

# Certificate in Global Health

## Course Handbook

*November 2017*

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### ABBREVIATIONS

AAVMC: American Association of Veterinary Medical Colleges  
CVM: College of Veterinary Medicine  
DVM: Doctor of Veterinary Medicine  
GHE: Global Health Education  
IACUC: Institutional Animal Care and Use Committee  
IRB: Institutional Review Board  
NAVMEC: North American Veterinary Medical Education Consortium  
NCSU: North Carolina State University  
US: United States

## 1. CONTACT INFORMATION

### Course Director:

Andy Stringer BVSc PhD MRCVS  
Director, Global Health Education  
College of Veterinary Medicine  
North Carolina State University

Email: [apstringer@ncsu.edu](mailto:apstringer@ncsu.edu)

Tel: (919) 513 6275



## 2. VETERINARIANS AND GLOBAL HEALTH

Veterinarians have an increasingly important role to play in addressing the grand global challenges of the 21<sup>st</sup> century, particularly in areas such as infectious disease control, antimicrobial resistance, food security and global health<sup>1</sup>. An increasing human population, urbanization, increasing demand for livestock products and climate change will place greater pressures on the environment, human and animal health and livelihoods. The advances of the 21<sup>st</sup> century have led to a world that is increasingly interconnected. Globalization will see global problems becoming US problems. In the coming decades, many of the major challenges to human health will originate outside of the human health sector. These range from emerging zoonotic diseases to pollution and climate change<sup>2</sup>. Tackling these challenges effectively will require multidisciplinary approaches with consideration given to the broader systems that encompass health (such as housing, transport, animal health, urban land use and agriculture).

Veterinary student education must reflect these global challenges and equip the next generation of veterinarians with the knowledge and skills required to tackle these problems and contribute to the changing needs of society. There has been a growing recognition of the need for improved veterinary education related to issues of global importance<sup>3,4,5,6</sup>. The American Association of Veterinary Medical Colleges (AAVMC) has produced a position statement (endorsed jointly by the American Veterinary Medical Association) on addressing societal needs<sup>7</sup>. The position statement highlights that ‘an accredited college should provide an environment that encourages a diversity of educational paths’ for veterinary students. The AAVMC North American Veterinary Medical Education Consortium (NAVMEC) Report (Roadmap for Veterinary Medical Education in the 21st Century)<sup>8</sup> highlighted the need to: ‘Empower veterinarians to contribute to societal needs from a global perspective’ as one of its main recommendations.

International learning experiences are vital to a Global Health Education program. International experiences, whether a research or clinical placement, allow first hand exposure to different contexts and global challenges, and provide an insight into different cultures and communities. These experiences help to develop key skills required for a future career in global health. Students will gain an increased understanding of differing perspectives and cultural values; improved communication skills; the ability to work in an interdisciplinary team; the ability to critically analyze problems involving complex social and ethical concerns; and the ability to be flexible, innovative and adaptable in resource poor contexts. The benefits of an international learning experience should lead to graduates that are more resourceful, more resilient, and who have a wider professional perspective.

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<sup>1</sup> Kelly, A., Osburn, B., Salman, M. (2014). Veterinary Medicine’s increasing role in global health. *The Lancet*. 2:379-380.

<sup>2</sup> <https://agenda.weforum.org/2015/10/how-the-sdgs-can-help-address-global-health-challenges/>

<sup>3</sup> Brown, C., Thompson, S., Vroegindewey, G. & Pappaioanou, M. (2006) The Global Veterinarian: The Why? The What? The How? *Journal of Veterinary Medical Education* 33(3) 411-415

<sup>4</sup> Willis, N. et al (2007) – Envisioning the future of veterinary medical education: the Association of Veterinary Medical Colleges Foresight Project, Final Report. *Journal of Veterinary Medical Education*, 34 (1): 3-41.

<sup>5</sup> Workforce Needs in Veterinary Medicine (2012) National Academies Press Available at: [http://www.nap.edu/openbook.php?record\\_id=13413](http://www.nap.edu/openbook.php?record_id=13413)

<sup>6</sup> Veterinary Students as Global Citizens. Royal Veterinary College, University of London and Development Education Research Centre, Institute of Education. 2012.

