The information published in this Graduate Calendar outlines the rules, regulations, curricula, programs and fees for the 2019-2020 academic year, including the Summer Semester 2019, Fall Semester 2019 and the Winter Semester 2020.

For your convenience the Graduate Calendar is available in PDF format.

If you wish to link to the Graduate Calendar please refer to the Linking Guidelines.

The University is a full member of:

• Universities of Canada

Contact Information:

University of Guelph
Guelph, Ontario, Canada
N1G 2W1
519-824-4120

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Disclaimer
The Office of Graduate and Postdoctoral Studies has attempted to ensure the accuracy of this on-line Graduate Calendar. However, the publication of information in this document does not bind the university to the provision of courses, programs, schedules of studies, fees, or facilities as listed herein.

Limitations
The University of Guelph reserves the right to change without notice any information contained in this calendar, including any rule or regulation pertaining to the standards for admission to, the requirements for the continuation of study in, and the requirements for the granting of degrees or diplomas in any or all of its programs.

The university will not be liable for any interruption in, or cancellation of, any academic activities as set forth in this calendar and related information where such interruption is caused by fire, strike, lock-out, inability to procure materials or trades, restrictive laws or governmental regulations, actions taken by the faculty, staff or students of the university or by others, civil unrest or disobedience, Public Health Emergencies, or any other cause of any kind beyond the reasonable control of the university.

The University of Guelph reaffirms section 1 of the Ontario Human Rights Code, 1981, which prohibits discrimination on the grounds of race, ancestry, place of origin, colour, ethnic origin, citizenship, creed, sex, sexual orientation, handicap, age, marital status or family status.

The university encourages applications from women, aboriginal peoples, visible minorities, persons with disabilities, and members of other under-represented groups.
Introduction

Collection, Use and Disclosure of Personal Information

Personal information is collected under the authority of the University of Guelph Act (1964), and in accordance with Ontario's Freedom of Information and Protection of Privacy Act (FIPPA) [http://www.e-laws.gov.on.ca/DBLaws/Statutes/English/90f31_e.htm]. This information is used by University officials in order to carry out their authorized academic and administrative responsibilities and also to establish a relationship for alumni and development purposes. Certain personal information is disclosed to external agencies, including the Ontario Universities Application Centre, the Ministry of Advanced Education and Skills Development, and Statistics Canada, for statistical and planning purposes, and is disclosed to other individuals or organizations in accordance with the Office of Registrarial Services Departmental Policy on the Release of Student Information. For details on the use and disclosure of this information call the Office of Registrarial Services at the University at (519) 824-4120 or see [https://www.uoguelph.ca/registrar/]

Statistics Canada - Notification of Disclosure

For further information, please see Statistics Canada's web site at [http://www.statcan.gc.ca] and Section XIV Statistics Canada.

Address for University Communication

Depending on the nature and timing of the communication, the University may use one of these addresses to communicate with students. Students are, therefore, responsible for checking all of the following on a regular basis:

Email Address

The University issued email address is considered an official means of communication with the student and will be used for correspondence from the University. Students are responsible for monitoring their University-issued email account regularly.

Home Address

Students are responsible for maintaining a current mailing address with the University. Address changes can be made, in writing, through Registrarial Services.

Name Changes

The University of Guelph is committed to the integrity of its student records, therefore, each student is required to provide either on application for admission or on personal data forms required for registration, their complete, legal name. Any requests to change a name, by means of alteration, deletion, substitution or addition, must be accompanied by appropriate supporting documentation.

Student Confidentiality and Release of Student Information Policy Excerpt

The University undertakes to protect the privacy of each student and the confidentiality of their record. To this end the University shall refuse to disclose personal information to any person other than the individual to whom the information relates where disclosure would constitute an unjustified invasion of the personal privacy of that person or of any other individual. All members of the University community must respect the confidential nature of the student information which they acquire in the course of their work.

Complete policy at [https://www.uoguelph.ca/secretariat/office-services/university-secretariat/university-policies].
## Learning Outcomes

### Graduate Degree Learning Outcomes

On May 27, 2013, the University of Guelph Senate approved the following five University-wide Learning Outcomes as the basis from which to guide the development of graduate degree programs, specializations and courses:

1. Critical and Creative Thinking
2. Literacy
3. Global Understanding
4. Communication
5. Professional and Ethical Behaviour

These learning outcomes are also intended to serve as a framework through which our educational expectations are clear to students and the broader public; and to inform the process of outcomes assessment through the quality assurance process (regular reviews) of programs and departments.

