



**CUMMING SCHOOL OF MEDICINE
GRADUATE COURSE OUTLINE**

COURSE TITLE:			
Course Name and Number	MDCH 643: Research in Healthcare Epidemiology and Infection Control		
Pre/Co-Requisites	None		
Faculty	Cumming School of Medicine, Graduate Science Education		
Instructor Name(s)	Jenine Leal, PhD	Email	Jenine.leal@ucalgary.ca
Office Location	FMC South Tower 801	Office Hours	Appointments on Request
Instructor Email Policy	Emails sent to @ucalgary email will be responded to within 3 business days.		
Telephone No.	403-973-6918		
TA Name		Email	
Class Term, Days	Winter 2021, Wednesdays		
Class Times	09:00 – 11:50		
Class Location	Synchronous, Online Delivery Only via Zoom		

COURSE INFORMATION/DESCRIPTION OF THE COURSE
<p>This course will take place online via Desire2Learn (D2L) and Zoom. To best succeed in the course, students are encouraged to participate in the asynchronous learning tasks using the D2L learning environment (e.g. discussion boards) and synchronous Zoom sessions (e.g. using the chat and Q&A features). Seminars are led by faculty, students and invited guests. All students are expected to attend each class fully prepared to participate actively in discussions.</p> <p>When unable to participate live due to the time difference or unforeseen circumstances, inform the instructor in advance and participate in an alternative activity (e.g. watch the recordings and contribute to the online discussions).</p> <p>The focus of this course will be on research in healthcare epidemiology with emphasis on infection prevention and control across the continuum of care (e.g. acute care, long term care). The underlying theme for this course will emphasize the research aspects of healthcare epidemiology and how the basic research techniques are applied in the healthcare environment. The first half of the course will introduce students to different methods and approaches used. The second half of the course will focus on different areas of infection prevention and control and research within these domains.</p>

The course is also intended to foster an interdisciplinary approach and to aid in the integration of knowledge and skills in infectious diseases, epidemiology, quality improvement, needs and risk assessments, and the organization and evaluation of health care services and programs into the field of healthcare epidemiology.

The course assignments include contributing to online discussions, mid-term and final examinations and a term paper. Graduate students are the intended audience.

LEARNING RESOURCES/REQUIRED READING

Class handouts, PowerPoint presentations and readings will be posted on **Desire2Learn (D2L)** as they become available. Lecture presentations will be posted the day before class. Topics for online discussion will be posted throughout the course. Lectures will be recorded and posted on **D2L**. Students are expected to be confident users of computer and internet technology and routinely use these resources.

Recommended Textbook

C. Glen Mayhall, editor. *Hospital Epidemiology and Infection Control*, Fifth Edition. Baltimore, Lippincott, Williams & Wilkins, 2011 (E-Book available on-line)

Learning Technology Requirements

Desire2Learn is a sophisticated e-Learning management system that makes use of sound instructional practices, social media, current technology, and intuitive functionality to create powerful and meaningful learning environments.

In order to successfully engage in learning experiences at the University of Calgary, students taking online, remote and blended courses are required to have reliable access to the following technology:

- A computer with a supported operating system, as well as the latest security and malware updates;
- A current and updated web browser;
- Webcam (built-in or external);
- Microphone and speaker (built-in or external), or headset with microphone;
- Current antivirus and/or firewall software enabled;
- Broadband internet connection

Most current laptops will have a built-in webcam, speaker and microphone.

Please see the following for a detailed explanation of the minimal required technology for online learning
<https://elearn.ucalgary.ca/technology-requirements-for-students/>

A laptop, desktop, tablet or mobile device is required for D2L access. If you need help accessing or using D2L, please visit the Desire2Learn resource page for students: <http://elearn.ucalgary.ca/d2l-student/>.

The login site for **D2L** is <http://d2l.ucalgary.ca>.

Information on **Zoom** is available at <https://elearn.ucalgary.ca/zoom/>.

COURSE OBJECTIVES/LEARNING OUTCOMES

The course goals are to:

- Explore the different aspects of research in healthcare epidemiology and infection prevention and control
- Critically examine the strategies used in surveillance, epidemiologic, implementation and education research,
- Survey the scope of research with specific reference to healthcare epidemiology which ranges from bench to bedside and includes patients/residents/clients, healthcare providers and visitors.

