



CUMMING SCHOOL OF MEDICINE

GRADUATE COURSE OUTLINE

MDCH 643

Research in Healthcare Epidemiology and Infection Control

Winter 2017

Course Coordinator:

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Teaching Assistants: Ms. Jenine Leal, PhD Candidate, Department of Community Health Sciences
 Ms. Gwyneth Meyers, PhD Candidate, Werlund School of Education

Guest Lecturers

N. Alfieri	Executive Director, Calgary, EMS, Cancer Care & IPC Surveillance, Infection Prevention and Control, Alberta Health Services	J. Leal	Epidemiologist, Surveillance & Standards Infection Prevention and Control, Alberta Health Services
K. Bush	Director, Surveillance & Standards, Infection Prevention and Control, Alberta Health Services	T. Louie	Infectious Diseases Specialist, Infection Prevention and Control, Alberta Health Services

K. Hope	Director, Calgary Zone Infection Prevention and Control, Alberta Health Services	G. Meyers	Senior Clinical Practice Coordinator, Infection Prevention and Control, Alberta Health Services
J. Kim	Site Director, Rockyview General Hospital, Infection Prevention and Control, Alberta Health Services	J. Vayalumkal	Site Director, Alberta Children's Hospital, Infection Prevention and Control, Alberta Health Services
O. Larios	Site Director, South Health Campus, Infection Prevention and Control, Alberta Health Services		

Day, Time and Location:

January 14 – April 15, 2015 – Wednesday, 0900 – 1150 hours -- Blended (Available in-class and on-line) course using Adobe Connect, Room G748, Health Sciences Centre

Course Description:

MDCH 643 is a web-based course which will be offered through Desire2Learn using Adobe Connect with a combination of in-class and geographically remote students. Students will regularly participate in discussions held through a variety of media including online chats and discussion boards using Desire2Learn, as well as guest lectures and web-based conferences using Adobe Connect.

The format for the course is seminar discussion with participation expected from students taking the course face-to-face and from those taking the course on-line. 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.

The focus of this course will be on research in healthcare epidemiology with particular emphasis on Infection Prevention and Control. 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, sampling, survey research methods, behaviour change, developing and accessing education programs and ethical practice.

This course is intended to foster an interdisciplinary approach and to aid in the integration of knowledge and skills in the following areas: clinical and community-based epidemiology, infectious diseases, antimicrobial therapy, microbial pathogenesis, molecular epidemiology, needs assessment, health and illness behaviour, and the organization and evaluation of health care services and programs into the field of healthcare epidemiology.

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

Prerequisites / Co-requisites:

None

Required Reading/Resources:

Class handouts, PowerPoint presentations and readings will be posted on Desire2Learn as they become available. Topics for on-line discussion will be posted throughout the course. The document entitled: Getting Started with Desire2Learn will be posted for the first class. The login site for Desire2Learn is

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, Fourth Edition*. Baltimore, Lippincott, Williams & Wilkins, 2011 (Available on-line or through the Medical Bookstore)

Class preparatory material and readings will be distributed 1 week prior to class.

Course Objectives:

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 and education research,
- Survey the scope of research with special reference to healthcare epidemiology which ranges from bench to bedside and includes patients/residents/clients, health care 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, sampling, survey research methods, social network analysis, 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.*

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	90-94	Excellent – superior performance showing comprehensive understanding of the subject matter
A-	3.70	85-89	Very Good Performance
B+	3.30	77-84	Good Performance
B	3.00	72-76	Satisfactory Performance
B-	2.70	68-71	Minimum Pass for Students in the Faculty of Graduate Studies
C+	2.30	63-67	All grades below 'B-' are indicative of failure at the graduate level and cannot be counted toward Faculty of Graduate Studies course requirements

Evaluations Scheme: The University policy on grading related matters is described in the [2016-2017 Calendar](#).
Course contributions include on-line and in-class discussion, 2 examinations and 1 individual paper.

Requirement	Weighting for Final Grade	Due Date
# 1	10%	Class participation <ul style="list-style-type: none"> The format for the course is seminar discussion with participation expected from students taking the course face-to-face and from those taking the course on-line. 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.
# 2 February 15, Exam Posted March 1, Exam Due	20%	Mid-term Exam (Take-home) <ul style="list-style-type: none"> This exam is scenario based and is designed to test the individual's ability to apply the principles and concepts of presented to address defined problems or situations. Mid-term exam will be a take-home examination that will be posted on Desire2Learn at least 7 days prior to the date they are due. Examinations must be posted to the digital drop box on Desire2Learn.
#3 Outline Due March 7, 2017	10%	Outline of Proposed Paper & Presentation <ul style="list-style-type: none"> One page outline of proposed topic for presentation and term paper The selected topic should incorporate the tools, the principles and concepts presented in the course that are relevant to the topic
# 3 April 5, exam posted April 12, exam due	30%	Final Examination (Take Home) <ul style="list-style-type: none"> This exam is scenario based and is designed to test the individual's ability to apply the principles and concepts of presented to address defined problems or situations. Mid-term exam will be a take-home examination that will be posted on Desire2Learn at least 7 days prior to the date they are due. Examinations must be posted to the digital drop box on Desire2Learn.
# 4 Presentation (April 12, 2017) Term Paper (April 17, 2017)	30%	Paper & Presentation <ul style="list-style-type: none"> Individual Paper (15 pages) 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). Term papers must be posted to the digital drop box Student Presentation Brief oral report which summarizes the topic chosen for term paper. Each presentation will be no longer than 20 minutes with an additional 10 minutes for discussion of issues related to the topic on Desire2Learn.

