Department of Veterinary Preventive Medicine

Master of Public Health
Veterinary Public Health Specialization

2020 - 2021
GUIDELINES FOR
CULMINATING
PROJECTS

August 2020

TABLE OF CONTENTS

GENERAL PROJECT GUIDELINES

The culminating project for the Masters of Public Health – Veterinary Public Health Specialization (MPH-VPH Program) is intended to provide students with the opportunity to integrate and synthesize knowledge and experience obtained during their academic course of study. For ideas of appropriate topics, students should review previous culminating projects in the MPH-VPH program, contact the Veterinary Public Health (VPH) director, or speak with their advisor. Although every culminating project will be different, there are some general guidelines that are relevant to every project.

1. Each student must choose a **Culminating Project (CP)** in conjunction with the **Faculty Advisor.**

   The Faculty Advisor must be a faculty member in the Veterinary Preventive Medicine Department, or must be a faculty member at the OSU College of Veterinary Medicine approved by the VPH committee.

2. **All CPs must have a significant veterinary component of direct importance to public health.** They must be directly related to any of the fields or areas covered by Veterinary Public Health such as: zoonotic diseases, food safety and foodborne diseases, epidemiology, environmental health, biosecurity, bioterrorism preparedness, or comparative and applied biomedical research among others.

3. If the student decides upon a CP that is outside the Faculty Advisor's area of expertise, the student may identify a **Culminating Project Advisor (CPA)** with the input of the Faculty Advisor. The student must obtain the CPA's direct consent to serve on his/her project. The CPA will work with the student and the Faculty Advisor to design and/or develop the CP.

4. A minimum of three committee members are required to comprise the **Culminating Project Committee**. They are the Faculty Advisor, a College of Public Health Full Time Faculty member, and a third reader. Therefore, the student and his/her Faculty Advisor must choose a faculty member from the College of Public Health as a "**second reader**" and another faculty member of the Department of Veterinary Preventive Medicine as a "**third reader.**" These three professionals will make up the student's MPH-VPH committee.

   However, if the student has a **Culminating Project Advisor** or any other faculty or professional (with "M" status from the Graduate School) directly involved in his/her Culminating Project they could chose such a person as the third reader. The student may add additional readers to the Committee, although this should be done on a case-by-case basis. All members of the committee should be chosen as early as possible in the academic program, but no later than the beginning of the student's final semester. Many forms can be found at: https://cph.osu.edu/students/graduate/handbooks/graduate-student-handbook/appendix-j-cph-forms.

5. The Faculty Advisor must approve the topic and format of the student's project as well as the timeline referred to in the next section. For MPH–VPH students pursuing a non-thesis path,

the available formats are: (1) Integrative Writing Project, (2) Grant Proposal, or (3) Applied Research Project. The criteria for each of these options appear on pages 10-18. Once the project is selected the student needs to update the **Student Control Sheet**. The **MPH-VPH director** will then assure the appropriateness of the project from the Veterinary Public Health point of view, and that such project will fulfill the requirements of the College of Public Health.

Students also have the option to complete a traditional research-based master's thesis as their Culminating Project. Although this option is less frequently chosen, those students who expect to pursue a doctorate or a research career are encouraged to consider a thesis, and there are of course some students who are simply interested in a topic that is best approached in the thesis format. Students interested in the thesis path should discuss this with their advisers no later than the beginning of their second semester of enrollment; to be sure they understand the requirements and time line. It is expected that thesis work generates a peer-reviewed publication. Specific guidelines about this option can be seen on pages 19-21.

6. The culminating project is eligible for three to six hours of course credit, graded Satisfactory/Unsatisfactory. The level of credit is established by the scope and requirements of the project. Because the typical MPH–VPH course carries 3 credit hours, a rough guide would be that the hours should approximate the work required for either one or two regular courses. According to OSU guidelines, one hour of credit should require approximately three hours per week for fourteen weeks in order to earn an average grade. Translated for this purpose, **a 3 credit hours project should take a minimum of 120 hours of work**, and a 6 hour project a minimum of 240 hours. The student and his/her Faculty Advisor will need to discuss and agree on the appropriate hour assignment for the project. The hours of credit may be taken over more than one semester. Students can be approved for up to three hours of credit in order to begin work on the project. Increasing to a total of six hours requires that the student has an approved proposal and their adviser has agreed that it justifies the higher credit level.