<sup>7</sup> [http://www.aavmc.org/data/files/about\\_aavmc/aavmc%20position%20statements.pdf](http://www.aavmc.org/data/files/about_aavmc/aavmc%20position%20statements.pdf)

<sup>8</sup> [http://www.aavmc.org/data/files/navmec/navmec\\_roadmapreport\\_web\\_single.pdf](http://www.aavmc.org/data/files/navmec/navmec_roadmapreport_web_single.pdf)

### 3. CERTIFICATE OVERVIEW

#### Certificate Overview

The Certificate in Global Health is a formal academic certificate for DVM students that examines the complexities inherent in improving health on a global scale. The Certificate in Global Health will introduce DVM students to global health issues and challenges. It will allow students to develop an understanding of key concepts, tools and frameworks essential for continued study in global health. The Certificate in Global Health will highlight the importance of understanding and addressing global health through multidisciplinary frameworks and collaborations. Completing the Certificate in Global Health gives you the knowledge to operate as a global citizen.

We define global health as

*‘an area for study, research and practice that places a priority on improving health and achieving health equity for all people worldwide. Global health issues transcend boundaries and require collective solutions that emphasize improving health, reducing disparities, and protecting against global threats.’*

The Certificate in Global Health program will cover the global disease burden, health determinants and disparities, health policy and actors, and the challenges facing global health. It will also provide an introduction to the methodological approaches and techniques used in global health research, including qualitative fieldwork, quantitative surveys, experimental designs, intervention trials, and program evaluation.

Earning the Certificate in Global Health requires completion of 12 credits. These credits are gained through the completion of 3 core selectives, an additional 4 credits from optional selectives/elective, and 5 credits through completion of an international Global Health Research Project.

In summary:

- Completion of 3 core selectives (3 credits)
- Completion of 4 optional selectives/or 2 optional selectives and one optional 2 credit elective (4 credits)
- Completion of international Global Health Research Project (5 credits)

## **4. CERTIFICATE LEARNING OUTCOMES**

### **Certificate Learning Outcomes**

Upon completion of the Global Health Certificate, individuals will be able to:

- Describe the current challenges and trends in global health.
- Understand contemporary and historic global health issues, programs, best practices and actors.
- Analyze the complexities of the social, economic, medical, political and environmental factors that affect global health.
- Analyze strategies to address health disparities across socially, demographically and geographically defined populations.
- Understand how individuals from a variety of disciplines collaborate to improve global health.
- Gain cultural competence and the ability to work effectively within diverse cultural settings.
- Gain an understanding of global health in practice through the process of participation in a data driven experiential learning experience in an international setting.

## 5. SELECTIVES

The Certificate in Global Health requires three core selectives and four optional selectives. Core selectives help you build a foundation of basic knowledge in global health. Core selectives can be completed in any order. Optional selectives allow you to explore in greater depth topics relevant to global health. Only one credit from the ‘orange’ optional selectives can be taken.

### Core and Optional Selectives

Selective	Code	Core	Optional
Global Health Challenges	VMP 991 162		
Global Health Research Methods	VMP 991 163		
Globalization, Int Trade and Vets	VMP 991 250		
Surveillance in Veterinary Medicine	VMP 991 151		
Intro to Research	VMB 991 105		
Special Topics in Toxicology	VMB 991 223		
Developmental Toxicology	VMB 991 301		
Infectious Disease Dynamics	VMP 991 160		
Food Animal Residue Avoidance	VMP 992 114		
Topics in Veterinary Microbiology	VMP 991 144		
Global Emerging Infectious Diseases	VMP 991 156		
Molecular Epidemiology	VMP 991 167		
Immunodiagnostics	VMP 991 143		
Epi/Public Health in Spanish	VMP 991 264		
Principles of Vaccination	VMP 991 268		
World Travel: Health and Safety	VMC 991 225		
Vet Med Terminology in Spanish	VMP 991 139		
Global Health: Uganda	VMP 991 265		
Vet Int Experience	VMP 991 112		
Vet Int Experience	VMP 991 212		
Vet Int Experience	VMP 991 312		
Vet Int Experience	VMP 992 112		
Vet Int Experience	VMP 992 212		
Vet Int Experience	VMP 992 312		

## 5.1 CORE SELECTIVES

- **Global Health Challenges: VMP 991 162** (1 credit)

This course provides an introduction to global health issues and challenges. It will allow students to develop an understanding of key concepts, tools and frameworks essential for continued study in global health. The focus of this course will be on global disease burden, health determinants and disparities, health policy and actors, and the challenges facing global health. The course will highlight the importance of understanding and addressing global health through multidisciplinary frameworks.

