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Office Hours: I am available by appointment and look forward to meeting with you.

Class Meeting Schedule:

Global Healthcare Innovation (BMEA 6100) is an asynchronous online course organized and delivered using applied case studies.

Required Course Materials:

A traditional textbook is not required. Required course materials include peer-reviewed scientific literature, slide presentations, videos and self-assessment activities and will be posted to CarmenCanvas (<https://carmen.osu.edu/>).

Course Description:

Global Healthcare Innovation (BMEA 6100) introduces graduate students to the breadth and diversity of global healthcare innovations. Through guided discussion and application of case studies, we will explore both emerging digital technologies (e.g., mobile telephones, telemedicine, telediagnostic systems, and virtual reality simulation) and social innovations to support population health efforts in resource-limited environments throughout the world.

While open to all graduate and professional students, *Global Healthcare Innovation* (BMEA 6100) is an elective course for those enrolled in the Graduate Interdisciplinary Specialization in Global Health (<https://globalhealth.osu.edu/specialization-global-health>).

Prerequisites:

There are no prerequisites for this course.

Course Learning Outcomes:

By the end of this course, students will be able to:

- analyze the evidence-based need for healthcare innovation in resource-limited environments throughout the world.
- describe the utility of reverse innovation—the flow of ideas from lower to higher income settings—as applied to healthcare delivery.
- discuss emerging digital technologies and social innovations to support population health efforts in resource-limited environments.

Online Structure:

This course will be conducted in a distance-learning, asynchronous online format. All materials will be provided via CarmenCanvas and all assignments will be completed via CarmenCanvas file upload. All necessary materials will be provided in the content section of CarmenCanvas. A tutorial is available at <https://ocio.osu.edu/audience/students>. Notices about this course will be sent to your [name.#@buckeyemail.osu.edu](mailto:yourname.#@buckeyemail.osu.edu) account. All students must have an active OSU email account and remain electronically connected to OSU. Emails may be forwarded to an external email address. Please contact the Help Desk for more information.

Course Technology:

For help with your password, university e-mail, Carmen, or any other technology issues, questions, or requests, contact the OSU IT Service Desk. Standard support hours are available at <https://ocio.osu.edu/help/hours>, and support for urgent issues is available 24x7. Self-Service and Chat support: <http://ocio.osu.edu/selfservice> • Phone: 614-688-HELP (4357) Email: 8help@osu.edu • TDD: 614-688-8743

Safety and Health Requirements:

All teaching staff and students are required to comply with and stay up to date on all University safety and health guidance, which includes wearing a facemask in any indoor space and maintaining a safe physical distance at all times. Non-compliance will be warned first and disciplinary actions will be taken for repeated offenses.

Academic Misconduct:

"Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the University's Code of Student Conduct, and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines established in the University's Code of Student Conduct and this syllabus may constitute

Academic Misconduct. The Ohio State University's Code of Student Conduct (Section 3335-23-04) defines academic misconduct as: Any activity that tends to compromise the academic integrity of the University, or subvert the educational process. Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the University's Code of Student Conduct is never considered an excuse for academic misconduct, so I recommend that you review the Code of Student Conduct and, specifically, the sections dealing with academic misconduct. If I suspect that a student has committed academic misconduct in this course, I am obligated by University Rules to report my suspicions to the Committee on Academic Misconduct. If COAM determines that you have violated the University's Code of Student Conduct (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the University. If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact me." (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct [<http://studentconduct.osu.edu/>].

Disabilities:

The University strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including mental health, chronic or temporary medical conditions), please let faculty know immediately so that we can privately discuss options. To establish reasonable accommodations, we may request that you register with Student Life Disability Services. After registration, make arrangements with me as soon as possible to discuss your accommodations so that they may be implemented in a timely fashion. SLDS contact information: slds@osu.edu; 614-292-3307; slds.osu.edu; 098 Baker Hall, 113 W. 12th Avenue.

Counseling and Consultation Services:

As a student, you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities. The Ohio State University offers services to assist you with addressing these and other concerns you may be experiencing.