7. The actual timing of registration for credit for the culminating project should be discussed with the Faculty Advisor, the MPH-VPH director, and the Office of Academic Programs & Student Services staff _**before the student registers**_.

8. After completion of the culminating project, the student is required to present it to the student's Culminating Project Committee members at the final presentation meeting **or Culminating Project Oral Defense.** With the permission of the committee, others may be invited to this meeting (open session), otherwise only the Committee members should be present (closed session).

9. A Satisfactory/Unsatisfactory result on the culminating project and the oral defense will be reported to the Graduate School using the electronic **Masters Examination Report** provided to the Faculty Advisor, who will determine the student's eligibility to graduate by the Graduate School deadline (typically 3-4 weeks before the end of the semester).

PROJECT TIMELINE REQUIREMENTS

The student and the Faculty Advisor must agree upon a timeline for completion of the project, subject to the constraints of Graduate School deadlines, and provide a copy to the MPH-VPH director. There is a **Culminating project timeline** which can help guide the student and the advisor through this process. In addition, the advisor may require that the student meet other deadlines, such as submitting outlines or drafts of the culminating project paper. Remember, ***the student is responsible for meeting all of the deadlines***. The deadlines for each semester are available at the Graduate School: https://gradsch.osu.edu/graduation-calendar.

The following requirements are especially important:

1. The student must schedule a meeting for his/her final **Culminating Project oral defense** with their committee during the semester they expect to graduate. The meeting should be scheduled in a timely manner, so that the student has sufficient time to make the usual necessary changes after the meeting, and the committee members have time to approve the revisions and approve the Master's Examination Report by the due date. See Appendix B to obtain an idea of the time involved just in the review process.

   Note: the student should lead the arrangement of the date, time, and room for the CP defense and inform the VPH coordinator to advertise the defense at least 5 business days in advance. Only by request of the advisor will the defense be "close doors".

2. The student must provide the committee members with a correctly formatted (refer to page 7) printed **final approved draft** of the manuscript **at least two weeks prior to the date of his/her oral defense.** The final approved draft is defined as the draft that has been reviewed by the adviser and he/she has approved it to be sent to the committee members.

3. Upon completion of the final oral defense meeting and **after all the final revisions from the committee members to the student's culminating project manuscript have been included in the final version (certified by the academic advisor)** the student must provide a bound final revised version of the culminating project approved by the advisor. The student must also e-mail an electronic copy (either Word or pdf) of the CP final version to the VPH director and the Office of Academic Programs & Student Services by the Graduate School deadlines for approved thesis/dissertation documents. Once this has been completed the committee will approve the student's **Master's Examination Report**. The committee is required to adhere to the Graduate School deadline of submitting the Report. Dates and Deadlines can be found at: https://gradsch.osu.edu/graduation-calendar **Failure to do so will result in a delay of your graduation.**

   Note: the committee could also approve the Master's Examination report the day of the exam and delegate to the academic advisor to certify that their changes and suggestions have been included in the final CP version. In either case, the advisor will not give their final approval until the student has complied with all the requirements indicated above to be released from the program.

4. If the student does not meet published graduation deadlines, but has completed all degree requirements by the last business day prior to the first day of classes for the following semester, the student may graduate the following semester without registering or paying fees (end of semester graduation). Please remember, however, that some faculty members may not be available between semesters to schedule a final oral defense meeting or approve revisions to the student's culminating project paper. If the student expects to meet these "end of semester" deadlines**, it is his/her responsibility** to determine whether their committee will be available. Failure to meet any of these deadlines may require the student to enroll and pay tuition for an additional semester.