An on-line guide to the learning outcomes, links to the associated skills, and detailed rubrics designed to support the development and assessment of additional program and discipline-specific outcomes, are available for reference on the [Learning Outcomes website](#).

### Critical and Creative Thinking

Critical and creative thinking is a concept in which one applies logical principles, after much inquiry and analysis, to solve problems with a high degree of innovation, divergent thinking and risk taking. Those mastering this outcome show evidence of integrating knowledge and applying this knowledge across disciplinary boundaries. Depth and breadth of understanding of disciplines is essential to this outcome. At the graduate level, originality in the application of knowledge (master’s) and undertaking of research (doctoral) is expected.

In addition, Critical and Creative Thinking includes, but is not limited to, the following outcomes: Independent Inquiry and Analysis; Problem Solving; Creativity; and Depth and Breadth of Understanding.

### Literacy

Literacy is the ability to extract information from a variety of resources, assess the quality and validity of the material, and use it to discover new knowledge. The comfort in using quantitative literacy also exists in this definition, as does using technology effectively and developing visual literacy.

In addition, Literacy includes, but is not limited to, the following outcomes: Information Literacy, Quantitative Literacy, Technological Literacy, and Visual Literacy.

### Global Understanding

Global understanding encompasses the knowledge of cultural similarities and differences, the context (historical, geographical, political and environmental) from which these arise, and how they are manifest in modern society. Global understanding is exercised as civic engagement, intercultural competence and the ability to understand an academic discipline outside of the domestic context.

In addition, Global Understanding includes, but is not limited to, the following outcomes: Global Understanding, Sense of Historical Development, Civic Knowledge and Engagement, and Intercultural Competence.

### Communication

Communication is the ability to interact effectively with a variety of individuals and groups, and convey information successfully in a variety of formats including oral and written communication. Communication also comprises attentiveness and listening, as well as reading comprehension. It includes the ability to communicate and synthesize information, arguments, and analyses accurately and reliably.

In addition, Communication includes, but is not limited to, the following outcomes: Oral Communication, Written Communication, Reading Comprehension, and Integrative Communication.

### Professional and Ethical Behaviour

Professional and ethical behaviour requires the ability to accomplish the tasks at hand with proficient skills in teamwork and leadership, while remembering ethical reasoning behind all decisions. The ability for organizational and time management skills is essential in bringing together all aspects of managing self and others. Academic integrity is central to mastery in this outcome. At the graduate level, intellectual independence is needed for professional and academic development and engagement.

In addition, Professional and Ethical Behaviour includes, but is not limited to, the following outcomes: Teamwork, Ethical Reasoning, Leadership, Personal Organization and Time Management, and Intellectual Independence.
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Population Medicine

The Department of Population Medicine is an international leader in promoting the optimal health and productivity of animal populations, ensuring the safety of foods of animal origin, and preventing animal-related disease in humans. MSc and PhD degrees are offered in the following fields:

• Epidemiology (MSc thesis option, MSc course-work option, PhD)
• Theriogenology (MSc thesis option)
• Health Management (MSc thesis option)
• Public Health (MSc, PhD)

Our research mission is to discover and disseminate knowledge regarding the management of health and productivity of animal populations, and the interrelationships of animals with humans and the environment. In support of this mission we rely principally on our expertise in field-based quantitative observational studies and clinical trials.

Our teaching/learning mission is to guide students as they obtain an essential knowledge base and develop the necessary communicative, quantitative and problem-solving skills to integrate and apply this knowledge; and to instill the appropriate attitudes and abilities required for life-long learning.

The department offers programs leading to MSc, Master of Public Health (MPH), PhD and DVSc degrees.

Administrative Staff

Chair
Todd Duffield (2536 Stewart Bldg., Ext. 54057)
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Olaf Berke
Dipl. Statistics, PhD Dortmund Germany - Associate Professor

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Katie Clow
BSc, DVM, PhD Guelph - Assistant Professor

Jason B. Coe
DVM, PhD Guelph - Associate Professor

Catherine E. Dewey
DVM, MSc, PhD Guelph - Professor and Chair

Todd F. Duffield
DVM, DVSc Guelph - Professor

Robert M. Friendship
DVM, MSc Guelph, Dip ABVP - Professor

Cathy J. Gartley
BSc New Brunswick, DVM, DVSc Guelph, Dip ACT - Assistant Professor

Jessica L. Gordon
BSc, MSc Michigan State Univ., DVS Guelph - Assistant Professor

