Community Health Sciences Graduate Education Program (MDCH)
Requirements by Specialization

BIOSTATISTICS – MSC THESIS-BASED		
Description	As of September 2018, we offer an interdisciplinary specialization in Biostatistics at the Master's level to students registered in the Cumming School of Medicine, MDCH or the Faculty of Science, Mathematics and Statistics. Students will receive the degree offered by the home program. Biostatistics is the application of statistics to biological or medical data. The science of biostatistics includes the design of biological experiments, the collection, summarization, and analysis of data from those experiments, and the interpretation of, and inference from, the results (http://en.wikipedia.org/wiki/Biostatistics accessed online August 12 08 and http://www.answers.com/topic/biostatistics accessed online August 12 08). "Biostatistics in the public health context consists primarily of developing descriptive statistics describing the overall health and well-being of a population. These statistics include such measures as birth, death, and infant death rates; disease incidence and prevalence; and trends of this data over time." (http://www.answers.com/topic/biostatistics accessed online August 12 08).	
Additional Admission Requirements	In addition to the Faculty of Graduate Studies' requirements, all applicants must meet the minimum admission requirements of the home program. In the case of the MSc Biostatistics Specialization (MDCH), a bachelor's degree in statistics, or its equivalent is usually required. Students must also have a letter from a faculty member in the home program indicating an agreement to supervise the applicant. Prospective applicants are strongly encouraged to approach potential supervisors in advance of applying for entry into the home program and Biostatistics specialization.	
MDCH Core Required Courses	1) MDCH 600: Introduction to CHS 2) MDCH 640: Fundamentals of Epidemiology	Request an exemption ***PRIOR*** to start of program based on having completed equivalent courses at another university.
Biostatistics Required Courses	1) BIST 600: Research Seminar 2) STAT 721: Statistical Inference 3) A minimum of 9 units (3HCEs) from List A or B, with at least 3 units from each of A and B	
Recommended Electives	As recommended by the student's supervisor/committee appropriate to the advancement of the thesis research topic. Other courses offered at the University of Calgary or through the Western dean's Agreement (https://grad.ucalgary.ca/current/managing-my-program/studying-at-another-university/western-deans) may be used to fulfil elective requirements, with the approval of the student's supervisor(s) and home department GPD.	
• **LIST A**	**EPIDEMIOLOGY and HEALTH**	
	1) MDCH 641: Introduction to Clinical Trials	
	2) MDCH 643: Research in Healthcare Epidemiology and Infection Control	
	3) MDCH 644: Surveillance I: Data Handling for Infection Control	
	4) MDCH 647: Clinical Epidemiology	
	5) MDCH 649: Epidemiology of Infectious Diseases	
	6) MDCH 661: Health Economics I	
	7) MDCH 662: Economic Evaluation	
	8) MDCH 663: Decision Analysis in Health Economics	
	9) MDCH 664: Administrative Data Analysis Methodology	
	10) MDCH 681: Health Research Methods	
	11) MDCH 740: Advanced Epidemiology	
	12) MDCH 741: Systematic Reviews and Meta-Analysis	
• **LIST B**	**BIOSTATISTICS/STATISTICS**	
	1) MDCH 611: Models for Health Outcomes (Biostatistics II)	
	2) MDCH 612: Models for Repeated Measures Studies and Time-to-Event Studies (Biostatistics III)	
	3) STAT 619: Bayesian Statistics	
	4) STAT 625: Multivariate Analysis	

	5) STAT 631: Computational Statistics
	6) STAT 633: Survival Analysis
	7) STAT 635: Generalized Linear Models
	8) STAT 637: Non-Linear Regression
	9) STAT 641: Statistical Learning
	10) STAT 701: Theory of Probability I
	11) STAT 723: Theory of Hypothesis Testing
Seminars	Students in MDCH 600 must attend all CHS-OIPH Weekly Seminars in the Fall and Winter terms. Additional seminars as recommended by student's supervisor/committee.
Thesis Research	All coursework must be completed prior to the Final Thesis Examination. Refer to requirements of home program regarding Thesis Monograph or Manuscript-based.
Practicum	None required, but typically arranged in conjunction with the student's supervisor(s).
Biostatistics Competencies	