MANUSCRIPT REQUIREMENTS

1. The manuscript should be a significant effort, but specific expectations concerning the length of the manuscript may differ because of topic, analytic approach, etc. However, most manuscripts should be at least 35 pages, not including references, tables, figures or appendices. The length and content will obviously depend on the scope of the project and hours of credit.

2. The final version of the manuscript must be typed on one side of the page only, double spaced, justified with a margin of at least one inch on each side, and on white acid-free paper (8.5 x 11 inches) and bound.

3. The manuscript must be in Times New Roman 12-point font; however, tables and footnotes may be in 10-point font if necessary. Indent the first line of each paragraph. The style must be consistent throughout your document. All paragraphs must have the first line indent.

4. Page numbers should be inserted (center bottom) on each page *except the title page*. Major headings (i.e. Abstract, Table of Contents, Introduction, Materials & Methods, Results, Conclusion and references References) aligned in the center and bolded in 16-point font. Minor or subheadings should be aligned left, bold, and underlined in 14-point font.

5. All figures and tables must be numbered, and all appendices must be labeled.

6. The cover or title page should include the Master of Public Health, Veterinary Public Health Specialization, the title of the project, the student's name including their degrees, the committee members' names, the text "Submitted in Partial Completion of Requirements for the Master of Public Health Degree at The Ohio State University," the month and year of the final project. An example is attached to the end of this document (Appendix C).

7. The sections of the manuscript will depend upon the nature of the project, as explained on the following pages. However, **every culminating project manuscript must have a 1) title page, 2) an abstract or executive summary, 3) a table of content (and a table of figures and tables if present), and 4) references**. The remainder of the work will vary according to the project requirements.

8. An optional Acknowledgement Page may be placed before the references. This page includes a brief, sincere, professional acknowledgment of the assistance received from individuals, advisor, faculty, and institutions.

9. References should follow the standard citation format used by the Journal of the American Veterinary Medicine Association (JAVMA). They should be formatted without a hanging indent and the style must be consistent throughout the reference section. Do not double space the references.

Journals:

1. Hoet AE, Saif LJ. Bovine torovirus (Breda virus) revisited. *Animal Health Research Reviews* 2004; 5(2):157-171.

2. Hoet AE, Nielsen PR, Hasoksuz M, et.al. Detection of bovine torovirus and other enteric pathogens in feces from diarrhea cases in cattle. *Journal of veterinary diagnostic investigation*. 2003; 5(3):205-212.

Books

1. Ettinger SJ, Feldman EC. The Gastrointestinal System (Section X) In: Ettinger SJ, Feldman EC, eds. Textbook of Veterinary Internal Medicine. Philadelphia, PA: W.B. Saunders Company, 1995; 1206-1207.

A Note on Using the Internet

Most students make use of sources discovered by Web search strategies. It is particularly important that students recognize three points regarding such sources. First, the "unfiltered" character of much of this information means that it needs to be evaluated extremely carefully. Second, most topics will require some resources not readily available on the Internet. Third, simply listing an Internet address is not an adequate citation. Any information must be identified so that it is unambiguously clear who produced it, what it is, and when the student accessed it. It should be obvious that the technical possibility of "cutting and pasting" from the Internet does not lessen the expectation of complete citation of sources and avoidance of plagiarism.

Guidelines concerning appropriate citation are available both in print and at several Internet sites. The Columbia University Press web site includes excerpts and general examples from a particularly useful source:

Columbia University Press. "Columbia Guide to Online Style." Excerpted and adapted from Janice R. Walker and Todd Taylor, *The Columbia Guide to Online Style* (Columbia University Press, 1998). http://www.columbia.edu/cu/cup/cgos/ (27 September 2004).

10. A bound, printed copy and an electronic copy of the completed final version of the CP manuscript, approved by the academic advisor, must be provided to the MPH-VPH Director. An electronic copy must also be provided to the Office of Academic Programs & Student Services by the corresponding deadlines.