Amy L. Greer
BSc, Mount Allison, MSc, Trent, PhD Arizona State - Assistant Professor

Michele T. Guerin
DVM, MSc, PhD Guelph - Associate Professor

Derek B. Haley
BHK Windsor, MSc Guelph, PhD Saskatchewan - Assistant Professor

Sherelee L. Harper
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Andria Q. Jones Bitton
DVM, PhD Guelph - Associate Professor

David E. Kelton
DVM, MSc, PhD Guelph, Dip ABVP - Professor

Deep K. Khosa
BSc, DVS, PhD Murdoch - Assistant Professor

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BSc McGill, DVM, DVS Guelph - Associate Professor

Scott A. McEwen

DVM, DVS Guelph, Dip. ACVP - Professor

Jennifer McWhirter
BSc, PhD Waterloo - Assistant Professor

Lee E. Niel
BSc Simon Fraser, PhD UBC - Assistant Professor

Terri L. O'Sullivan
DVM, PhD Guelph - Assistant Professor

Andrew Papadopoulos
BASc Ryerson, MBA York, PhD Guelph - Associate Professor and Coordinator, Master of Public Health Program

Jane Parmley
DVM Saskatchewan, PhD Guelph - Associate Professor

David L. Pearl
BSc McGill, MSc York, DVM, PhD Guelph - Associate Professor and Graduate Program Coordinator, Admission and Administration

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DVM Croatia, MSc, PhD Guelph - Associate Professor

David Renaud
BSc, DVM, PhD Guelph - Assistant Professor

Jan M. Sargeant
DVM, MSc, PhD Guelph - Professor and Director - Centre for Public Health and Zoonoses

Anita Tucker
BSc, MSc, PhD Guelph - Assistant Professor

Jeffrey Wichtel
BVSc, PhD Massey - Professor and Dean

Associated Graduate Faculty

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Assoc. of Music, DVM Guelph, MSc UPEI - Contractually Limited Faculty, Population Medicine, University of Guelph

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Ashlee Cusnolo
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BSc, PhD Guelph - Associate Professor, Veterinary Diagnostic and Production Animal Medicine/Biomedical Science, Iowa State University

Richard Reid-Smith
BSc UWO, DVM Guelph, DVS Guelph - Veterinary Epidemiologist, Public Health Agency of Canada

Karen Shapiro
BS, DVM, PHD, MPVM - Assistant Research Faculty, Pathology, University of California-Davis

Jeff Wilson
DVM, DVS, PhD Guelph - President, Novometrix Inc., Moffat

MSc Program

The department offers a MSc by thesis in the fields of: 1) epidemiology; 2) theriogenology; 3) health management; and 4) public health, and a MSc by course work and major research paper in the fields of: 1) epidemiology; and 2) public health.

Admission Requirements

Students admitted must have an honours or DVM degree (or its equivalent). In addition, the department considers the applicant's special circumstances and the referees' comments. Since the core of the MSc in Population Medicine in the fields of epidemiology or public health builds on knowledge of various analytic techniques, students entering the program should possess knowledge of basic statistical methods and their application.

All applicants should submit a one-page statement of research interests and career goals to assist in the identification of a faculty advisor who has the funding necessary to support the research. Students may be admitted into the Fall, Winter or Summer semesters.

Program Requirements

Students enroll in one of two study options: 1) thesis, or 2) course work and major research paper.
Thesis
The prescribed studies are a minimum of four courses (at least 2.0 course credits) appropriate to the discipline. Epidemiology I (POPM*6200) is a required course for students in epidemiology and public health; students in health management and theriogenology must take either Epidemiology I (POPM*6200) or Applied Clinical Research (POPM*6230). A minimum of ‘B’- average is required in the prescribed studies. The department seminar course, POPM*6100, is also required but does not count as one of the four courses. A thesis must be completed and successfully defended.

Course Work and Major Research Paper

Epidemiology
For the MSc by course work and major research paper in the field of Epidemiology, no fewer than eight courses (at least 4.0 course credits) will be taken. These must be approved by the departmental Graduate Program Committee. Each student in the program will take three core courses (including the Project in Population Medicine course, POPM*6250, which is equivalent to two courses), and at least four additional courses. The department seminar course, POPM*6100, is also required but does not count as one of the eight courses. Normally, the prescribed courses for the MSc in Population Medicine (Epidemiology) by course work and major research project will include:

Core Courses
- POPM*6200 [0.50] Epidemiology I
- POPM*6210 [0.50] Epidemiology II
- POPM*6250 [1.00] Project in Population Medicine

Additional Courses
The four courses selected in this category will depend upon the student's background, specialty, interest and area of research.

