

MEDICAL HEALTH INFORMATICS 4980E

RESEARCH PROJECT AND SEMINAR
METHODOLOGY, EXPERIMENTATION AND COMMUNICATION IN HEALTH INFORMATICS

DEPARTMENT OF PATHOLOGY & LABORATORY MEDICINE
DEPARTMENT OF COMPUTER SCIENCE

COORDINATOR:

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1. GENERAL OUTLINE

Medical or health informatics is an interdisciplinary field that stands at the intersection of computer sciences, the health and medical sciences, information management and information technology to achieve better health. "Health informaticians" facilitate the collection and use of health-related data, information and knowledge that will enable and support all aspects of safe, efficient and effective health services for Canadians (e.g., planning, resource management, decision support, research, development, organization, provision, evolution of services, etc).

By definition this is an interdisciplinary field and individuals who understand both aspects of computer science and medical sciences are required. The specialization in medical health informatics will introduce you to a combination of foundational courses in both the medical sciences (particularly in understanding the pathophysiology of disease) and computer sciences (in algorithms, data structures, databases, computer networks, and human-computer interaction). Two additional courses in health informatics and health information management (offered through the Department of Pathology & Laboratory Medicine) will provide greater insight into the roles and functions of health informatics and the health informatics professional within the health system.

The goal of this seminar and research-based course and research project in 4th year is to introduce you to the qualitative and quantitative skills required to pursue a career in research. Students will undertake a research project that will cross disciplines and be supervised by faculty from either the medical sciences or computer sciences or in some cases, depending on the project, under co-supervision.

This will involve:

- the formulation of a research proposal and research hypothesis,
- collection of data to test your hypothesis or the development of an appropriate application to solve an existing problem,
- statistical analysis of the data, where appropriate, and
- the oral and written presentation of the methodology, results and conclusions.

Independent study, self-directed experimental design and analysis, and effective communication skills will be emphasized. Students are required to spend at least 10-12 hours/week working with their supervisor(s) on their chosen research problem. Specific projects and assignment to supervisors will be worked out between the student and supervisor early in September.

In addition a weekly seminar or oral communication session will be held; (tentative timetable and schedule is attached). You will be required to present your project proposal/progress report during the Fall term (in written and oral form) and a final report (written and oral form) during the Winter term.

2. COURSE OUTLINE

INTRODUCTION & ORIENTATION

During the first two weeks of September you will meet with and be assigned to your supervisor(s). In consultation with student and supervisor, attendance within the laboratory and weekly expectations will be delineated.

You will also have a session at the Taylor library to review some of the essential medical literature databases available to researchers and to introduce some tips for more effective literature searching. You will also be introduced to a reference management application, Mendeley, which is available to all UWO students and which you will find useful in preparing your project proposal and final research report. You will also have a session outlining how to critically analyze a journal article (with a sample presentation given).

II. RESEARCH PROJECT

You will have received a listing of potential projects and supervisors prior to the start of classes. During the first week of classes (the week of September 9th) you will be asked to set up a meeting with your potential research supervisor and final matching of students with supervisors will take place during that week or the next (if necessary). Students will report to their faculty supervisor by no later than Monday, September 23, to discuss weekly hours, your project and the initial research proposal.

A written research project proposal is due by November 1 (copy to supervisor and copy to Dr. Gibson).

The final written research project report will be due the last week of class in the Winter term (April 3, 2020) (copy to supervisor and to Dr. Gibson).

III. SCIENTIFIC COMMUNICATION

During the weekly seminar sessions, students will have an opportunity to practice their oral presentation skills and to present their initial research proposal (in November) and a final research project report (in March).

You will also present a critique of one of the key journal articles in your topic area during October as you develop your project proposal and participate as a discussant in at least one other journal critique. An additional journal critique or progress report will be presented in the Winter term (January/February).

3. OBJECTIVES AND EVALUATION

I. Techniques

Objectives: To develop a familiarity with a variety of methodologies and approaches to problem solving in health informatics.

II. Research Projects

Objectives:

- To develop skills in the formulation of hypothesis and the design and execution of a research project.
- To develop the analytical skills required to conduct research in health informatics and to derive appropriate conclusions.
- To develop skills in critical evaluation of medical and scientific information.

III. Scientific Communication

Objectives: To develop skills in oral and written communication.

EVALUATION:

I.	Participation		10%
	Supervisor evaluation (research methods, professionalism)†	50%	
	Participation & contribution in seminar discussions	50%	
II.	Research Project		70%
	i. Written proposal*	50%	
	ii. 30 min presentation of Proposal	50%	
	iii. Final written report**	50%	
	iv. 30 min presentation of Final Report	50%	
III.	Communication		20%
	Journal critique	20%	
	Journal critique	20%	

† Participation and research technique (Research Supervisor evaluation). Supervisors will take into consideration evidence of competency and particular excellence in research skills and professional and ethical behaviour.

* Research Proposal – The proposal should be prepared in consultation with your supervisor and should include the following sections:

- Overall objective(s)
- Background – brief introduction and evidence that led to formulation of hypothesis
- Hypothesis or research focus/Specific aims
- Outline of methodology - how are you going to test your hypothesis or explore the issue chosen for investigation, including relevant experimental model and approaches (qualitative or quantitative including statistical analyses) to be used
- Significance of research
- References

** Final Report – The written report should be in the format of a scientific article (can use an appropriate format for submission, e.g. Journal of medicine and Internet Research, JAMIA, IJMI, BMC Medical Informatics and Decision Making. Include:

- < a general discussion of the problems encountered and the possible solutions,
- < the direction of the research if the project were to be continued.

MHI 4980E - SEMINAR & RESEARCH PROJECTSeminar Schedule Wednesdays,
Health Sciences Addition H410

DATE	TIME	TOPIC	LECTURER
September 11	10:30am – 12:30pm	Introduction	CJG
September 18	10:30am – 12:30pm	Privacy & Confidentiality of Health Data	CJG
September 25		Library Session – Information Searching Skills	
October 2	10:30am – 12:30pm	Journal Critique	CJG
October 9		Journal Critique	
October 16		Journal Critique	
October 23		Journal Critique	
October 30			
November 1	Written Proposals Due		
Reading Week		Nov 4 - 10	
November 13	10:30 am – 1:30 pm	Proposal Presentation Session	
November 20	10:30 am – 1:30 pm	Proposal Presentation Session	
Schedule for Winter term will be handed out in January			

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KEY DATES:

- September 9** **Decision on project(s)/supervisor(s)**
Set up times with faculty member to discuss:
1. the project (outline, scope, background information)
 2. time commitment
 3. Safety workshops, any necessary training etc.
- September 23** **Final decision on project**
Meet with supervisor on expectations and requirements of the project and start work on project.
- November 1** **Written proposal reports due**
Formatting guidelines will be provided.
One copy of the proposal to be submitted to the supervisor and one copy to the course coordinator.
- November 13/20** **Proposal Presentations**
Prepare and deliver proposal, methods and approach to fellow students and faculty supervisors
- October 9-30** **Submit articles for critique**
Pick research articles in the scope of your research project. These articles may be selected through literature search or in consultation with the supervisor.
Post your article to the OWL web site one week prior to your critique presentation.