The underlying theme for this course will emphasize the research aspects of healthcare epidemiology and how the basic research techniques are applied in the healthcare environment. Topics will include surveillance, quantitative and qualitative methods, quality improvement methods, machine learning, developing education programs and ethical practice.

Learner Objectives

Following completion of this course, students will be able to:

- *Identify different research methodologies that are relevant to healthcare epidemiology and Infection Prevention and Control.*
- *Apply basic research methodologies to examine issues or problems in healthcare epidemiology and Infection Prevention and Control.*
- *Demonstrate the epidemiologic tools/methods used for research in healthcare epidemiology and Infection Prevention and Control.*

Communication:

A link to the Zoom class will be provided on D2L. It is the student's responsibility to ensure that they receive all posted communications and documents and that they receive e-mails sent by instructors through D2L. Only your @ucalgary.ca e-mail address may be linked to D2L. Please ensure that you are regularly checking your @ucalgary.ca account

The course will begin with the following territorial acknowledgement:

The University of Calgary Cumming School of Medicine would like to acknowledge the traditional territories of the people of the Treaty 7 region in Southern Alberta, which includes the Blackfoot Confederacy (comprising the Siksika, Piikani, and Kainai First Nations), as well as the Tsuut'ina First Nation, and the Stoney Nakoda (including the Chiniki, Bearspaw, and Wesley First Nations). The City of Calgary is also home to Métis Nation of Alberta, Region III

CUT POINTS FOR GRADES			
This course adheres to the grading system outlined in the University of Calgary, Faculty of Graduate Studies Calendar. Grades of A+ and A are not distinguished in the calculation of GPAs. Percentage/letter grade conversion used for this course is as follows			
Grade	Grade Point Value	Percentage Conversion	Graduate Description
A+	4.00	95-100	Outstanding
A	4.00	85-94	Excellent – superior performance showing comprehensive understanding of the subject matter
A-	3.70	80-84	Very Good Performance
B+	3.30	75-79	Good Performance
B	3.00	70-74	Satisfactory Performance
B-	2.70	65-69	Minimum Pass for Students in the Faculty of Graduate Studies
C+	2.30	55-64	All grades below ‘B-’ are indicative of failure at the graduate level and cannot be counted toward Faculty of Graduate Studies course requirements
C	2.00	50-54	

Assessment Components: The University policy on grading related matters is outlined in the 2020-2021 Calendar .			
Assessment Methods	Description	Weight %	Due Date <u>and</u> Time
Class Participation	The format for the course is seminar discussion with participation expected from students taking the course online. Seminars will be led by faculty, students and invited guests. All students will be expected to attend each class fully prepared to participate actively in discussions.	10%	
Mid-Term Exam (Take-home)	<p>This exam is scenario based and is designed to test the individual’s ability to apply the principles and concepts presented to address defined problems or situations.</p> <p>Mid-term exam will be a take-home examination that is posted on D2L at least 14 days prior to the date it is due. It must be submitted to the digital drop box on D2L</p>	20%	<p>Exam posted on February 10, 2021.</p> <p>Exam due by 11:59pm on February 24, 2021</p>

Outline Paper and Presentation	<p>One-page description of planned topic for the individual paper and presentation.</p> <p>Point-form format Must be submitted to the digital drop box on D2L</p>	10%	Outline Due by 11:59 pm on March 3, 2021
Final Examination (Take-Home)	<p>This exam is scenario based and is designed to test the individual's ability to apply the principles and concepts presented to address defined problems or situations.</p> <p>Final exam will be a take-home examination that is posted on D2L at least 7 days prior to the date it is due. It must be submitted to the digital drop box on D2L.</p>	30%	<p>Exam posted on April 7, 2021.</p> <p>Exam due by 11:59pm on April 14, 2021.</p>
Paper & Presentation	<p>Individual paper (Max 15 pages, excluding references).</p> <p>Report on a specific Infection Prevention and Control issue or problem and discuss a research approach or strategy that you would use to investigate further or to develop an intervention(s). This paper should incorporate the tools, the principles and concepts presented in the course that are relevant to the topic. No longer than 15 pages double spaced (excluding references). Must be submitted to the digital drop box on Desire2Learn.</p> <p>Student Presentation Brief oral report which summarizes the topic chosen for term paper. Time dedicated to each presentation will depend on the number of students enrolled. It will include allotted time for discussion and questions.</p>	30%	<p>Presentation on April 14, 2021</p> <p>Individual Paper due by 11:59pm on April 16, 2021</p>