Examples of courses suitable for inclusion in the student's program include:
- PABI*6550 [0.50] Epidemiology of Zoonoses
- POPM*6230 [0.50] Applied Clinical Research
- POPM*6290 [0.50] Epidemiology III
- POPM*6350 [0.50] Safety of Foods of Animal Origins
- POPM*6950 [0.50] Studies in Population Medicine
- STAT*6920 [0.50] Topics in Statistics
- POPM*6520 [0.50] Introduction to Epidemiological and Statistical Methods
- POPM*6700 [0.50] Swine Health Management *
- POPM*6400 [0.50] Dairy Health Management *

Additional courses other than those listed above may be deemed suitable for the student's program by the Departmental Graduate Program Coordinator after recommendations are received from the Advisory Committee.

At least three semesters of full-time study will be required for completion of the MSc program by course work and major research paper option; two of these semesters must be at the University of Guelph. Normally, however, students take 4-5 semesters to complete the program.

Public Health
For the MSc by course work and major research paper in the field of Public Health, no fewer than eight courses (at least 4.0 course credits) will be taken. These must be approved by the departmental Graduate Program Committee. Each student in the program will take three core courses (including the Project in Population Medicine course, POPM*6250, which is equivalent to two courses), and at least four additional courses. The department seminar course, POPM*6100, is also required but does not count as one of the eight courses. Normally, the prescribed courses for the MSc in Population Medicine (Public Health) by course work and major research project will include:

Core Courses
- POPM*6200 [0.50] Epidemiology I
- POPM*6210 [0.50] Epidemiology II
- POPM*6250 [1.00] Project in Population Medicine

Additional Courses
The four courses selected in this category will depend upon the student's background, specialty, interest and area of research.

Examples of courses suitable for inclusion in the student's program include:
- PABI*6500 [0.50] Infectious Diseases and Public Health
- POPM*6210 [0.50] Epidemiology II
- POPM*6290 [0.50] Epidemiology III
- POPM*6510 [0.50] Community Health Promotion
- POPM*6540 [0.50] Concepts in Environmental Public Health
- POPM*6580 [0.50] Public Health Administration
- POPM*6950 [0.50] Studies in Population Medicine
- EDRD*6100 [0.50] Disaster Planning and Management
- POPM*6520 [0.50] Introduction to Epidemiological and Statistical Methods
- EDRD*6690 [0.50] Program Evaluation
- POPM*6600 [0.50] Applied Public Health Research

Additional courses other than those listed above may be deemed suitable for the student's program by the Departmental Graduate Program Coordinator after recommendations are received from the Advisory Committee.
Theriogenology
The Department of Population Medicine offers the Doctor of Veterinary Science (DVSc) degree in the field of Theriogenology. Prerequisites include a DVM or equivalent degree, one or two years of practice experience/internship, cumulative average of at least a “B”, and eligibility for licensure to practice veterinary medicine in Ontario. The DVSc program provides rigorous advanced academic preparation in the discipline of Theriogenology with a view to preparation for Board Certification by the American College of Theriogenologists. The Theriogenology field at the Ontario Veterinary College is multi-species, with emphasis placed on a candidate’s specific areas of interest. The DVSc differs from PhD training by emphasizing the development of both research and applied clinical skills. It is a three-year program, with approximately one-third of the time involving clinical duties within the Veterinary Teaching Hospital, including assisting in teaching of final year veterinary students. The remainder of effort is directed towards a substantive thesis research project in Theriogenology and coursework. The DVSc degree requirements include successful completion of 2.5 credits of prescribed graduate level courses, a qualifying examination and successful defense of a thesis. A faculty member(s) in the Department of Population Medicine will supervise each candidate for the Theriogenology DVSc program.

Interdepartmental Programs

Food Safety and Quality Assurance
The Department of Population Medicine participates in the MSc program in food safety and quality assurance. Those faculty members whose research and teaching expertise includes aspects of food safety and quality assurance may serve as advisors for MSc students. Please consult the Food Safety and Quality Assurance listing for a detailed description of the MSc program.

Collaborative Specializations

International Development Studies
The Department of Population Medicine participates in the International Development Studies MSc course work/PhD collaborative specialization. Those faculty members whose research and teaching expertise includes aspects of international studies may serve as advisors for MSc course work/PhD in International Development Studies students. Please consult the International Development Studies listing for a detailed description of the collaborative specialization.