GRADUATION REQUIREMENTS SUMMARY

IN ORDER TO GRADUATE, YOU MUST:

Step 1. Register for a minimum of 3 graduate credit hours of VETPREV 7998 in the semester in which you intend to defend and graduate.

Step 2. Complete an *Application to Graduate* form (available online: https://gradforms.osu.edu/) This must be completed no later than **the 10th Friday of the semester previous to graduation**, and **is valid for the semester indicated in the form only**. Submitting this application indicates that you expect to complete all degree requirements that semester. If you do not, you will need to complete a new *Application to Graduate*.

Step 3. Meet the requirements noted in the *Graduate School Handbook* :
   Responsibility II.5.13.2. . . the student:
   1. *must have earned a cumulative point-hour ratio of at least 3.0 for all graduate credit hours taken at this university (ref.II.4.1)*
   2. *must have fulfilled all additional requirements published by the Graduate Studies Committee [essentially, the core and elective courses required for the degree]*
   3. *must have final grades for all courses received in the University Registrar's Office by the deadline published*
   4. *must have fulfilled all other requirements by the deadlines established by the Graduate School*
   End of Semester II.5.13.3
   A student who does not meet published graduation deadlines but who does complete all degree requirements by the last business day prior to the first day of classes for the following semester may graduate the following semester without registering or paying fees.

   The Graduate School graduation deadlines for each semester are available from the Graduate School https://gradsch.osu.edu/graduation-calendar.

Step 4. A *Master's Examination Report* will automatically be provided to your Faculty Advisor after your *Application to Graduate* has been submitted to the Graduate School. The *Master's Examination* for the MPH-VPH is the defense of your culminating project. In response to any direction from your culminating project committee, you must revise your document until the committee finds it satisfactory; while making sure that the Graduate School deadlines are met. Upon successful completion of your culminating project, your committee will electronically approve the Master's Exam Report. Follow the instructions provided above in the section "project Timeline requirements", point 3 and 4 (page 5), in regards to the Master's Examination Report.

Plan ahead, give yourself plenty of time, and make sure you are aware of all the deadlines. These are not negotiable!

INTEGRATIVE WRITING OR SERVICE PROJECT

The integrative writing or service project for the MPH specialization in Veterinary Public Health is an opportunity to provide a solution to a VPH issue or for intensive study of a topic, which is usually in the form of design and implementation of interventions, program planning and implementation, evaluation of programs, delivery of services, policy analysis or development, risk communication campaigns, or comprehensive case analysis, among others.

Project types:
There are several forms of the integrative writing project. The adviser will discuss individual expectations with the student, but these general descriptions about some integrative writing project possibilities may be helpful (this is not an exhaustive list of all possibilities):

- *Comprehensive Case Study*
  The student may write an original case study of a scope to permit integrative use of skills gained in the curriculum. The adviser will establish the format and expectations, particularly the concern for scope and opportunity for integration. A typical comprehensive case study would require analyzing a real situation, identifying relevant VPH issues, and applying appropriate methods to arrive at recommendations. A typical case study might be a critical, comprehensive review of a specific veterinary public health issue: i.e. "Q Fever in the Community: A Tabletop Outbreak Exercise".

- *Program Planning and Implementation*
  This option provides students with an opportunity to take a principal role in designing or developing a veterinary public health project for a community organization or agency. This option focuses on the planning, implementation, analysis/evaluation, and/or impact of a veterinary public health project or program. A typical program planning project might be designing animal and/or human health programs related to veterinary public health topics: i.e. "Emergency Response Plans for the Ohio Animal Disease Diagnostic Laboratory".

- *Policy Analysis*
  This sort of project concentrates on critical review of an actual or proposed policy intervention (which may include a proposal of the student's own design). The methods of inquiry may include traditional data analysis, but should also demonstrate an ability to undertake qualitative analysis. This will involve critical reading, and may include key informant interviews and other sources. A typical policy analysis might be a review of proposed legislation or administrative rule: i.e. "Survery of Ohio County Dog Wardens with a Focus on the Implementation of Ohio House Bill 14."