A passing grade on a particular component is not essential to pass the course as a whole.

Registrar Scheduled Exam: No

Late Assignments:

- Assignments are due on the specified date by 12 midnight. 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 student 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 the 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.

Course Timetable:

Winter 2017

WEEK 1 - January 11 E. Henderson Chapter 1	<ul style="list-style-type: none"> ○ Introduction <ul style="list-style-type: none"> • Purpose • Operationalization • Overview of quality of care and risks in hospitals and hospital ecology. ○ Large studies in Infection Prevention and Control including <ul style="list-style-type: none"> • SENIC Project, • The National Nosocomial on Infection Study & • Canadian National Infection Surveillance Project (CNISP)
WEEK 2 - January 18 E. Henderson K. Bush J. Leal Chapters 8, 9, 89	<ul style="list-style-type: none"> ○ Surveillance and reporting of healthcare-associated infections <ul style="list-style-type: none"> • Strategies and techniques • Data sources • Reporting • Accessing or evaluating Surveillance programs • Outbreak investigations
WEEK 3 - January 25	<ul style="list-style-type: none"> ○ Epidemiologic design and analysis issues in Infection Prevention and Control studies

<p>E. Henderson</p> <p>Chapters 2, 5, 6</p>	<ul style="list-style-type: none"> • Study designs • Identifying appropriate control groups • Risk factor identification and measurement ○ Data collection and management ○ Sampling for quantitative and qualitative studies <ul style="list-style-type: none"> • Random • Non-random • Sampling Strategies • Bias
<p>WEEK 4 - February 1</p> <p>J. Kim (0900 – 1045)</p> <p>E. Henderson (1100-1150)</p> <p>Chapters 87</p>	<ul style="list-style-type: none"> ○ Current Issues in Infection Prevention and Control <ul style="list-style-type: none"> • Common Hospital-acquired Infections • Special patient populations • Hot topics in IPC ○ Ethics of Infection Prevention and Control <ul style="list-style-type: none"> • Ethics of patient management • Ethics of research
<p>WEEK 5 - February 8</p> <p>T. Louie</p> <p>Chapters 71, 72, 80, 82,</p>	<ul style="list-style-type: none"> ○ Environmental cleaning ○ Environmental and other laboratory based studies <ul style="list-style-type: none"> • Designing studies to assess <ul style="list-style-type: none"> ○ environmental contamination ○ contamination of equipment ○ Assessing disinfectant or antiseptic activity through kill studies of micro-organisms ○ Environmental Controls in Health Care Settings <ul style="list-style-type: none"> • Physical Plant Design • Water treatment • Air Handling
<p>WEEK 6 - February 15</p> <p>E. Henderson</p> <p>N. Alfieri (1030 - 1150)</p> <p>Chapters 4, 10 - 12</p>	<ul style="list-style-type: none"> ○ Programs for the control and prevention of healthcare-associated infections. <ul style="list-style-type: none"> • Organizational Structure • Recommendations for infrastructure and staffing ○ Barriers to Infection Prevention and Control <ul style="list-style-type: none"> • Administrative • Political • Other Barriers <p>MID-TERM EXAMINATION DISTRIBUTED</p>
<p>February 19 - 26</p>	<p>No Class - Reading Week</p>
<p>WEEK 7 - March 1</p> <p>J. Vayalumkal</p> <p>E. Henderson</p> <p>Chapters 48 - 53</p>	<ul style="list-style-type: none"> ○ Infection control in pediatric populations <ul style="list-style-type: none"> • Susceptibility of young children • Increasing acuity • Developmental challenges • The environment (Toys, etc) <p>MID-TERM EXAMINATION DUE</p>
<p>WEEK 8 - March 8</p>	<ul style="list-style-type: none"> ○ The clinical microbiology laboratory and infection control