One Health
The Department of Population Medicine participates in the collaborative specialization in One Health. Master’s and Doctoral students wishing to undertake thesis research or their major research paper/project with an emphasis on one health are eligible to apply to register concurrently in Population Medicine and the collaborative specialization. Students should consult the One Health listing for more information.

Neuroscience
The Department of Population Medicine participates in the Neuroscience MSc/PhD collaborative specialization. Those faculty members whose research and teaching expertise includes aspects of neuroscience may serve as advisors for MSc/PhD in Neuroscience students. Please consult the Neuroscience listing for a detailed description of the collaborative specialization.

Courses

*Given in alternate years.

Epidemiology

**POPM*6200 Epidemiology I F [0.50]**
This course covers concepts, principles and methods of basic and applied epidemiology, including the following topics: sampling, measuring disease frequency, clinical epidemiology, descriptive epidemiology, causal reasoning and design, interpretation and critical appraisal of surveys, observational studies, field trials and critical appraisal.

Restriction(s): MPH and Population medicine students. Instructor consent required.

Department(s): Department of Population Medicine

**POPM*6210 Epidemiology II W [0.50]**
Advanced study design and analytic methods for the analysis of data from observational studies and surveys.

Department(s): Department of Population Medicine

**POPM*6220 Analytical Epidemiology S [0.50]**
This course focuses on the advanced analysis of epidemiologic studies. Case control, cohort and survival studies are analysed within the generalized linear-model framework. Links between study objectives, study design and data analysis will be emphasized throughout. Special problems, such as the analysis of correlated data arising from cluster sampling of individuals, are discussed.

Prerequisite(s): POPM*6210 and POPM*6290

Department(s): Department of Population Medicine

**POPM*6230 Applied Clinical Research F [0.50]**
This course is designed to help clinical researchers design, fund, and analyze their clinical research. Emphasis is placed upon planning a well-designed clinical trial and writing a well-organized grant proposal.

Department(s): Department of Population Medicine

**POPM*6250 Project in Population Medicine F,W,S [1.00]**
Collection and analysis of field data and the preparation of a written report suitable for publication, and oral presentation of the findings to the graduate faculty. This course is part of the MSc program by course work in population medicine.

Restriction(s): Restricted to coursework students in the MSc Population Medicine program.

Department(s): Department of Population Medicine

**POPM*6290 Epidemiology III F [0.50]**
This course gives an overview of advanced methods for the analysis of data of clustered/correlated data as opposed to independent data. Special emphasis is on spatial, longitudinal, survival data and time series data.

Prerequisite(s): POPM*6210 (or equivalent graduate course from another university)

Department(s): Department of Population Medicine

**POPM*6520 Introduction to Epidemiological and Statistical Methods F [0.50]**
This is a 0.5 credit introductory graduate course for MPH students and students interested in epidemiology. The course will provide an introduction to research design, grant proposal writing, and critical appraisal, as well as survey (questionnaire) design and basic statistical methods for epidemiological studies.

Co-requisite(s): POPM*6200

Department(s): Department of Population Medicine

**POPM*6800 Infectious Disease Modeling W [0.50]**
This course covers concepts, principles and methods of basic and applied epidemiology, including the following topics: sampling, measuring disease frequency, clinical epidemiology, descriptive epidemiology, causal reasoning and design, interpretation and critical appraisal of surveys, observational studies, field trials and critical appraisal.

Prerequisite(s): POPM*6200 and successful completion of an undergraduate course in differential calculus.

Restriction(s): Instructor consent required.

Department(s): Department of Population Medicine

**POPM*6960 Systematic Reviews & Meta-Analysis W [0.50]**
This course covers the use of systematic reviews in animal and public health, the steps in conducting a systematic review, and quantitative synthesis of research results from multiple studies (meta-analysis). The course combines didactic lectures and videos with practical exercises during class time.

Prerequisite(s): POPM*6200 and POPM*6520

Department(s): Department of Population Medicine

Health Management

**POPM*6400 Dairy Health Management * S [0.50]**
This course stresses a population-based, herd-level approach to dairy herd health management, in which optimizing the efficiency of the dairy enterprise is the overall goal. The biological and economic impacts of disease and management deficiencies on herd performance will be discussed as they relate to design and implementation of herd health programs. The course will emphasize the critical role of record keeping, data analysis and monitoring on program success.

