

Washington University School of Medicine  
Master of Population Health Sciences (M19-5656)  
Master of Public Health (S55-4003)

Fall 2019 Global Burden of Disease: Methods and Applications (3 credits)  
COVID-19 SPECIAL EDITION

FALL 2020 (08/27/20 – 12/10/20)  
ONLINE INSTRUCTION (EXCEPT OFFICE HOURS)  
Thursdays, 2:00 – 5:00 pm

**SYLLABUS<sup>1</sup>**

Version 3: 08-10-20

**INSTRUCTORS** Rumi Kato Price, PhD, MPE (Interim Course master, [pricerk@wustl.edu](mailto:pricerk@wustl.edu))  
Amanda Sy (technical assistant, [amanda.sy@wustl.edu](mailto:amanda.sy@wustl.edu))

**GUEST LECTURERS** (alphabetical listing): In progress <sup>2</sup>

**OFFICE HOURS** By appointment or after class with an advance request. Group office hours can be arranged.  
Meetings are in-person when permitted, or online

**PREREQUISITES** Equivalent to an introductory epidemiology, a behavioral/social science quantitative method, or a biostatistics course. Prior consultation with Course Master is needed for those who do not meet any prerequisite.

**TARGET AUDIENCE** This course is suited for postgraduate scholars, fellows, medical students, and graduate students with interest or experience in global health methodology, and/or global health research experience.

**COURSE DESCRIPTION & OBJECTIVES:**

The Covid-19 global and local crises have amplified many aspects of urgent healthcare issues and health inequalities related to global burden of diseases including mortality and morbidity. The Fall 2020 Special Edition of the Global Burden of Disease course focuses on epidemiologic methods and global applications of GBD around the topics of Covid-19. The main topics include three major categories of global burden of diseases, including infectious diseases, chronic medical illnesses, and psychiatric & behavioral disorders. Topical areas include health care system, social determinants of health, and environmental justice. Focusing on the pandemic, students will learn basic methods used for global health research and major global, national and local trends; the impact of the pandemic on other disease patterns, morbidity and mortality; as well as learning about health care systems' response, amplified health disparities, and environmental correlates and consequences. The transdisciplinary knowledge and hands-on skills in data visualization and analyses will deepen students' understanding of future landscape of disease patterns and health care system; they will be able to apply the knowledge and skills to international or local health research and public health practice.<sup>3</sup>

1. A draft version. The content of this syllabus is subject to change.
2. Guest lectures are subject to availability of lecturers.
3. Topics are subject to change, due to the dynamics of the on-going COVID-19 pandemic.

**Due to the ongoing Covid-19 pandemic, the Fall 2020 instruction is conducted online mode only. Advance survey and optionally in-person office hours will be utilized to enhance engagement and class learning experiences.**

**Format:** The class format will be broadly divided into three: 1-hour lectures that cover the core topics and basic methodologies associated with the global burden of disease; second hour is dedicated to discussion of reading or lecture materials, exercise and assignments; the third hour is flexible and usually allocated to group project which will culminate to presentations toward the end of semester.

**COMPETENCIES:** At the end of this course, the student will be able to:

1. Develop a critical understanding of the concepts and measures used in studies of global burden of diseases.
2. Acquire a deeper understanding of transdisciplinary thinking toward illness experiences and global health research, using Covid-19 as a case study
3. Understand regional and national patterns of global burden of major diseases, focusing on Covid-19 related mortality and morbidity, and their risk factors.
4. Apply measures used in global burden studies to empirical data, field work, or interpretation of results in literature as they relate to mortality, morbidity and burden of the on-going Covid-19 pandemic.
5. Apply critical knowledge in global burden of the ongoing Covid-19 to disease monitoring, prevention, health promotion, treatments, long-term consequences and policy implications.