ASSESSMENT AND EVALUATION INFORMATION

ATTENDANCE AND PARTICIPATION EXPECTATIONS:

Students will regularly participate in discussions held through a variety of media including online chats and discussion boards using D2L, as well as guest lectures and web-based seminars using Zoom. All students will be expected to attend each class fully prepared to participate actively in discussions.

See assessment description above for more details.

**GUIDELINES FOR SUBMITTING ASSIGNMENTS:**

All examinations and the final paper must be posted online in the digital Dropbox on Desire2Learn (exceptions may be made by the instructor). Files must be uploaded as Microsoft Word documents to facilitate grading. Assignments should have a file name as follows: **Student Name_assignment name_date**. All assignments must be submitted by 23:59 on the date they are due.

The in-class presentation must be posted online in the digital Dropbox on Desire2Learn the day prior to the due date to enable upload on Desire2Learn for the class lecture.

FINAL EXAMINATIONS:

Final exam due date is noted above in the Assessment table. It is a take-home exam that will be posted on Desire2Learn at least 7 days prior to the due date.

EXPECTATIONS FOR WRITING:

All written assignments will be assessed at least partly on writing skills. Writing skills include not only surface correctness (grammar, punctuation, sentence structure etc.) but also general clarity and organization. Resources used in assignments must be properly documented or referenced. If you need help with your writing, you may use the writing support services offered through the Student Success Centre <https://www.ucalgary.ca/student-services/student-success/writing-support/grad-workshops>.

LATE AND/OR MISSING ASSIGNMENTS:

Assignments are due on the specified date by 23:59. Students who hand in assignments late will be penalized 5% per day for handing in late. Assignments that are handed in 14 calendar days or more after the due date will be refused and the students assigned a score of zero for the assignment.

Students may hand in assignments late without penalty under the following circumstances:

- The student has discussed the timelines with course instructor in advance of the due date and the course instructor has granted an extension

There is a valid health or family emergency such as is discussed under the University regulations for deferral of final examinations. Students may be required to provide the Course Coordinator with such documentation related to illness and/or emergency as is discussed and required in the University regulations pertaining to deferral of final examinations. This information can be found in the University Calendar.

Is a passing grade on a particular component essential to pass the course as a whole? Yes – the Individual Paper

CLASS SCHEDULE			
Course Schedule Date	Topic, Activities & Readings	Instructor	Assignments/Due Dates & Times
January 13, 2021	Course Introduction & Expectations	Dr. Jenine Leal	

	Principles of Healthcare Epidemiology & Infection Control		
January 20, 2021	Quality Improvement vs. Research in IPC Legal & Ethical Issues in IPC – Individual rights vs public health responsibility	Dr. Jenine Leal (09:00-10:10) Dr. Lorian Hardcastle (10:20-11:50)	
January 27, 2021	Epidemiological design and analysis issues in IPC studies Making a business case for IPC	Dr. Jenine Leal	
February 3, 2021	Behaviour change for IPC – theories and models of behaviour and social change	Dr. Gwyneth Meyers	
February 10, 2021	Implementation Science & Quality Improvement Practical application of QI methods in IPC	Dr. Jayna Holroyd-Leduc (10:20-11:50) Ms. Heather Gagnon (09:00-10:00)	Mid-Term Exam Posted
February 15-19 Reading Week – NO CLASSES			
February 24, 2021	Clinical microbiology laboratory and IPC Use of Geographic Information Systems (GIS) in healthcare	TBD Dr. Alka Patel (09:00-10:20)	Mid-Term Exam Due
March 3, 2021	IPC Surveillance – strategies and techniques, data sources, reporting, evaluating surveillance programs Outbreak Investigations in Healthcare settings	Mrs. Kathryn Bush, Mrs. Jennifer Ellison, Mrs. Blanda Chow (09:00-10:40) Mrs. Karen Hope (10:50-11:50)	Outline of individual paper and presentation due.
March 10, 2021	Healthcare-associated infections due to invasive devices and by specific organisms	Dr. Jenine Leal Mrs. Jennifer Ellison, Mrs. Blanda Chow	