- *Program Evaluation/Assessment*
  This option provides students with an opportunity to take a principal role in planning and pursuing a program assessment or evaluation. This option involves an assessment for a community, agency, organization or one of their programs or activities. A typical assessment might be reviewing the knowledge and/or handling of veterinary public health topics in a specific professional or population group. A common program evaluation will involve the analysis and assessment of an activity performed by a local, state or federal

organization or company. The evaluated program has to have an important VPH component: i.e. "Competencies and Future Direction of Veterinary Public Health and Preventive Medicine: Assessment of the ACVPM".

When preparing a service-based culminating project, the student should follow the format below. Due to the variety of project types, the student may alter this format to pertain to their project with the approval of their Faculty Advisor.

Sections to be included in an integrative writing a service culminating project:

1. Cover Page (Appendix C)

2. Abstract/Executive Summary
An abstract is a brief summary of approximately 250-500 words. The major components are: Main Problem, Objective(s) and Purpose, Project Development/Approach, Product Description, and Discussion. An executive summary is an expanded version of the abstract and is typically one to two pages in length. Your advisor must make the decision on which one is appropriate according to your work.

3. Table of Contents
The table of contents lists all the major topical areas of the document with the corresponding page numbers.

Note: If numerous tables and figures are to be included then a **List of Tables** and/or a **List of Figures** should also be included.

4. Introduction
The introduction has three major elements or subsections: preamble, comprehensive literature review, and goals, objectives, and purpose.

Preamble: This subsection should state the basic rationale for the project (the main VPH problem to be addressed with this CP), what the student proposes to do (objectives), and why it is important (what impact is expected).

Comprehensive Literature Review: Place the project in the context of what is already known about the topic by reviewing relevant research and official sources of information. A literature review is a synthesis of what researchers/scholars have written about a topic organized according to a **guiding concept**. The purpose is not to list as many articles as possible, but rather to demonstrate the student's ability to recognize relevant information, to synthesize the information and evaluate it according to the main point that the student has identified for his/her project. The literature review should set the proposed project in context, provide background on the problem to which the student is responding and the approach he/she is taking, and discuss any gaps in the literature that the student has identified. Remember to define specific terms that will be used in the text of the report and remember to "tell a story".

Goals, Objectives, and Purpose: The project goals and objectives define the scope and the direction of the project. Goals are broad timeless statements that include all aspects of a program. Objectives outline in measurable terms the specific outcomes or products of the student's work. For example, objectives of an intervention program might be specific changes that will occur in the target population in a designated time frame as a result of the student's project. Finally, the student needs to describe what would be the expected impact or main purpose accomplished if the project is successful.

5. Project Development

Agency/Organization Description. This section presents the agency/organization on whose behalf the project is proposed or been developed. It should include a graphic presentation of the organizational structure and a discussion of how the project fits in with their mission and other programs of the agency/organization. If relevant, this section may include historical information or discussion of interorganizational relationships.

Theoretical/Conceptual Framework. This section will vary depending on the type of integrative writing project the student chooses to do. In general, the student needs to describe the behavioral or risk communication model they are using and why it applies to their project.

Project development. In this section it should be described the approach used to address the project questions or reach the proposed goals and objectives. Examples of what this section may include are a discussion of the project's target population (if applies), information on search strategies and databases used, potential data collection methods used (i.e. surveys, interviews), description of the design and development process of each one of the products or "deliverables" (including the review and approval process), description of any data analysis and evaluation process performed, etc. A project schedule should be included as an appendix, describing step-by-step the activities carried out to develop the project; identifying any "deliverables" obtained in every step. In few words, this section should describe how the project was developed in a way that any future student could follow these steps to be able to successfully repeat such CP.

Budget (depending on CP). Provide a narrative description and justification of the resources required for the execution of the project, including both personnel and other resources. Construct a simple budget showing the resources by category with expected expenditures; if the project requires more than one year, show the division of expenditures by period.