Department(s): Department of Population Medicine

**POPM*6700 Swine Health Management * U [0.50]**
Diseases of swine are studied with particular emphasis on preventive medicine and herd-health management.

Department(s): Department of Population Medicine

Theriogenology

**POPM*6610 Theriogenology of Cattle * U [0.50]**
A lecture/seminar course emphasizing the relationship of nutritional, genetic, endocrine, anatomical, and environmental factors with the reproductive health of cattle. Application of reproductive technologies will also be covered.

Department(s): Department of Population Medicine

**POPM*6630 Theriogenology of Horses * U [0.50]**
A lecture/seminar course covering the genetic, endocrine, anatomical and environmental factors that affect reproductive performance and health of horses. Breeding management, including recent technologies, and management of the infertile animal will be included.

Department(s): Department of Population Medicine
### IX. Graduate Programs, Population Medicine

#### Other

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<th>Credits</th>
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<td>POPM*6100 Seminar F</td>
<td>Seminar F</td>
<td>0.00</td>
<td>A practical course that utilizes tutorials, workshops, self and peer reviewed assessment to help participants develop skills in public speaking and presentation of scientific data. Each student presents at least one seminar on an approved subject during the departmental seminar series.</td>
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#### Public Health

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<th>Credits</th>
<th>Description</th>
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<td>POPM*6200</td>
<td>Safety of Foods of Animal Origins F</td>
<td>0.50</td>
<td>The detection, epidemiology, human health risk, and control of hazards in food of animal origin.</td>
</tr>
<tr>
<td>POPM*6510</td>
<td>Community Health Promotion F</td>
<td>0.50</td>
<td>The objective of this course is to provide students with an understanding of public health, population health and health promotion. Topics will include perspectives on health and illness, injury prevention, determinants of health, population diversity and the role of evidence in public health decision-making.</td>
</tr>
<tr>
<td>POPM*6520</td>
<td>Health Communication W</td>
<td>0.50</td>
<td>This course introduces communication theory, best practices, and skills related to public health. Students will learn about the written, oral, and visual communication of health information for professional, peer, and lay audiences. Students will apply their knowledge by creating a portfolio of health communication materials.</td>
</tr>
<tr>
<td>POPM*6530</td>
<td>Concepts in Environmental Public Health</td>
<td>0.50</td>
<td>This course covers the main concepts of environmental public health including basic elements of environmental toxicology, risk analysis, air and water quality, food safety, waste, occupational health and eco health.</td>
</tr>
<tr>
<td>POPM*6540</td>
<td>Public Health Policy and Systems</td>
<td>0.50</td>
<td>This course covers concepts and principles of public health policy and systems including: public health systems, their structure, funding and governance and their integration into the healthcare system; evolution of public health policy; models of policy development and analysis; stakeholder analysis; and, public health ethics.</td>
</tr>
<tr>
<td>POPM*6550</td>
<td>Public Health Practicum II</td>
<td>1.00</td>
<td>In this 1.0 credit course, students will synthesize theoretical concepts, learned via prior coursework, with public health practice. Students will work in a host public health agency for a 12- to 16-week period, focusing on a major project of significance to the host organization.</td>
</tr>
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</table>

#### POPM*6560 Theriogenology of Dogs and Cats * U | 0.50 | A seminar/laboratory course emphasizing advanced reproductive management of sheep, goats and farmed deer/elk, with the emphasis on a sheep production model. New reproductive technologies will be included. |

#### POPM*6570 Theriogenology of Small Ruminants * U | 0.50 | A seminar/laboratory course emphasizing advanced reproductive management of sheep, goats and farmed deer/elk, with the emphasis on a sheep production model. New reproductive technologies will be included. |

#### POPM*6580 Public Health Administration F | 0.50 | This course will teach students to develop, implement and improve public health programs. Understanding an organization’s mission and priorities, and developing business plans is critical for an effective administrator. Furthermore, it introduces theories and effective components of leadership and describes the practical role of the leader. |

#### POPM*6590 Public Health Practicum II W | 1.00 | This course allows students in the Master of Public Health program to undertake an optional second practicum experience. They will work in a host public health organization or agency for a 12- to 16-week period, focusing on a major project of significance to the host organization. |

**Restrictions:**
- MPH students only. Instructor consent required.
- Instructor consent required.

**Prerequisites:**
- POPM*6560 or instructor's signature required
- POPM*6560
- POPM*6510, POPM*6520, POPM*6530, POPM*6540, and POPM*6550
- MPH students only. Instructor consent required.
- MPH students only. Instructor consent required.