Course currently offered Fall semester Week 1

- **Global Health Research Methods: VMP 991 163** (1 credit)

This course provides an introduction to the methodological approaches and techniques used in global health research, including qualitative fieldwork, quantitative surveys, experimental designs, intervention trials, and program evaluation. The strengths and weaknesses of each methodology will be explored with students identifying how best to determine the most appropriate method for specific research questions. The course will take a problem-based approach, emphasizing the interdisciplinary nature of global health research.

Course currently offered Spring semester Week 1

- **Globalization, International Trade and Vets: VMP 991 250** (1 credit)

Students will be presented with globalization and international trade cases. Discussions and activities will focus on the role of the veterinarian in meeting health and welfare challenges, food security, animal movement/certification, regionalization/compartimentalization and transboundary diseases, and other import/export issues associated with animal agriculture and transformation industries. Students will prepare a presentation for class on a globalization/international trade topic and lead a discussion considering social, professional, and cultural ramifications of public health and public policy decisions.

Course currently offered Fall semester Week 2



## 5.2 OPTIONAL SELECTIVES

- **Surveillance in Veterinary Medicine: VMP 991 151** (1 credit)

Students will be presented with surveillance cases covering operational and strategic decisions, and animal, laboratory, national and international surveillance programs. Information on risk-based surveillance and its applications to small, large, and wildlife populations, as well as, antibiotic resistance will be discussed. Students will prepare a presentation for class discussion on a surveillance program for a disease or micro-organism of their choice. The selective will include a field trip and presentations from invited local and regional surveillance experts.

Course currently offered Fall semester Week 1

- **Intro to Research: VMB 991 105** (1 credit)

This one-week selective is aimed at introducing students in the DVM program to research (basic science and clinical) ongoing at the College of Veterinary Medicine. Following an overview/introductory session, students will be divided into small groups (ideally 1-2 students per lab) and assigned to one of several research active laboratories across the CVM. During this week, students will engage in a lab-intensive research project aimed at providing hands-on experience. Students will engage either in research on basic mechanisms of disease, research that directly benefits large and small companion animals and research that impacts food animal medicine. At the end of the week, the selective group will meet to present the work they each completed during this experience. A summary of research projects available will be provided closer to the time of the selective and students offered the chance to indicate any preferences. This selective is required for the Clinician Scientist Focus Area and will fulfill the research requirement for clinical competency skills.

Course currently offered Fall semester Week 1

- **Special Topics in Toxicology: VMB 991 223** (1 credit)

This course complements the core course in veterinary toxicology and poisonous plants. This course will differ in that the course content will focus on topics that relate to food animal, equine, avian, and wildlife toxicology. This course will present common toxic agents and their mechanisms of action, clinical signs and lesions, diagnosis, and treatment, especially as they relate to domestic and wild animals. The course will also include additional training in poisonous plant identification (laboratory).

Course currently offered Fall semester Week 2

- **Developmental Toxicology: VMB 991 301** (1 credit)

Exposure of pregnant animals to chemicals and other environmental agents can induce abnormal embryonic development, leading to birth defects. In this course, we will use chemical teratogens in the laboratory to induce abnormal organ formation in live aquatic animal models. Molecular

biological assays will then be performed to examine the effects of these chemical treatments on gene expression patterns and the development of organ anatomy in the embryo. This selective will fulfill the research requirement for clinical competency skills.

Course currently offered Fall semester in both Week 1 and Week 2.

- **Infectious Disease Dynamics: VMP 991 160** (1 credit)

The objective is to learn principles underlying the spread and control of infectious diseases in populations. The course combines case-studies with computational simulations labs that illustrate the principles. We will combine lectures, group learning, and hands-on computer labs. Students interested in infectious diseases, population health, food animals and wildlife are encouraged to take the course.