6. Product(s) Description and Discussion

In this section the final product(s) obtained should be described in detail and inserted as an appendix. Explain to the reader the different sections/components of the product(s) obtained and the logic or reasoning behind them. The student should also describe how this product will be delivered and used (or implemented) by the agency/organization, and the potential impact/importance this will have in the target population. Depending on the project, the product obtained could be compared with similar work already published or developed, highlighting the new developments or relevance of the current student's work. Limitations of the product should also be presented in this section, as well as recommendations and future projects. Additionally, the Public Health impact of the work done must be discussed in detail in this section. Finally, a closing paragraph or conclusion should be added to close this section.

7. Acknowledgement

Include acknowledgements to anyone who helps with the project along the way (*i.e.* peers/coworkers, professors, mentors, family, organizations, companies, etc.).

8. References

All literature and personal communications cited in the proposal must be listed in the reference section. References should follow a standard format approved by the advisor.

9. Appendices

The first appendix (or appendices) must be the product(s) produced by the student as well as the project schedule. Also anything not included in the text of the report that is important for understanding the project should be attached as an appendix. All appendices must have references within the text of the project report and must be included as part of the table of contents.

GRANT PROPOSAL

Many public health professionals have occasion to seek funding for design and implementation of interventions, evaluation of programs, delivery of services, or research. For that reason, one of the possible culminating experience project options for students in the MPH-VPH Program is the preparation of a grant proposal.

In order to be appropriate for this purpose, a grant proposal should be more than a simple "boilerplate" request for funds to continue operations of an existing program. At a minimum, the proposal should require some basic elements, including design of a program, intervention, evaluation, or service; a justification of the proposed approach based on a careful **literature review and/or other evidence** (analysis of preliminary data); and a budget with appropriate justification.

It is expected that the grant proposal be "real" in the sense that the student has a specific target funding source, whether he/she actually submits the proposal for review by the sponsor or not, and an agency or organization under whose auspices the work described in the grant proposal would be conducted. As part of the proposal for the project the student is required to provide a copy of the Request for Proposals (RFP) to which he/she is responding, or other evidence of the priorities and expectations of the target sponsor. The choice of funding source is up to the advisor and the student, but typical choices would include federal and state agencies (CDC, NIH, ODH, USDA, ODA, etc.), national foundations (Robert Wood Johnson, Pew, Kellogg, Melinda & Bill Gates Foundation, etc.), other non-profit organizations (American Cancer Society, Red Cross, CVM, Farmers' Association, etc.), or various local foundations and organizations (Columbus Foundation, Columbus Medical Association Foundation, Osteopathic Heritage Foundation, etc.). Remember that the Faculty Advisor must approve the topic for the project. In addition, it is strongly advised that the student update their committee members on a regular basis, to avoid any unwelcome surprises.

The student should follow the format and requirements established by the sponsor agency or organization in their Request for Proposals. The final grant produced must be included as an

Appendix. If this format does not include or follow the structure provided below, then the student should add such sections as part of their culminating project.

Sections to be included in a Grant Proposal Culminating Project:

1. **Cover Page (Appendix C)**

2. **Abstract/Executive Summary**
An abstract is a brief summary of approximately 250-500 words. The major components are: Main Problem to be addressed by the Grant, Objective(s) and Purpose, Grant Development, Expected Results, and Discussion. An executive summary is an expanded version of the abstract and is typically one to two pages in length. Your advisor must make the decision on which one is appropriate according to your work.

3. **Table of Contents**
The table of contents lists all the major topical areas of the document with the corresponding page numbers.

Note: If numerous tables and figures are to be included then a **List of Tables** and/or a **List of Figures** should also be included.

4. **Introduction**
The introduction has three major elements or subsections: preamble, comprehensive literature review, and goals, objectives, and purpose.

Preamble: This subsection should state the basic rationale for the project (the main VPH problem to be addressed with this CP), what the student proposes to do (objectives), and why it is important (what impact is expected).