BIOSTATISTICS – PHD THESIS-BASED		
Description	As of September 2018, we offer an interdisciplinary specialization in Biostatistics at the Doctoral level to students registered in the Cumming School of Medicine, MDCH or the Faculty of Science, Mathematics and Statistics. Students will receive the degree offered by the home program. Biostatistics is the application of statistics to biological or medical data. The science of biostatistics includes the design of biological experiments, the collection, summarization, and analysis of data from those experiments, and the interpretation of, and inference from, the results (http://en.wikipedia.org/wiki/Biostatistics accessed online August 12 08 and http://www.answers.com/topic/biostatistics accessed online August 12 08). "Biostatistics in the public health context consists primarily of developing descriptive statistics describing the overall health and well-being of a population. These statistics include such measures as birth, death, and infant death rates; disease incidence and prevalence; and trends of this data over time." (http://www.answers.com/topic/biostatistics accessed online August 12 08).	
Additional Admission Requirements	In addition to the Faculty of Graduate Studies' requirements, all applicants must meet the minimum admission requirements of the home program. In the case of the PhD Biostatistics Specialization (MDCH), a master's degree in statistics, or its equivalent is usually required. Students must also have a letter from a faculty member in the home program indicating an agreement to supervise the applicant. Prospective applicants are strongly encouraged to approach potential supervisors in advance of applying for entry into the home program and Biostatistics specialization.	
MDCH Core Required Courses	1) MDCH 600: Introduction to CHS 2) MDCH 640: Fundamentals of Epidemiology	Request an exemption ***PRIOR*** to start of program based on having completed equivalent courses at the Master's level at the same or another university. Elective Requirements ***CANNOT*** be waived.
Biostatistics Required Courses	1) BIST 600: Research Seminar	
	2) STAT 641: Statistical Learning	
	3) STAT 721: Statistical Inference	
	4) A minimum of 9 units (3HCEs) from List A or B, with at least 3 units from each of A and B	
Recommended Electives	As recommended by the student's supervisor/committee appropriate to the advancement of the thesis research topic. Other courses offered at the University of Calgary or through the Western dean's Agreement (https://grad.ucalgary.ca/current/managing-my-program/studying-at-another-university/western-deans) may be used to fulfil elective requirements, with the approval of the student's supervisor(s) and home department GPD.	
• **LIST A**	**EPIDEMIOLOGY and HEALTH**	
	1) MDCH 641: Introduction to Clinical Trials	
	2) MDCH 643: Research in Healthcare Epidemiology and Infection Control	
	3) MDCH 644: Surveillance I: Data Handling for Infection Control	
	4) MDCH 647: Clinical Epidemiology	
	5) MDCH 649: Epidemiology of Infectious Diseases	
	6) MDCH 661: Health Economics I	
	7) MDCH 662: Economic Evaluation	
	8) MDCH 663: Decision Analysis in Health Economics	
	9) MDCH 664: Administrative Data Analysis Methodology	
	10) MDCH 681: Health Research Methods	
	11) MDCH 740: Advanced Epidemiology	
	12) MDCH 741: Systematic Reviews and Meta-Analysis	
• **LIST B**	**BIOSTATISTICS/STATISTICS**	
	1) MDCH 611: Models for Health Outcomes (Biostatistics II)	
	2) MDCH 612: Models for Repeated Measures Studies and Time-to-Event Studies (Biostatistics III)	
	3) STAT 619: Bayesian Statistics	
	4) STAT 625: Multivariate Analysis	
	5) STAT 631: Computational Statistics	
	6) STAT 633: Survival Analysis	

	7) STAT 635: Generalized Linear Models
	8) STAT 637: Non-Linear Regression
	9) STAT 641: Statistical Learning
	10) STAT 701: Theory of Probability I
	11) STAT 723: Theory of Hypothesis Testing
Seminars	Students in MDCH 600 must attend all CHS-OIPH Weekly Seminars in the Fall and Winter terms. Additional seminars as recommended by student's supervisor/committee.
Candidacy Examination	All coursework must be completed and the dissertation proposal approved and submitted to Ethics prior to the Candidacy Exam. The Candidacy Examination will consist of three written questions devised by the supervisory committee and an oral examination.
Thesis Research	Refer to requirements of home program regarding Thesis Monograph or Manuscript-based.
Practicum	None required, but typically arranged in conjunction with the student's supervisor(s).
Biostatistics Competencies	