If you are or someone you know is suffering from any of the aforementioned conditions, you can learn more about the broad range of confidential mental health services available on campus via the Office of Student Life's Counseling and Consultation Service (CCS) by visiting ccs.osu.edu or calling 614--292--5766. CCS is located on the 4th Floor of the Younkin Success Center and 10th Floor of Lincoln Tower. You can reach an on-call counselor when CCS is closed at 614-292-5766.

If you are thinking of harming yourself or need a safe, non-judgmental place to talk, or if you are worried about someone else and need advice about what to do, 24 hour emergency help is also available through the Suicide Prevention Hotline (Columbus: 614-221-5445 / National: 800-273-8255); or text (4hope to 741741); or at suicidepreventionlifeline.org

Diversity:

"The Ohio State University affirms the importance and value of diversity in the student body. Our programs and curricula reflect our multicultural society and global economy and seek to provide opportunities for students to learn more about persons who are different from them. We are committed to maintaining a community that recognizes and values the inherent worth and dignity of every person; fosters sensitivity, understanding, and mutual respect among each member of our community; and encourages each individual to strive to reach his or her own potential. Discrimination against any individual based upon protected status, which is defined as age, color, disability, gender identity or expression, national origin, race, religion, sex, sexual orientation, or veteran status, is prohibited."

Title IX:

Title IX makes it clear that violence and harassment based on sex and gender are Civil Rights offenses subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories (e.g., race/gender). If you or someone you know has been sexually harassed or assaulted, you may find the appropriate resources at <http://titleix.osu.edu> or by contacting the Ohio State Title IX Coordinator, Kellie Brennan, at titleix@osu.edu.

Grievances and Solving Problems:

Please see SHRS Student Handbook Policy # 5 and Policy #20 – Student Appeal Process. In general, a student should meet with the instructor of record for the course first and then, as outlined in Policy #5 and #20, a student should then take any problem or grievance to the Division Director.

Conduct in the Classroom and Academic Learning Environment:

Students will adhere to the code of student conduct for The Ohio State University at all times.

This syllabus, the course elements, policies, and schedule are subject to change.

Grading and Evaluation:

Graded assignments may come in two forms, and students should note the expectations for each in the descriptions of our class assignments below.

- **Independent Work (👤):** Strictly non-collaborative, original-individual work. You may discuss this assignment only with your instructor. Discussions with other individuals, either in person or electronically, are strictly prohibited.
- **Optional-Collaboration (💬):** Students are permitted, but not required, to discuss the assignment or ideas with each other. However, all submitted work must be one's original and individual creation.

Assignment Name	Points / Weight	Assignment Type
Weekly Discussion Board Responses (6 weekly responses @ 20 points)	120	💬
Global Healthcare Innovation Presentation	150	👤
Global Healthcare Innovation Class Discussion	80	💬
Final Examination	150	👤
TOTAL COURSE POINTS	500	

Course Assignments:**Weekly Discussion Board Responses**

Discussion with your classmates is a vital part of learning. In this course, you will participate in six (6) weekly general discussions. Each week, Dr. Wallace will post two (2) discussion prompts pertaining to material covered during class. To receive full credit for each weekly discussion, you need to post thoughtful, well-written responses to both prompts and respond to two of your classmates' answers. Responses must be posted to the course CarmenCanvas Discussion Board by 9:00 am on:

- October 25, 2021
- November 1, 2021
- November 8, 2021
- November 15, 2021
- November 22, 2021
- November 29, 2021

Global Healthcare Innovation Presentation and Class Discussion

Students will identify a recently implemented healthcare innovation project or initiative in a low-income or lower-middle-income country. Please consult the World Bank Country and Lending Groups (<https://datahelpdesk.worldbank.org/knowledgebase/articles/906519>) to identify counties currently categorized as low-income or lower-middle income.

Examples of healthcare innovation projects include Sproxil (<https://sproxil.com>) in Ghana, Nigeria and Kenya and MamaOpe (<http://mamaope.com/>) in Uganda.