<p>O. Larios (9 - 1030)</p> <p>J. Leal (1045 – 1150)</p> <p>Chapters 95, 96</p>	<ul style="list-style-type: none"> • Emerging pathogens, • Antimicrobial Resistance • New technology ○ Economic Evaluation in Infection Control <ul style="list-style-type: none"> • What is it and why is it important? • How it could be used. • Challenges • Examples
<p>WEEK 9 - March 15</p> <p>K. Hope</p> <p>Chapters 83, 84</p>	<ul style="list-style-type: none"> ○ Design and Construction/Renovation <ul style="list-style-type: none"> • Risk Assessment/Checklist • Patient risks • Design Standards/Guidelines • Tour of Foothills Medical Centre Construction sites (for in-class students only) (1100-1200 hours) -- Distance students could try and hook-up with IPC from their local hospital and ask for a tour of construction sites.
<p>WEEK 10 - March 22</p> <p>J. Conly</p> <p>Chapters 85, 86, 87</p>	<ul style="list-style-type: none"> ○ Antimicrobial Stewardship in Hospital - Methods for detection, monitoring and managing resistance <ul style="list-style-type: none"> • Antibiotic use and abuse • Antibiotic resistance • Restricted formulary • Antibiotic prophylaxis • Alternatives/supplements to Antibiotics
<p>WEEK 11 - March 29</p> <p>G. Meyers</p> <p>E. Henderson</p>	<ul style="list-style-type: none"> ○ Behaviour Change for Infection Prevention <ul style="list-style-type: none"> • Behaviour change is central to infection prevention • Theories and models of behaviour and social change • The social marketing approach • Evaluation of behaviour change interventions (e.g., hand hygiene)
<p>WEEK 12 - April 5</p> <p>G. Meyers</p> <p>K. Bush</p> <p>Chapters 91, 92,</p>	<ul style="list-style-type: none"> ○ Practical Applications of Qualitative Methods in Infection Prevention and Control <ul style="list-style-type: none"> • Assessing activities such as adherence <ul style="list-style-type: none"> ○ Routine precautions (practice) ○ Isolation precautions ○ Hand Hygiene practices • Hand washing Project ○ Research Methods: Theory to Practice <p>FINAL EXAMINATION POSTED</p>
<p>WEEK 13 - April 12</p> <p>E. Henderson</p>	<p>STUDENT PRESENTATIONS</p> <p>FINAL EXAMINATION DUE</p>
<p>Wednesday, April 17, 2017</p>	<p>TERM PAPER DUE</p>

System Requirements for Desire2Learn and Adobe Connect

Windows

- 1.4GHz Intel® Pentium® 4 or faster processor (or equivalent) for Windows 7, Windows 8 or Windows 8.1
- Windows 8.1 (32-bit/64-bit), Windows 8 (32-bit/64-bit), Windows 7 (32-bit/64-bit)
- 512MB of RAM (1GB recommended) for Windows 7 or Windows 8
- Microsoft Internet Explorer 8, 9, 10, 11; Mozilla Firefox; Google Chrome
- Adobe® Flash® Player 11.2+

Mac OS

- 1.83GHz Intel Core™ Duo or faster processor
- 512MB of RAM (1GB recommended)
- Mac OS X 10.7.4, 10.8, 10.9
- Mozilla Firefox; Apple Safari; Google Chrome
- Adobe Flash Player 11.2+

Linux

- Ubuntu 12.04; Red Hat Enterprise Linux 6; OpenSuSE 12.2
- No Add-in support for Linux. Users on Linux can attend meetings in the browser.
- Mozilla Firefox
- Adobe Flash Player 11.2+

Mobile

- Apple supported devices: iPhone 5S, iPhone 5, iPhone 4S, iPad with Retina display, iPad 3, iPad 2, iPad mini, and iPod touch (4th & 5th generations)
- Apple supported OS versions summary: iOS 6 and higher
- Android supported devices: Motorola DROID RAZR MAXX, Motorola Atrix, Motorola Xoom, Samsung Galaxy Tab 2 10.1, Samsung Galaxy S3 & S4, Nexus 7 tablet
- Android supported OS versions summary: 2.3.4 and higher

Copyright

It is the responsibility of students and professors to ensure that materials they post or distribute to others comply with the Copyright Act and the University's Fair Dealing Guidance for Students (library.ucalgary.ca/files/library/guidance_for_students.pdf). Further information for students is available on the Copyright Office web page (<http://library.ucalgary.ca/copyright>).

A Note Regarding Instructor Intellectual Property

Generally speaking, 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.

Academic Accommodations Based on Disability

It is the student's responsibility to register with Student Accessibility Services to be eligible for formal academic accommodation. If you are a student who may require academic accommodation and have not registered with Student Accessibility Services, please contact their office at (403) 220-8237; <http://www.ucalgary.ca/access/>. Students will be provided with all necessary accommodations to ensure equal opportunity to succeed in this course. Please provide the instructor your accommodation letter from Student Accessibility Services within 14 days after the start of this course so that all needed arrangements for exams and assignments can be made.

Accommodations on Protected Grounds other than Disability

Students who require an accommodation in relation to their coursework based on a protected ground other than disability, should communicate this need, preferably in writing, to the designated Cumming School of Medicine graduate student contact, Dr. Donna-Marie McCafferty (dmmccaff@ucalgary.ca). Students who require an accommodation unrelated to their coursework or the requirements for a graduate degree, based on a protected ground other than disability, should communicate this need, preferably in writing, to the Vice-Provost (Student Experience). For additional information on support services and accommodations for students with disabilities, visit www.ucalgary.ca/access/.

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](#).

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.

Recording of Lectures

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

Electronic Devices

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

Emergency Evacuation/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 (<http://www.ucalgary.ca/provost/students/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.

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 220-5333. Use any campus phone, emergency phone or the yellow phone located at most parking lot pay booth.