March 17, 2021	<p>Medical devices, sterilization and disinfection – standards, audits and challenges</p> <p>Healthcare facility design & construction – risk assessments, patient risks, design standards/guidelines</p>	<p>Mrs. Janet Barclay (09:00-10:20)</p> <p>Mrs. Karen Hope (10:30-11:50)</p>	
March 24, 2021	<p>IPC Tools: Point of care risk assessments, hand hygiene, personal protective equipment, patient isolation/placement</p> <p>Risk of viral transmission during aerosol generating medical procedures – challenges with COVID-19 guidance in the face of evidence uncertainty</p>	<p>TBD</p> <p>Dr. Jenine Leal</p>	
March 31, 2021	<p>Infection control in specific populations – Pediatrics</p> <p>Long-term Care, Correctional Facilities</p>	<p>Dr. Bonita Lee (09:00-10:15)</p> <p>Dr. Joseph Kim (10:20-11:50)</p>	
April 7, 2021	<p>Evidence uncertainties in IPC</p> <p>Introduction to Artificial Intelligence/Machine Learning and Health</p>	<p>Dr. Jenine Leal (09:00-10:30)</p> <p>Dr. Joon Lee (10:30-11:50)</p>	Final Exam Posted
April 14, 2021	Last Class: Student Presentations	09:00-11:50	Final Exam Due Student Presentations Due Individual Paper Due April 16, 2021

Guidelines for Zoom Sessions

Zoom is a video conferencing program that will allow us to meet at specific times for a ‘live’ video conference, so that we can have the opportunity to meet each other virtually and discuss relevant course topics as a learning community.

To help ensure Zoom sessions are private, do not share the Zoom link or password with others, or on any social media platforms. Zoom links and passwords are only intended for students registered in the course. Zoom



recordings and materials presented in Zoom, including any teaching materials, must not be shared, distributed or published without the instructor's permission.

The use of video conferencing programs relies on participants to act ethically, honestly and with integrity; and in accordance with the principles of fairness, good faith, and respect (as the Code of Conduct). When entering Zoom or other video conferencing sessions, you play a role in helping create an effective, safe and respectful learning environment. Please be mindful of how your behaviour in these sessions may affect others. Participants are required to use names officially associated with their UCID (legal or preferred names listed in the Student Centre) when engaging in these activities. Instructors/moderators can remove those whose names do not appear on class rosters. Non-compliance may be investigated under relevant University of Calgary conduct policies. If participants have difficulties complying with this requirement, they should email the instructor of the class explaining why, so the instructor may consider whether to grant an exception, and on what terms. For more information on how to get the most out of your zoom sessions visit: <https://elearn.ucalgary.ca/guidelines-for-zoom/>.

If you are unable to attend a Zoom session, please contact your instructor to arrange an alternative activity (where available). Please be prepared, as best as you are able, to join class in a quiet space that will allow you to be fully present and engaged in Zoom sessions. Students will be advised by their instructor when they are expected to turn on their webcam (such as for group work, presentations, etc).

The instructor may record online Zoom class sessions for the purposes of supporting student learning in this class – such as making the recording available for review of the session or for students who miss a session. Students will be advised before the instructor initiates a recording of a Zoom session. These recordings will be used to support student learning only.

Conduct During Lectures

The classroom should be respected as a safe place to share ideas without judgement - a community in which we can all learn from one another. Students are expected to frame their comments and questions to lecturers in respectful and appropriate language, always maintaining sensitivity towards the topic. Students, employees, and academic staff are also expected to demonstrate behaviour in class that promotes and maintains a positive and productive learning environment.

As members of the University community, students, employees and academic staff are expected to demonstrate conduct that is consistent with the University of Calgary Calendar, the Code of Conduct and Non-Academic Misconduct policy and procedures, which can be found at <https://www.ucalgary.ca/policies/forms/title>.