Course currently offered Fall semester Week 1

- **Food Animal Residue Avoidance: VMP 992 114** (1 credit)

This course utilizes the Food Animal Residue Avoidance Databank (FARAD) as a tool for exposing students to the principles of food animal pharmacology relative to controlling drug residues. The course would involve limited formal lectures, review of historic FARAD case studies, answering the FARAD national hot-line and some specifically formulated independent problem solving sessions. Students will also experience hands on drug residue analysis and participate in a drug residue trial in organic dairy cattle.

Course currently offered Fall semester Week 1

- **Topics in Veterinary Microbiology: VMP 991 144** (1 credit)

This selective is intended to expose students to topics in veterinary microbiology. We will review bacteriology case reports, discuss the importance of biosecurity and infectious disease control, review zoonotic organisms and organisms important to public health, and spend time in the laboratory learning techniques for pathogen identification and antimicrobial susceptibility determination.

Course currently offered Fall semester Week 1

- **Global Emerging Infectious Diseases: VMP 991 156** (1 credit)

An increasing number of animal diseases emerge as threats to human health and societal stability. This course summarizes recent clinical incursion of disease in the United States and elsewhere, analyzes reasons that diseases spillover from animals to humans, examines dynamics at the human animal interface which allow emergence, critiques human and animal policies and response structures and practices risk communication for emerging global threats. Lecture, small group exercise, individual web based modules and field experience are employed for learning. Instructor Permission required.

Course currently offered Spring semester Week 1

- **Molecular Epidemiology: VMP 991 167** (1 credit)

DVM students will learn about the principles of molecular epidemiology and help them to study diseases in animals and humans. Students will learn about pathogen source tracking, disease investigations, disease surveillance and insights in disease transmission dynamics from an individual to the global level. The selective is pertinent to students interested in veterinary public health and pursuing a career working for the CDC, FDA or USDA. This course counts toward the clinical competency research requirement.

Course currently offered Spring semester Week 1

- **Immunodiagnosics: VMP 991 143** (1 credit)

Immunodiagnosics is designed to give veterinary students hands-on experience in performing routine assays used in clinical medicine. This course will examine the principles of diagnostic immunoassays including antigen/antibody reactions, diffusion assays, ELISAs, PCR, and flow cytometry, and enable future clinicians to better interpret and understand results of diagnostic assays used in daily practice. This course will fulfill the research requirement for clinical competency skills.

Course currently offered Spring semester Week 1

- **Epi/Public Health Experiential Learning in Spanish: VMP 991 264** (1 credit)

Students will be exposed to concrete experiences at veterinary practices serving the Hispanic/Latino community and small farms owned/managed by Hispanic/Latino or farms where there is a Hispanic/Latino workforce. Students will prepare reflective observations including cultural and language barriers encountered, discuss their experience with classmates, and engage in veterinary epidemiology and public health consultation under faculty supervision.

Course currently offered Spring semester Week 2

- **Principles of Vaccination: VMP 991 268** (1 credit)

This course is designed to give the students an overview of the different classes of vaccines and the role of their components in inducing a protective immune response. In addition, we will look at the production process of a vaccine and evaluate the requirements of future vaccines to overcome the reluctance of the population towards vaccination.

Course currently offered Spring semester Week 2

- **World Travel: Health and Safety VMC 991 225** (1 credit)

Discussion of resources and approaches to planning and conducting safe travel in under-developed countries. Particular emphasis on field projects but with consideration of general travel. Examination of infectious disease risks, preventative measures, packing, customs, passport, visa, evacuation and other insurance, specimen and research permits, and embassy interactions. Monday, Tuesday and Wednesday of the course will be conducted at the NC Zoo. Thursday and Friday will be conducted in Raleigh.

