVEYS

At the beginning and end of the course your progress will be assessed. In addition, your feedback on the materials and methods used in this course will be collected, as well as your attitudes, abilities and beliefs about the topic covered and activities performed in the course. All assessments and surveys are performed in an effort to improve your online learning and pillar experience and to help you achieve the learning outcomes of the course.

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Point breakdown for Part A.

Category	Name of Assignment
Pre-test	Attitudes Measures Pre-Test
	COVID-19 Pre-Test
Modules	Mass General Hospital Grand Rounds
	American College of Physicians
	Colorado Public Health COVID-19 Situation
	Federal Emergency Management Agency
	Personal Protective Equipment
	Social Determinants of Health, Ethical, and Legal
	Wellness
Weekly Reflections	
Mandatory Lecture Series	
Weekly Tasks	Monday Update 3/23
	Monday Update 3/30
	Monday Update 4/6
Post-test	COVID-19 Post-Test
	Attitudes Measures Post-Test
	COVID-19 Pre/Post-Course Survey

Point breakdown for Part B.

Category	Assignments by Pillar			
	Bioethics and Medical Humanities	Community Education	Research	Service Learning
Assignments	Prompt #1 Response	Educational project proposal	Journal Club #1 Discussion Post	Log Service-Learning Opporuntites #1
	Prompt #2 Response	Work in progress summary of project	Journal Club #2 Discussion Post	Log Service-Learning Opporuntites #2
	Prompt # 3 Response		Research Abstract	Log Service-Learning Opporuntites #3
	Prompt #4 Response			Log Service-Learning Opporuntites #4
Virtual Meetings	Weekly Friday small group Zoom Meeting	Final Presentaion Zoom Meeting	Weekly Work in Progress Meeting	N/A
Applied Learning	Optional: Submit writtings or art to Human Touch Journal	Optional: Find Public Venue for Education Materials	Optional: Work with assigned research mentor on literature review, chart review, or bench top research	Required: Complete required 16 hours at the service learning opporuntity

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Course Leadership

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