Equity, Diversity and Inclusion
The Cumming School of Medicine recognizes that equity, diversity, and inclusion benefits and strengthens all communities, including the medical community and those served by it. We aim to actively engage all learners, particularly those from equity seeking groups including women, Indigenous peoples, visible/racialized minorities, persons with disabilities, and LGBTQ+. While our faculty continues to learn about more equitable,



diverse, and inclusive approaches to education, we welcome and appreciate suggestions to help us ensure that all learners are well served by our courses.

To help cultivate learning environments that support diverse and inclusive perspectives and lived experiences, learners are invited to let instructors know if:

- they have names and/or pronouns they would prefer to use that differ from those that appear on official records
- scheduled class meetings conflict with religious events so that alternative arrangements can be made

If they are not already, learners are also encouraged to become familiar with the various opportunities for diverse engagement, learning, and support on campus, including, but not limited to the following resources:

The Office of Equity, Diversity and Inclusion

<https://www.ucalgary.ca/equity-diversity-inclusion>

The Q Centre

<https://www.su.ucalgary.ca/programs-services/student-services/the-q-centre/>

The Writing Symbols Lodge

<https://www.ucalgary.ca/student-services/writing-symbols/home>

INTERNET AND ELECTRONIC COMMUNICATION DEVICE INFORMATION

Cell phones must be turned off in class unless otherwise arranged with the instructor.

The use of laptop and mobile devices is acceptable when used in a manner appropriate to the course and classroom activities. Students are to refrain from accessing websites that may be distracting for fellow learners (e.g. personal emails, Facebook, YouTube). Students are responsible for being aware of the University's Internet and email use policy, which can be found at

<https://www.ucalgary.ca/policies/files/policies/acceptable-use-of-electronic-resources-and-information-policy.pdf>

MEDIA AND RECORDING IN LEARNING ENVIRONMENTS

Media recording for lesson capture

Please refer to the following statement on media recording of students: https://elearn.ucalgary.ca/wp-content/uploads/2020/05/Media-Recording-in-Learning-Environments-OSP_FINAL.pdf

The instructor may use media recordings to capture the delivery of a lecture. These recordings are intended to be used for lecture capture only and will not be used for any other purpose. Although the recording device will be fixed on the Instructor, in the event that incidental student participation is recorded, the instructor will



ensure that any identifiable content (video or audio) is masked, or will seek consent to include the identifiable student content to making the content available on University approved platforms.

Media recording for assessment of student learning

The instructor may use media recordings as part of the assessment of students. This may include but is not limited to classroom discussions, presentations, clinical practice, or skills testing that occur during the course. These recordings will be used for student assessment purposes only and will not be shared or used for any other purpose.

Media recording for self-assessment of teaching practices

The instructor may use media recordings as a tool for self-assessment of their teaching practices. Although the recording device will be fixed on the instructor, it is possible that student participation in the course may be inadvertently captured. These recordings will be used for instructor self-assessment only and will not be used for any other purpose.

Student Recording of Lectures

Audio or video/visual recording of lectures is prohibited except where explicit permission has been received from the instructor.

UNIVERSITY OF CALGARY POLICIES AND SUPPORTS

ACADEMIC ACCOMMODATIONS

Students seeking an accommodation based on disability or medical concerns should contact Student Accessibility Services; SAS will process the request and issue letters of accommodation to instructors. For additional information on support services and accommodations for students with disabilities, visit www.ucalgary.ca/access/. Students who require an accommodation in relation to their coursework based on a protected ground other than disability should communicate this need in writing to their Instructor. The full policy on Student Accommodations is available at www.ucalgary.ca/policies/files/policies/student-accommodation-policy.pdf

IMPORTANT INFORMATION

Any research in which students are invited to participate will be explained in class and approved by the appropriate University Research Ethics Board

INSTRUCTOR INTELLECTUAL PROPERTY

Course materials created by professor(s) (including course outlines, presentations and posted notes, labs, case studies, assignments and exams) remain the intellectual property of the professor(s). These materials may NOT be reproduced, redistributed or copied without the explicit consent of the professor. The posting of course materials to third party websites such as note-sharing sites without permission is prohibited. Sharing of extracts of these course materials with other students enrolled in the course at the same time may be allowed under fair dealing