Course currently offered Fall semester Week 2

- **Vet Med Terminology in Spanish VMP 991 139** (1 credit)

This selective will mimic an immersion program and will feature a combination of short talks with role-playing and practice drills. Students will prepare a presentation in Spanish for the rest of the group in common veterinary topics. As a group, the students will write a series of fact-sheets covering different aspects of the veterinary practice. Students are encouraged to review Spanish grammar before taking the selective and listen to Spanish radio or TV, and check all the iTunes U free available materials in Spanish. This course is open to students who have taken a combination of two years (minimum) of Spanish classes in high school and in college. Students who have learned Spanish while working abroad or who have spoken Spanish at home growing up, are exempt from the high school or college-level course requirement. Students who have studied other Romance languages (such as Portuguese, Italian, or French), or have lived in countries where other Romance languages are spoken, are recommended to check with the instructor prior to registration if they want to participate in the selective.

Course currently offered Spring semester Week 1

- **Global Health: Uganda: VMP 991 265** (1 credit)

This international faculty-led selective to Uganda will introduce DVM students to global health issues and challenges. It will allow students to develop an understanding of key concepts, tools and frameworks essential for continued study in global health. This selective will highlight the importance of understanding and addressing global health through multidisciplinary frameworks and collaborations. The selective will involve classroom-based teaching (twinned with Ugandan veterinary students), labs, field visits and group assignments. There will also be engagement with various Ugandan veterinary and health institutions.

<https://cvm.ncsu.edu/education/dvm/program/international-programs/uganda-global-health/>

Course currently offered Spring semester Week 2

- **Vet Int Experience: VMP 991 112** (1 credit)

This selective is recommended for veterinary students who are interested in a veterinary experience in an international setting. This extramural experience must be approved and be under the guidance of a supervising veterinarian or CVM faculty member. Requirements: Non-Clinical Extramural Registration form -- due one month prior. Student will be required to submit a placement evaluation report package as detailed by the Course Coordinator within one month

after experience.

[go.ncsu.edu/CVMInternationalPrograms](http://go.ncsu.edu/CVMInternationalPrograms)

Course currently offered Fall semester Week 1

- **Vet Int Experience: VMP 991 212** (1 credit)

This selective is recommended for veterinary students who are interested in a veterinary experience in an international setting. This extramural experience must be approved and be under the guidance of a supervising veterinarian or CVM faculty member. Requirements: Non-Clinical Extramural Registration form -- due one month prior. Student will be required to submit a placement evaluation report package as detailed by the Course Coordinator within one month after experience.

[go.ncsu.edu/CVMInternationalPrograms](http://go.ncsu.edu/CVMInternationalPrograms)

Course currently offered Fall semester Week 2

- **Vet Int Experience: VMP 991 312** (2 credit)

This selective is recommended for veterinary students who are interested in a veterinary experience in an international setting. This extramural experience must be approved and be under the guidance of a supervising veterinarian or CVM faculty member. Requirements: Non-Clinical Extramural Registration form -- due one month prior. Student will be required to submit a placement evaluation report package as detailed by the Course Coordinator within one month after experience.

[go.ncsu.edu/CVMInternationalPrograms](http://go.ncsu.edu/CVMInternationalPrograms)

Course currently offered Fall semester across both Week 1 and Week 2.

- **Vet Int Experience: VMP 992 112** (1 credit)

This selective is recommended for veterinary students who are interested in a veterinary experience in an international setting. This extramural experience must be approved and be under the guidance of a supervising veterinarian or CVM faculty member. Requirements: Non-Clinical Extramural Registration form -- due one month prior. Student will be required to submit a placement evaluation report package as detailed by the Course Coordinator within one month after experience.

[go.ncsu.edu/CVMInternationalPrograms](http://go.ncsu.edu/CVMInternationalPrograms)

Course currently offered Spring semester Week 1

- **Vet Int Experience: VMP 992 212** (1 credit)

This selective is recommended for veterinary students who are interested in a veterinary experience in an international setting. This extramural experience must be approved and be under the guidance of a supervising veterinarian or CVM faculty member. Requirements: Non-Clinical

Extramural Registration form -- due one month prior. Student will be required to submit a placement evaluation report package as detailed by the Course Coordinator within one month after experience.

