TRAINING IN EPIDEMIOLOGY AND BIOSECURITY, WITH EMPHASIS ON ZOONOTIC DISEASES
Welcome to Massey University’s postgraduate training in epidemiology and biosecurity. This highly specialised training has been designed to aid students in their understanding of the identification, management, and prevention of globally-significant zoonotic diseases through two conjointly delivered degrees, the Master of Veterinary Medicine (MVM) in Biosecurity and the Master of Public Health (MPH) in Biosecurity.

These degrees represent the very first postgraduate training programmes in the world that have been designed from the start with the key design feature being to fully integrate veterinary and medical specialist topics in a single curriculum.

The degree programme is jointly taught by the Centre for Public Health Research (CPHR) based on the Wellington campus and the EpiCentre based on the Manawatu campus. The two groups have an exemplary teaching and research background in human and animal health respectively.

Massey University aims to position the MVM/MPH (Biosecurity) degrees as an essential part of the professional development of veterinarians and public health officials charged with the prevention, detection, management and control infectious diseases in either animals or humans.

The training is only available to students from outside New Zealand to ensure that the content is tailored to meet the needs of a global community.

The degrees were originally conceived and developed with support of the World Bank as part of their implementation of the Avian and Human Influenza Fund. As the global pandemic of influenza was unfolding during 2009 and 2010, the first 70 students representing seven countries in South Asia enrolled in the programme and finished in mid-2011.

Massey University is committed to delivering a highly sought-after programme of training in veterinary and public health epidemiology which meets your needs for many years to come. We do this through a combination of online learning and unique face-to-face teaching workshops. This blended curriculum delivery teaches not only the technical aspects of epidemiology and biosecurity but also purposely incorporates learning activities meant to build your professional relationships with students, both within and between countries and disciplines (veterinary and public health).
You will be accepted into this programme because we believe that you have the potential to both complete the programme and make a significant positive difference to the health status of people and animals in your country.

Massey University is committed to a process of continuous improvement. An integral part of that is integrating your feedback at appropriate times. Your input is respected at any time, both formally and informally through dialogue with the MVM/MPH Programme Team.

On behalf of Massey University and the MVM/MPH Programme Team, I wish you every success in your studies and look forward to assisting you in developing your own network of health professionals from different disciplines and countries.

Eric Neumann  
Programme Director  
EpiCentre  
Institute of Veterinary, Animal and Biomedical Sciences  
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PROGRAMME OUTCOMES

• To enhance the use of epidemiological methods by medical and veterinary doctors in designing prevention and control programmes for zoonotic diseases.

• To assist animal health and public health disease control managers in implementing effective disease surveillance and risk mitigation strategies.

• To improve and standardize the range and depth of skills available to disease managers in a group of countries known to have very diverse needs.

• To provide participants with an internationally recognized Masters qualification without the need to leave the region for an extended period of time in order to receive the training.

• To enable participants to continue to work in their day-to-day functions while studying for the degree, resulting in less disruption and lost work productivity with the ability to undertake the degree on a part-time basis.
PROGRAMME STRUCTURE

Formal training of animal health experts and human health experts in epidemiology and biosecurity is completed through a blended teaching approach which harnesses the best of new and traditional approaches to advanced learning.

The Masters degree training has been designed to accommodate part-time study in order to allow participation of people who may not be able to delegate all their normal work responsibilities. To accomplish this, the participants will be trained and quality will be assured through a combination of web-based learning delivered over the internet and workshop-based teaching, conducted in locations most convenient to the specific student cohort. Two face-to-face workshops will be conducted during the degree programme with a total contact period of approximately 4 weeks.

As building the student’s professional network is an important outcome of this training, the curriculum is most successful when a region-specific student can be assembled. However, we are happy to work with individual students (or sponsoring organisations) to your specific situation. While the degree can be completed in a single year (if the candidate can commit to 26 weeks full-time study over the course of a year), there is flexibility to extend the time period if necessary.

Programme offerings to date have been offered on a half-time basis to allow candidates that are unable to completely give up their full-time employment, to enroll and complete the degree, at a distance, at an achievable pace.

TARGETED PARTICIPANTS

The focus of this training programme is to develop epidemiological skills which can be applied to practical health and biosecurity management tasks of the nature faced by regional or national disease control officials.

Individuals with the following job expectations should be considered as likely candidates for the proposed training:

- Field-based veterinarians and public health doctors responsible for implementation of national disease control programmes, including those in fairly remote locations.
- University faculty involved in consultation with Ministries of Agriculture, or Health, in design of disease control programmes.
- University faculty involved in education either of medical doctors or veterinarians.
- Consultants or contractors working in association with international development agencies or NGOs managing endemic or epidemic disease situations.
- Laboratory personnel working in support of disease control programmes.
- Data and information managers who support disease control programmes.
Prospective students are required to meet the following pre-requisites:

- Have been previously awarded a public health, medical, or veterinary degree\(^1\) from a recognised University\(^2\).
- Provide evidence of your English language\(^3\) proficiency.
- Have access to a modern computer with reliable, high-quality internet connection.

\(^1\) As a minimum, the degree should allow the holder the right to practice medicine (human or veterinary), or for those with a public health degree, the right to implement public health laws, in the country of residence.

\(^2\) Recognised in this context is recognition by the governing authorities in the country of residence of the degree holder.

\(^3\) While IELTS (6.5 band) or TOEFL (P 575) testing is encouraged, if unable to provide these results a subjective assessment of your English language competency may be arranged.