#### **ATTENDANCE, PARTICIPATION AND ASSIGNMENTS**

1. Virtual attendance is required for all classes. Recording is available in Canvas if scheduled zoom class is missed. Planned absences will need consent in advance by the course master, such as religious holidays and career development activities. More than two unexcused absences from virtual class without completing a post-class makeup assignment may result in a lowered grade; students who miss more than four virtual classes may be asked to withdraw from the class. Adequate accommodations will be made in the event a student encounters unanticipated health issues
2. In-class conduct: During the Zoom class, it is expected that students refrain from cell phone use, texting, emails and web surfing, that are unrelated to class activities, except for emergencies. This course may be audiotaped, photographed for educational purposes and later reviews by students.
3. Reading materials: Readings or other media assignments should be completed before each lecture. Articles or links to articles will be posted on Canvas in advance. Some citations to assigned readings are provided in advance but are subject to change. There is no required textbook.<sup>4</sup>
4. Student participation: This will consist of either informal discussions or semi-formal student presentations. Students are expected to prepare some discussion materials as directed by the course master in advance.
5. Class project and periodic assignments: A primary assignment is the class project completion and group presentation at the end of the course. Periodic individual and group assignments will augment class project completion and presentation.

**GROUP CLASS PROJECTS:** Examples of student group projects are listed below. Student's own ideas are welcome. Students are expected to form groups to choose a topic.<sup>5</sup>

1. Covid-19 infection, mortality and associated comorbidities across time and space.
2. Long haulers: illness phenomenology and long-term sequela and disability burden
3. Projecting and predicting disability weights of Covid-19

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4. Due to the nature of changing Covid-19 pandemic and rapid pace at which new information is found and released, reading and other support materials are provided week by week.

5. Number of class projects depends on enrollment size. A group of 3-4 for each project is desired.

4. Covid-19 and health, economic and environmental equalities
5. How can human change their behaviors to save themselves, other species and the Earth: Lessons from Covid-19

**GRADING: Letter grade or Pass/Fail with course master’s permission.**<sup>6</sup> Course activities and student products include lectures, class participation, assignments, and final group project presentation.

Your grade will be based on:

- Class attendance (20%)
- Student in-class participation and active discussion (20%)
- Periodic assignments (40%)
- Final class project presentation (20%)

**Grading Scale:** A+: 97-100; A: 93-96; A-: 90-92; B+: 87-89; B: 83-86; B-: 80-82; C+: 77-79; C: 73-76; C-: 70-72. Total of 100 will be converted to letter grades according to the established norm; grades will not be normalized. Pass/Fail is optional but requires advance permission from the course master

**Policy on late assignment submission:** Late submission of assignments may negatively impacts a component score unless prior approval is obtained or an emergency rises (i.e. documented health issues or family emergency). Accommodations can be made for students with unanticipated health changes.

**Communications with the course master/co-instructors are vitally important.**

**Rubrics:** To assess assignment, we will utilize rubric format consists of multiple criteria for assignment/presentation for the purpose of assignment and levels of completeness/innovation of student’s response. Examples will be provided within the first couple of classes.

**DROP DATES**

You may drop for any reason during the course of the semester. However, you may only receive a partial or no tuition reimbursement depending upon how far into the semester you drop the course. See the [MPHS Student Handbook](#). A late withdrawal will appear on your transcript as a withdrawal.

**COURSE SCHEDULE AND ASSIGNMENT DUE DATES**

**Week 1: Thursday, August 27, 2020**

<b>Lecture: Introduction to the Global Burden of Disease</b>	<b>Class exercise &amp; project</b>
<ul style="list-style-type: none"> <li>○ Experience of infectious disease expert</li> <li>○ Instructor and student introduction</li> <li>○ Syllabus review</li> <li>○ Reading materials</li> <li>○ Student requirements and products</li> <li>○ Global Burden of Disease as it relate to Covid-19</li> </ul>	<ul style="list-style-type: none"> <li>○ Introductory survey: What GBD means to you? What do you like to achieve?</li> <li>○ Discussion: How Covid-19 changed your perception of global health, and how it relates to global burden of disease?</li> <li>○ IHME COVID-19 prediction visualization</li> <li>○ Breakout – group formation</li> </ul>