COPYRIGHT LEGISLATION



All students are required to read the University of Calgary policy on Acceptable Use of Material Protected by Copyright www.ucalgary.ca/policies/files/policies/acceptable-use-of-material-protected-by-copyright-policy.pdf and requirements of the copyright act (<https://laws-lois.justice.gc.ca/eng/acts/C-42/index.html>) to ensure they are aware of the consequences of unauthorised sharing of course materials (including instructor notes, electronic versions of textbooks etc.). Students who use material protected by copyright in violation of this policy may be disciplined under the Non-Academic Misconduct Policy

ACADEMIC INTEGRITY

The Cumming School of Medicine expects intellectual honesty from its students. Course participants should be aware of University policies relating to Principles of Conduct, Plagiarism and Academic Integrity. These are found in the printed Faculty of Graduate Studies Calendar, or online under Academic Regulations in the Faculty of Graduate Studies Calendar, available at [Faculty of Graduate Studies Academic Regulations](#)

ACADEMIC MISCONDUCT

For information on academic misconduct and its consequences, please see the University of Calgary Calendar at www.ucalgary.ca/pubs/calendar/current/k.html

EMERGENCY EVACUATION AND ASSEMBLY POINTS

Assembly points for emergencies have been identified across campus. The primary assembly points for South Campus (Health Science Centre (HSC); Health & Research Innovation Centre (HRIC); Heritage Medical Research Building (HMRB) and Teaching, Research and Wellness (TRW)) are:

- HSC and HMRB: HRIC Atrium (alternate assembly point is Parking Lot 6)
- HRIC: HMRB Atrium (alternate assembly point is Parking Lot 6)
- TRW: McCaig Tower (alternate assembly point is HMRB – Atrium)

APPEALS

If there is a concern with the course, academic matter or a grade, first communicate with the instructor. If these concerns cannot be resolved, students can proceed with an academic appeal, as per Section N of the Faculty of Graduate Studies Calendar. Students must follow the official process and should contact the Student Ombuds Office (www.ucalgary.ca/student-services/ombuds) for assistance with this and with any other academic concerns, including academic and non-academic misconduct

THE FREEDOM OF INFORMATION AND PROTECTION OF PRIVACY (FOIP) ACT

This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIP) and students should identify themselves on written assignments (exams and term work.) by their name and ID number on the front page and ID on each subsequent page. Assignments given by you to your course instructor will remain confidential unless otherwise stated before submission. The assignment cannot be returned to anyone else without your expressed permission to the instructor. Grades will be made available on an individual basis and students will not have access to other students' grades without expressed consent. Similarly, any information about yourself that you share with your course instructor will not be given to anyone else without your permission

WELLNESS AND MENTAL HEALTH RESOURCES

The University of Calgary recognizes the pivotal role that student mental health plays in physical health, social connectedness and academic success, and aspires to create a caring and supportive campus community where



individuals can freely talk about mental health and receive supports when needed. We encourage you to explore the excellent mental health resources available throughout the university community, such as counselling, self-help resources, peer support or skills-building available through the SU Wellness Centre, at www.ucalgary.ca/wellnesscentre/services/mental-health-services and the Campus Mental Health Strategy website [at www.ucalgary.ca/mentalhealth/](http://www.ucalgary.ca/mentalhealth/)

SUPPORTS FOR STUDENT LEARNING, SUCCESS, AND SAFETY

Student Ombudsman: The Student Ombuds' Office supports and provides a safe, neutral space for students. For more information, please visit www.ucalgary.ca/ombuds/ or email ombuds@ucalgary.ca

Student Union: The SU Vice-President Academic can be reached at (403) 220-3911 or suvpaca@ucalgary.ca; Information about the SU, including elected Faculty Representatives can be found here: www.su.ucalgary.ca/

Graduate Student's Association: The GSA Vice-President Academic can be reached at (403) 220- 5997 or gsa.vpa@ucalgary.ca; Information about the GSA can be found here: gsa.ucalgary.ca

SAFEWALK

Campus security will escort individuals, day or night, anywhere on campus (including McMahon Stadium, Health Sciences Centre, Student Family Housing, the Alberta Children's Hospital and the University LRT station). Call 403-220-5333 or visit www.ucalgary.ca/security/safewalk. Use any campus phone, emergency phone or the yellow phone located at most parking lot pay booths. Please ensure your personal safety by taking advantage of this service.