PROGRAMME DESCRIPTION

The training programme requires completion of eight academic papers. For medical doctors, successful completion of the modules will result in the award of a Master of Public Health (MPH) degree; veterinary doctors will be awarded a Master of Veterinary Medicine (MVM) degree, both with a degree endorsement in Biosecurity.

The first four course papers are common to both degrees and will cover principles of epidemiology, disease prevention and control, risk management, and disease surveillance. The content of the remaining four papers will vary depending on whether the student is focusing on human or animal health and meets the specific needs of the experts in each field. This formal training will be preceded by a two week “bridging” course to familiarize students with the programme, assess current skill level, and to evaluate each student’s level of computer literacy and need for support resources.
This diagram provides a general overview of the course content.
Massey University manages a Virtual Learning Environment (VLE) called “Stream”, which is based on the open-source Moodle platform. Students can access Stream through standard Internet browsers such as Mozilla Firefox or Microsoft Internet Explorer.

Study material will also be provided on a CD for use in settings with irregular Internet availability; however, all students will need to have at least periodic access to the online Stream environment.

When enrolled on a part-time study basis, each paper will be offered online for approximately a 6-8 week period. Students enrolled in a specific paper will be working at a pace compatible with their short-term time availability, but in a managed environment that will be staffed online by a faculty member who is part of the Massey University teaching team. Within the papers, case studies and assignments will be developed that are specifically suited to diseases or health programmes relevant to the student cohort. When possible, students will be encouraged to use their own data and experience generated from their working environment to complete class assignments.

In order to build appreciation of the value of epidemiological skills, workshops will be organised that will bring together a range of people from each of the countries in the region. Participants in these workshops will include not only the trainees, but will also include senior executives from regional Ministries of Health and Agriculture, staff members from Medical and Veterinary Schools, and other key players in control of zoonotic diseases. These workshops will be designed to prepare candidates and raise awareness and enthusiasm for the programme amongst high-level employers and managers who will make use of the new Masters graduates after they complete their training.

The workshops will consist of a week-long Commencing Workshop just prior to the beginning of the Master degree course, and a 2-3 week-long Training Workshop held mid-way through the programme.
195.740 - A Population Basis for Measuring Health
Use of basic epidemiological principles to define populations at risk and determine their state of health. Techniques for determining strength of association, and prevalence/incidence will be mastered.

195.741 - Techniques for Disease Outbreak Investigation
The principles of outbreak investigation including appropriate selection of study design will be explored. Basic statistical analysis and interpretation of data will be completed; limitations to data interpretation, confounding, and systematic error will be discussed.

195.742 - Disease Surveillance and Diagnostic Testing
Fundamental principles of disease surveillance including appropriate sample size determination will be presented. Choice of diagnostic test and diagnostic test performance evaluation will be key features taught in order to master the subject.

195.743 - Principles of Disease Control and Management
Theoretical and practical aspects of biosecurity will be presented. Students will learn standardized approaches to controlling disease outbreaks including temporal measures of disease, data collection and management, and presentation of information to the public. Principles of Disease Control and Management will be delivered in a workshop format, at a location determined through consultation with the student cohort. This 2-3 week-long intensive training course will enable face-to-face interactive and problem-based learning as well as an opportunity for course teachers to communicate directly with the students, and judge progress of candidates towards the required level of postgraduate achievement.

The following are MVM (Biosecurity) specific specialist papers and are only available to candidates of the course, except in special circumstances.

195.744 - Risk and Decision-making During Disease Outbreaks
Risk assessment, including import risk assessment will be taught in the context of all OIE guidelines for risk analysis. Several frameworks for sound decision-making will be presented.

195.745 - The Interface of Human and Animal Disease
This paper will explore concepts of veterinary public health with a focus on managing zoonotic diseases, and interacting with public health and medical personnel.

195.746 - Public Policy in the Context of Disease Management
Students will engage in practice of creating sound public policy that balances the need for science-based decisions in the context of its application by farmers, consumers, and public officials. Skills for communicating policy information to the public will be learned.
195.747 - The Economics of Animal Disease Control
Understanding the cost of disease is fundamental to formulating strategic disease control plans. Whether outcomes include disease eradication or simply management of an endemic pathogen, the ability to discern the cost of the disease relative to the cost of control of that disease is a critically important skill.

The following papers are specialist papers for the MPH (Biosecurity) degree and are only available to students from outside this course in special circumstances.

231.721 - International Public Health
The theory and practice of public health in international perspective. Topics may include: international health policy, health security, health protection and promotion, descriptive epidemiology, introduction to occupational and environmental health, health programme evaluation, and health economics.

231.722 - Communicable Disease Prevention and Control
Prevention and control of communicable disease, including epidemiology, international and national public health policy, and pandemic planning.

231.723 - Epidemiological Methods
The theory and practice of epidemiology. Topics may include: epidemiology as a population science, cohort studies, case-control studies, prevalence studies, geographical and temporal variation, types of bias, confounding, data analysis, interpretation of findings of epidemiological studies, the use of epidemiology in health policy.

231.724 - International Occupational and Environmental Health
An overview of the contribution that occupational and environmental exposures make to adverse health outcomes in the general population both nationally and internationally, and the appropriate methods of identifying and preventing occupational and environmental hazards.

IS THIS TRAINING APPROPRIATE FOR YOU?

- Do you want high quality training in epidemiology and biosecurity?
- Would you like to achieve an internationally recognised Masters degree?
- Are you unable to leave your home countries for an extended period?
- Would you like to minimize the loss of work productivity during the training period?
- Do you want to achieve competencies in multiple aspects of applied epidemiology in a cost-effective manner?
- Do you live outside New Zealand?
- Are you up to the challenge?

If you answer yes to all of these questions then this training programme is made for you.