[go.ncsu.edu/CVMInternationalPrograms](http://go.ncsu.edu/CVMInternationalPrograms)

Course currently offered Spring semester Week 2

- **Vet Int Experience: VMP 992 312** (2 credit)

This selective is recommended for veterinary students who are interested in a veterinary experience in an international setting. This extramural experience must be approved and be under the guidance of a supervising veterinarian or CVM faculty member. Requirements: Non-Clinical Extramural Registration form -- due one month prior. Student will be required to submit a placement evaluation report package as detailed by the Course Coordinator within one month after experience.

[go.ncsu.edu/CVMInternationalPrograms](http://go.ncsu.edu/CVMInternationalPrograms)

Course currently offered Spring semester across both Week 1 and Week 2.

## 6. OPTIONAL ELECTIVE

- **VMP 986 One Health - Philosophy to Practice** (2 credit)

This course will introduce a diverse student body to One Health and its implementation across disciplines; facilitate understanding of the interactions linking veterinary medicine, human medicine, and environmental health; and promote cross-campus and cross-discipline interactions. 2-credit interactive seminar with team project. Participants include students and faculty from NC State, UNC Chapel Hill and Duke University, plus non-governmental organizations, private-sector members and government professionals. The course is open to professional DVM and NCSU graduate students interested in the science/practice/policies related to animal health, human health and/or environmental health.

<https://cvm.ncsu.edu/c/l/dvm/electives.html>

Course currently offered Spring semester Tues 5:30 - 7:30 NC Biotech Center, RTP

## **7. ZOO MED FOCUS AREA**

Due to the requirements of the Zoo Med Focus area, DVM students wishing to complete both the Zoo Med Focus area and the Certificate in Global Health will need to take the optional elective route instead of pursuing 4 optional selectives.

- **VMP 986 One Health - Philosophy to Practice (2 credit)**

This course will introduce a diverse student body to One Health and its implementation across disciplines; facilitate understanding of the interactions linking veterinary medicine, human medicine, and environmental health; and promote cross-campus and cross-discipline interactions. 2-credit interactive seminar with team project. Participants include students and faculty from NC State, UNC Chapel Hill and Duke University, plus non-governmental organizations, private-sector members and government professionals. The course is open to professional DVM and NCSU graduate students interested in the science/practice/policies related to animal health, human health and/or environmental health.

<https://cvm.ncsu.edu/c/l/dvm/electives.html>

Course currently offered Spring semester Tues 5:30 - 7:30 NC Biotech Center, RTP



## **8. INTERNATIONAL GLOBAL HEALTH RESEARCH PROJECT (VMP 900- 5 credits)**

This international Global Health Research Project will allow students to develop an understanding of methodological approaches and techniques used in global health research, including qualitative fieldwork, quantitative surveys, experimental designs, intervention trials, and program evaluation. This elective will highlight the importance of understanding and addressing global health through multidisciplinary frameworks and collaborations. This elective is a required component of the Certificate in Global Health. Course Coordinator permission is required.

### **What is the purpose of the program?**

The purpose of the summer research program is to provide DVM students with a positive experience in global health research as a means to encourage DVM students to consider a future career in global health. This program is aimed at building awareness of a global health issue through a global health focused research program. The program places DVM students with a research mentor(s) and provides the student with a research project for a 10-week period over the summer. The research mentor is responsible for funding the research project consumable costs.

### **Program Objectives**

- To gain an understanding of global health in practice through the process of experiential learning in an international setting.
- To actively participate in a data driven, evidence-based approach to a global health challenge.

### **Which students are eligible to participate in the program?**

- DVM students who have completed their first or second year of veterinary school are eligible to apply.
- DVM students must have enrolled in the Certificate in Global Health program.

### **What are the selection criteria for the summer research projects?**

#### ***Suitability of project***

- Project Objective: The project should focus on a global health problem of significance. Impact in low-middle income countries is preferred but not required.
- Hypothesis Driven Research: The project should be hypothesis driven research including a certain degree of independence and responsibility for the DVM student. DVM students are expected to demonstrate initiative and responsibility in various components of research project – study design, data collection, data analysis and report writing and presentation.
- The proposed project should enable the student to formulate a testable hypothesis, identify specific objectives, conduct research, interpret data, and present their findings in a written and oral abstract format at the conclusion of their summer program.
- The GHE committee recognizes that 10 weeks is a short time to complete a research project. The project should be of sufficient scope to provide a good research experience while remaining focused enough that it can be completed within a 10-week period. The research experience can be a standalone project or a component of a larger more comprehensive research project.
- It is important that the research project provide some technical experience associated with data

gathering and/or analysis. Retrospective studies restricted to extracting data from medical records and data entry will be assigned a low priority.