Part 1

Students will prepare a 15-minute interactive slide presentation and narration (audio recording) depicting their selected healthcare innovation project. Presentations must be uploaded to CarmenCanvas DropBox by November 30, 2021 at 9:00 am.

Part 2

From November 30-December 6, 2021 (Week #7), we will review and discuss submitted healthcare innovation projects. Students are required to review and actively participate in an online discussion throughout the week. To receive full credit for this assignment, you need to post thoughtful, well-written responses to prompts and your classmates' responses. Responses must be posted to the course CarmenCanvas Discussion Board on December 6, 2021 at 9:00 am.

Final Examination

A comprehensive open-notes final examination will be distributed to students on December 7, 2021 at 9:00 am. The final examination must be submitted to CarmenCanvas DropBox on December 16, 2021 by 9:00 am.

Grading Scale

A	A-	B+	B	B-	C+	C	C-	D+	D	E
>93%	92.9- 90%	89.9- 87%	86.9- 83%	82.9- 80%	79.9- 77%	76.9- 73%	72.9- 70%	67.9- 69%	66.9- 60%	<60%

Course Schedule

Date	Topics	Readings and Resources	Assignment(s)
<p>Week 1 10/18- 10/25</p>	<p>Overview of Global Healthcare Innovation</p> <p>Reverse Healthcare Innovation</p>	<p>Faroo et al. A user-centered design framework for mHealth. <i>PLoS One</i>, 2020; 15(8):e0237910. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7444488/pdf/pone.0237910.pdf</p> <p>Horgan et al. Propelling health care into the twenties. <i>Biomedicine Hub</i>, 2020;5:508300. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7392387/pdf/bmh-0005-0001.pdf</p> <p>Snowdon et al. Reverse innovation: an opportunity for strengthening health systems. <i>Globalization and Health</i>, 2015;11:2. https://pubmed.ncbi.nlm.nih.gov/25889986/</p>	<p>Discussion Board Responses—Week #1 (submitted to CarmenCanvas Discussion Board by 10/25/2021 at 9:00 am)</p>
<p>Week 2 10/26- 11/01</p>	<p>Case Study: Building a Digital Healthcare System in Estonia</p>	<p>e-Estonia Healthcare https://e-estonia.com/solutions/healthcare/</p> <p>Medical and Healthcare Innovation in Estonia https://www.youtube.com/watch?v=h8w_PuoVQgE</p> <p>Lotman & Viigimaa. Digital health in cardiology: the Estonian perspective. <i>Cardiology</i>, 2020;145:21-26. https://www.karger.com/Article/Pdf/504564</p>	<p>Discussion Board Responses—Week #2 (submitted to CarmenCanvas Discussion Board by 11/01/2021 at 9:00 am)</p>
<p>Week 3 11/02- 11/08</p>	<p>Case Studies: Mobile Telephone Applications to Improve Healthcare Delivery and Assessment in India, Malawi, and Tanzania</p>	<p>Shah et al. High uptake of an innovative mobile phone application among community health workers in rural India: an implementation study. <i>Natl Med J India</i>, 2019;32(5);262-269. https://pubmed.ncbi.nlm.nih.gov/32985439/</p> <p>Pattnaik et al. Testing the validity and feasibility of using a mobile phone-</p>	<p>Discussion Board Responses—Week #3 (submitted to CarmenCanvas Discussion Board by 11/08/2021 at 9:00 am)</p>