**Week 2: Thursday, September 3, 2020**

<b>Lecture: Basic models of Global Burden of Disease and COVID-19 epidemic modeling</b>	<b>Class exercise &amp; project</b>
<ul style="list-style-type: none"> <li>○ Basic elements of global burden of disease</li> <li>○ Modeling COVID-19 pandemic – IHME Intro</li> </ul>	<ul style="list-style-type: none"> <li>○ GBD basic measures discussion: years of life lost (YLL); disability weights; years of life</li> </ul>

6. Due to continuing uncertainties of the Covid-19 pandemic spread in the St. Louis region, including Washington University campuses, changes from letter grade to pass/fail can be arranged flexibly.

<ul style="list-style-type: none"> <li>Other modeling of COVID-19 pandemics: Intro</li> </ul>	<ul style="list-style-type: none"> <li>lost due to disability (YLD); disability-adjusted life years (DALY)</li> <li>Hand computation of GBD – case scenarios</li> <li>Short report #1 instruction</li> </ul>
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**Week 3: Thursday, September 10, 2020**

<b>Lecture: Illness and disease experience</b>	<b>Class exercise &amp; project</b>
<ul style="list-style-type: none"> <li>Disease and illness from a medical anthropological perspective</li> <li>Covid-19 survivor's own stories</li> <li>Health care workers – what was like at the height of the curve?</li> </ul>	<ul style="list-style-type: none"> <li>Discussion: similarities and differences in Covid-19 experiences</li> <li>Team &amp; project formation: Round I – list of potential projects</li> <li>Short report #1 instruction (describe patient and health care perspectives)</li> </ul>

**Week 4: Thursday, September 17, 2020**

<b>Lecture: Covid-19 - Infectious Disease</b>	<b>Class exercise and project</b>
<ul style="list-style-type: none"> <li>Global spread of SARS-Cov2 and Covid-19 (history, progression, pandemic)</li> <li>Local spread modeling</li> </ul>	<ul style="list-style-type: none"> <li>Infectious disease modeling basics review</li> <li>Local epidemic model exercise using visualization tool(s)</li> </ul>

**Week 5: Thursday, September 24, 2020**

<b>Lecture: Ebola and Covid-19</b>	<b>Class exercise and project</b>
<ul style="list-style-type: none"> <li>Virological characteristics and transmission)</li> <li>Epidemiologic</li> <li>Healthcare response</li> <li>Treatment and prevention (including vaccine)</li> </ul>	<ul style="list-style-type: none"> <li>Discussion: Ebola and Covid-19, areas of impact and sequela</li> <li>Short report #2 instruction (interaction of virology, healthcare response and sociocultural factors)</li> <li>Team &amp; project formation: Round II – outline of projects</li> </ul>

**Week 6: Thursday, October 1, 2020**

<b>Lecture: Chronic medical illnesses and Covid-19</b>	<b>Class exercise and project</b>
<ul style="list-style-type: none"> <li>Symptoms progression of Covid-19</li> <li>Chronic medical illness as risk factors</li> <li>Covid-19 illness sequela</li> <li></li> </ul>	<ul style="list-style-type: none"> <li>Hypothetical scenario of future GBD DALYs due to Covid-19</li> <li>Short report #2 student presentation and discussion</li> </ul>

**Week 7: Thursday, October 7, 2020**

<b>Lecture: Chronic medical illnesses and Covid-19</b>	<b>Class exercise and project</b>
<ul style="list-style-type: none"> <li>Healthcare preparedness</li> <li>Comparative risk assessment framework for future projection of Covid-19 disability assessment</li> </ul>	<ul style="list-style-type: none"> <li>Team and project formation: Round III – finalize group project topic</li> <li>Discussion: GBD perspective on medical illness and Covid-19</li> <li>Mid-course feedback</li> </ul>