### ***Research Emphasis***

It is expected that the Global Health Research Project Elective will have a strong research emphasis. The ability to design, conduct and analyze are fundamental skills that DVM students will benefit from acquiring and aid success in a global health orientated career. The research emphasis will also support the fundamental value of evidence-based decision making in global health. The type of research project involved in the Global Health Research Project Elective will not be restricted but will require a hypothesis and methodology prescribed by the appropriate discipline. Ideally the DVM students should pursue a small independent project within a larger well supported global health oriented program, however, this is not always feasible and is not a required criteria. A well-mentored standalone independent project will also be considered if it falls within the scope of global health. If an independent project is not pursued and a student instead participates in an ongoing research project, the student will be expected to be able to comprehend and explain the hypotheses being studied, the experimental design and methodology being used, and expected to contribute some analysis and original thought to final outcomes.

### ***Resources for completion of project***

- Sufficient financial resources are available to support the research project.
- IACUC and/or IRB approval has been obtained in support of the project if applicable.
- Technical support is available to the student as is necessary for completion of the project.

### **Selection of a suitable research mentor?**

The success of the international Global Health Research Project depends on the individual mentors working with the students. Students should develop a relationship with a primary research mentor, the individual who is directly responsible for the proposed research project. The primary research mentor may or may not be a CVM faculty member. External mentors will vary from year to year depending on projects selected. The mentor is expected to be supportive, available and willing to commit to working with the student until the end of the Global Health Research Project Elective. If the primary research mentor is not a CVM faculty member, then students must identify a CVM faculty mentor in addition. The primary research mentor and the CVM faculty mentor should be in communication with each other. Primary research mentors are expected to provide an evaluation of the student. The following list of expectations has been developed to guide mentors supervising DVM students.

#### **The mentor shall:**

- Oversee all aspects of the project
- Ensure that the student attends all required activities
- Provide the necessary background and other information necessary for the student to complete the project
- Meet regularly with the student and be appropriately accessible to the student outside the regular meeting schedule
- Contribute to the students intellectual growth and development

- Help the student with experimental design and methodology
- Help the student develop experimental progress and direction
- Help the student troubleshoot experimental problems
- Help develop the students capacity for reasoning and data interpretation
- Help the student think critically and objectively about their own results and ideas
- Provide financial resources for the project
- Provide or arrange the necessary facilities and equipment for the project
- Contribute to the students professional development
  - Provide counsel for professional decisions
  - Help the student envision a career plan
  - Provide input and guidance for abstract, presentation, and poster preparation
- Serve as a role model
  - Convey high ethical standards and concerns for research subjects
  - Illustrate active teamwork and collaboration
  - Illustrate good work habits
  - Illustrate good mentoring skills

### **Activities, Outputs and Expectations**

The DVM student is expected to devote a 10-week period to their project over the relevant summer, consistent with the Global Health Research Project Elective program (and register for 5 credits using VMP 900). This will consist of an 8-week international research placement and 2-week post trip program. The DVM student must work with a College of Veterinary Medicine (CVM) faculty member and/or approved outside mentor(s) to design and conduct a research project. All students enrolled on the Global Health Research Project must have a designated CVM faculty mentor for their specific project.

A pre-proposal outlining the focus and general scope of the project must be submitted with the DVM student's application to the program. The CVM Global Health Education (GHE) committee will review these documents. After approval, a more detailed full proposal will be submitted in the spring semester to coincide with funding opportunity deadlines.

DVM students are expected to formally present their work to the CVM community after completion of the Global Health Research Project Elective. This may be accomplished through participation in the CVM research Day, or in the form of a presentation arranged ad hoc by the CGH coordinator. DVM students will also present the entire scope of their project as a Report Paper submitted to the CGH coordinator at the end of the 10-week Elective. DVM students and their mentors are encouraged to submit the results of their project to a peer-reviewed publication, but this is not to be expected or required.