		<p>based method to assess the strength of implementation of family planning programs in Malawi. <i>BMS Health Services Research</i>, 2020;20:221. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7076956/pdf/12913_2020_Article_5066.pdf</p> <p>Braun et al. An evaluation of a family planning mobile job aid for community health workers in Tanzania. <i>Contraception</i>, 2016;94(1): 27-33. https://pubmed.ncbi.nlm.nih.gov/27039033/</p>	
<p>Week 4 11/09-11/15</p>	<p>Case Studies: Using Novel Approaches to Transform Medical Education in Uganda Zambia</p>	<p>Mugagga et al. The wooden skull: an innovation through the use of local materials and technology to promote the teaching and learning of human anatomy. <i>BioMed Research International</i>, 2020 (Article ID 8036737) http://downloads.hindawi.com/journals/bmri/2020/8036737.pdf</p> <p>Bing et al. Using low-cost virtual reality simulation to build surgical capacity for cervical cancer treatment. <i>J Glob Oncol</i>, 2019;5: JGO.18.00263. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6550092/</p>	<p>Discussion Board Responses—Week #4 (submitted to CarmenCanvas Discussion Board by 11/15/2021 at 9:00 am)</p>
<p>Week 5 11/16-11/22</p>	<p>Case Studies: Harnessing Telemedicine to Transform Healthcare Services in Peru and Bangladesh</p>	<p>Iqbal. Telemedicine: an innovative twist to primary health care in rural Bangladesh. <i>J Prim Care Community Health</i>. 2020;11:2151132720950519. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7457686/pdf/10.1177_2150132720950519.pdf</p> <p>Marini et al. New ultrasound tediagnostic system for low-resource areas. <i>J Ultrasound Med</i>, 2020; doi;10.1002/jum.15420. https://onlinelibrary.wiley.com/doi/full/10.1002/jum.15420</p>	<p>Discussion Board Responses—Week #5 (submitted to CarmenCanvas Discussion Board by 11/22/2021 at 9:00 am)</p>

<p>Week 6 11/23- 11/29</p>	<p>Case Study: Employing Social Innovation Strategies to Promote Tropical Disease Prevention in Cambodia</p>	<p>Ballard et al. Supporting better evidence generation and use within social innovation in health in low- and middle-income countries: a qualitative study. PLoS One, 2017;12(1):e0170367. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5268497/pdf/pone.0170367.pdf</p> <p>Echaubard et al. Fostering social innovation and building adaptive capacity for dengue control in Cambodia: a case study. Infectious Diseases of Poverty, 2020;9:126. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7469325/pdf/40249_2020_Article_734.pdf</p>	<p>Discussion Board Responses—Week #6 (submitted to CarmenCanvas Discussion Board by 11/29/2021 at 9:00 am)</p>
<p>Week 7 11/30- 12/06</p>	<p>Global Healthcare Innovation Presentation and Class Discussion</p>	<p>CarmenCanvas Discussion Board</p>	<p>Global Healthcare Innovation Presentation (submitted to CarmenCanvas DropBox by 11/30/2021 at 9:00 am) Global Healthcare Innovation Class Discussion (submitted to CarmenCanvas Discussion Board by 12/06/2021 at 9:00 am)</p>
<p>Final Examination Submission Deadline: December 16, 2021 at 9:00 am</p>			

Attendance/Participation Expectations:

Global Healthcare Innovation (BMEA 6100) is an asynchronous online course. While attendance is not assessed per se, regular online activity (i.e., Discussion Boards) is an integral part of the course. It is recommended that each student visit and review course CarmenCanvas pages several times per week.

Absence and Make-up Policy:

Make-up assignments and final examination will not be given except in case of a serious emergency for an extended time period. If so, you must contact the instructor before the event (or arrange for someone to do so) or as soon as possible. You must show evidence that you are physically unable to participate it, such as a clear and specific doctor's note mentioning the date, exam, and reason. Generally speaking, no make-ups will be granted for personal reasons such as travel, leisure, or to ease test week schedules, and no student will be permitted to take an exam beyond the scheduled and already-extended time period.

Late Assignment Submissions:

Late assignments will not be accepted.

Instructor Feedback and Response Expectations:

- **Email:** I will reply to email within 48 hours.
- **Graded Materials Return:** I will grade, provide feedback and return all written assignments within 7 days.
- **Discussion Board Response Times:** I will reply to Carmen discussion boards within 48 hours.

Copyright:

©-The materials used in connection with this course may be subject to copyright protection and are only for the use of students officially enrolled in the course for the educational purposes associated with the course. Copyright law must be considered before copying, retaining, or disseminating materials outside of the course.