**Week 8: Thursday, October 15, 2020**

<b>Lecture: Mental health and Covid-19</b>	<b>Class exercise and project</b>
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<ul style="list-style-type: none"> <li>○ Covid-19 and CNS system invasion?</li> <li>○ Mental health consequences of Covid-19</li> <li>○ Stress on healthcare professionals</li> <li>○ Repurposing psych drugs for Covid-19 treatment</li> </ul>	<ul style="list-style-type: none"> <li>○ Team project – in class work</li> <li>○ Short report #3 instruction (healthcare preparedness, contrast Covid with a well-understood common disease)</li> <li>○ Class project abstract draft due</li> </ul>
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**Week 9: Thursday, October 22, 2020**

<b>Lecture: Substance abuse and Covid-19</b>	<b>Class exercise and project</b>
<ul style="list-style-type: none"> <li>○ Changes in the global and domestic substance use patterns</li> <li>○ What happened to the opiate epidemic?</li> </ul>	<ul style="list-style-type: none"> <li>○ Short report #3 student presentation</li> <li>○ Class project outline and content preparation – outlining the deliverable</li> </ul>

**Week 10: Thursday, October 29, 2020**

<b>Attend a portion(s) of the Institute for Public Health Annual Conference (8a-3p) <sup>7</sup></b>	<ul style="list-style-type: none"> <li>○ Short report #4: Submit a short essay based on your conference participation. Any topic related to Covid-19 as it related to the global burden of disease.</li> </ul>
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**Week 11: Thursday, November 5, 2020**

<b>Lecture: Covid-19 – amplifier of social determinants of health</b>	<b>Methods and Practice</b>
<ul style="list-style-type: none"> <li>○ SES, race, geography on Covid-19 spread and disease sequela</li> <li>○ Stigma and discrimination</li> </ul>	<ul style="list-style-type: none"> <li>○ Short report #5 instruction (describe one area of health disparities in the St. Louis region, what happened and why)</li> <li>○ Class project outline due</li> </ul>

**Week 12: Thursday, November 12, 2020**

<b>Lecture: Covid-19 and Environmental sciences</b>	<b>Methods and Practice</b>
<ul style="list-style-type: none"> <li>○ Environmental justice perspective on Covid-19 impact</li> <li>○ Pollution, fine particles, environmental destruction</li> <li>○ Silver lining? When the human economy stops</li> </ul>	<ul style="list-style-type: none"> <li>○ Short report #5 student presentation</li> <li>○ Week 13 panel discussion preps</li> <li>○ Q&amp;A for group presentations for Week 15</li> </ul>

**Week 13: Thursday, November 19, 2019**

<b>Student panel</b>
<ul style="list-style-type: none"> <li>○ Future predictions on the Covid-19's impact on healthcare and health research</li> <li>○ How have you adjusted? Your health and mental health</li> <li>○ Recommendations for policy makers</li> <li>○ What is your plan to adjust your career?</li> </ul>

**Week 14: Thursday, November 26, 2020 – NO CLASS, Thanksgiving**

**Week 15: Thursday, December 3, 2020**

<b>Student presentations</b>
<ul style="list-style-type: none"> <li>○ Class project presentations (1)</li> </ul>

7. <https://publichealth.wustl.edu/events/covid-19-pandemic-response-lessons-learned-and-recovery/>

- Presentation discussions

## Week 16: Thursday, December 10, 2020

### Student presentations and wrap-up

- Class project presentation (2)
- Final class presentation documents due
- Missed assignments makeup time
- Course evaluation

**Reading samples:** To be assigned week by week, due to rapidly changing nature of the Covid-19 pandemic

### **MENTAL HEALTH RESOURCES**

Mental Health Services' professional staff members work with students to resolve personal and interpersonal difficulties, many of which can affect the academic experience. These include conflicts with or worry about friends or family, concerns about eating or drinking patterns, and feelings of anxiety and depression. See: [shs.wustl.edu/MentalHealth](https://shs.wustl.edu/MentalHealth). Washington University School of Medicine Department of Psychiatry. For further information: <https://hr.wustl.edu/covid19-employee-support/mental-health-resources/zoom-support-groups-and-sessions/>

### **SEXUAL ASSAULT RESOURCES**

You can also speak confidentially and learn about available resources by contacting [Dr. Gladys Smith, PhD](#), Sexual Violence Prevention Therapist and Licensed Psychologist at the Medical Campus, (314) 362-2404. Additionally, you can report incidents to the Office of Student Affairs or by contacting WUSM Protective Services 314-362-4357 or your local law enforcement agency.

### **BIAS RESOURCES**

The University has a process through which students and staff who have experienced or witnessed bias, prejudice or discrimination against a student can report their experiences to the University's Bias Report and Support System (BRSS) team. For details see: [diversityinclusion.wustl.edu/brss/](https://diversityinclusion.wustl.edu/brss/).

### **Office of the Associate Vice Chancellor for Diversity, Equity and Inclusion (DEI)**

**The DEI Training Team** designs, facilitates and leads diversity education programming for faculty, staff and students on a wide range of topics including: creating a climate of respect, the value of diversity and the role of biases in our day-to-day lives. [diversity.med.wustl.edu/training/](https://diversity.med.wustl.edu/training/)

**The Office of Diversity Programs** promotes diversity among and prepares medical students to lead in a global society. A priority for the Office of Diversity Programs is to cultivate and foster a supportive campus climate for students of all backgrounds, cultures and identities. [mddiversity.wustl.edu/](https://mddiversity.wustl.edu/)

**The Diversity and Inclusion Student Council** promotes an inclusive campus environment for all School of Medicine students. [sites.wustl.edu/disc/](https://sites.wustl.edu/disc/)

**The Office for International Students and Scholars** embraces the university's mission of welcoming promising students from around the world. [wumma.wustl.edu/](https://wumma.wustl.edu/)

### **DISABILITY RESOURCES**

It is the goal of Washington University to assist students with disabilities in removing the barriers their disabilities may pose and provide support in facing the challenge of pursuing an education at Washington University.

Washington University recognizes and accepts its professional, legal and moral responsibility to avoid discrimination in the acceptance and education of qualified students with disabilities and to provide reasonable



accommodations to such students consistent with the principles embodied in the law. These guidelines apply to students seeking admittance as well as to those who become disabled while they are enrolled.

Washington University makes every effort to insure that all qualified applicants and students can participate in and take full advantage of all programs and opportunities offered within the university. Washington University encourages and gives full consideration to all applicants for admission. Washington University does not discriminate in access to its programs and activities on the basis of age, sex, sexual orientation, race, disability, religion, color or national origin.

To learn more about services provided to students with disabilities, initiate the process of formal documentation and/or to arrange for accommodations, please review the [Disability Resources](#) for the Med School at the start of the course.

**ACADEMIC INTEGRITY/PLAGIARISM POLICY:**

Academic dishonesty is a serious offense that may lead to probation, suspension, or dismissal from the University. Academic dishonesty includes plagiarism (the use of someone else's ideas, statements, or approaches without proper citation). Academic dishonesty also includes copying information from another student, submitting work from a previous class for a new grade without prior approval from your instructor, cheating on exams, etc. You are responsible for reviewing [WashU's academic integrity resources](#) to become aware of all the actions that constitute academic dishonesty.

All instances of academic dishonesty will be reported to the Office of the Registrar for investigation and potential disciplinary action. In addition, the instructor will make an independent decision about the student's grade on any assignment in question. The MPHS process regarding academic dishonesty is described in the [MPHS Student Handbook](#)