Comprehensive Literature Review. Place the project in the context of what is already known about the topic by reviewing relevant research and official sources of information. A literature review is a synthesis of what researchers/scholars have written about a topic organized according to a guiding concept. The purpose is not to list as many articles as possible, but rather to demonstrate the student's ability to recognize relevant information, to synthesize the information and evaluate it according to the guiding concept that the student has identified for his/her project. The literature review should set the proposed project in context, provide background on the problem to which the student is responding and the approach he/she is taking, and discuss any gaps in the literature that the student has identified. Remember to define specific terms that will be used in the text of the report and remember to "tell a story".

Goals, Objectives, and Purpose: The project goals and objectives define the scope and the direction of the project. Goals are broad timeless statements that include all aspects of a program. Objectives outline in measurable terms the specific outcomes or products of the student's work. Finally, the student needs to describe what would be the expected impact or main purpose accomplished if the project is successful.

5. Grant Development

Agency/Organization Description. In this section the student should described the agency/organization to which he/she is submitting the grant proposal. It should include a graphic presentation of the organizational structure and a discussion of how the project fits in with mission and other programs of that agency/organization. The student should also provide a short description of the RFP he/she are pursuing, highlighting why such RFP is the best match for his/her grant.

Grant development. In this section it should be described all the steps taken to develop the grant proposal from conception through the review process and final presentation. It should also include the search methodology used to identify publications to be included in the literature review and other sections of the grant.

Pilot data or results. Describe here any materials and methodology followed to obtained preliminary data to be used in the grant application. Also describe here all the data bases used as well as any analysis or evaluation performed of such data to obtained preliminary results to support the grant.

In few words, this section should describe how the whole grant proposal was developed in a way that any future student could follow these steps to be able to successfully repeat such CP.

6. Grant Description and Discussion

In this section the final grant should be described and inserted as an appendix. Explain to the reader the different sections/components of the grant and the logic or reasoning behind them (remember that the grant always has limited space, so you can use this section to explain in detail the experimental design or methodology to be followed in case that the grant is successful and obtain the funding). The student should also **describe the expected results** to be obtained if the grant is fully executed, as well as the potential impact/importance this results(s) will have in the target population. Depending on the grant, the student should compare with similar work already published or developed, highlighting the new developments or relevance of the current student's idea (what is the innovation of this project?). Limitations of the product should also be presented in this section, as well as recommendations and next steps. Additionally, the Public Health significance or impact that this grant will have must be discussed in detail here. Finally, a closing paragraph or conclusion should be added to close this section.

7. Acknowledgement

Include acknowledgements to anyone who helps with the project along the way (*i.e.* peers/coworkers, professors, mentors, family, organizations, companies, etc.).

8. References

All literature and personal communications cited in the proposal must be listed in the reference section. References should follow a standard format requested from the agency/organization.

9. Appendices

The first appendix must be the grant produced as well as any Institution Review Board (IRB) and/or the Institutional Animal Care and Use Committee (IACUC) application. The IRB and/or IACUC should only be included as appendices <u>if they were prepared or amended by the student</u>. Finally, anything not included in the text of the manuscript that is important for understanding the grant should be attached as an appendix. All appendices must have references within the text of the project report and must be included as part of the table of contents.

APPLIED RESEARCH PROJECT

The MPH-VPH program permits general applied research projects in order to provide students with an opportunity to pursue an area of interest through their own research. An applied research project ordinarily includes data analysis of some sort in order to permit hypothesis testing or evaluation. Therefore, it is expected that most applied research projects will be of one of two types: (1) investigation of a research question expressed in traditional hypothesis form, or (2) evaluation of a program, diagnostic technique, treatment, intervention, or retrospective data analysis, among others. Some have described this sort of research project as a "<u>mini-thesis</u>." It is correct that some research projects approved for this purpose could probably also function as a master's thesis. However, the expectations of scale and completeness are less than that of the thesis (no peer-review publication is expected), perhaps at the level that one might use for a "pilot study" or generation of preliminary data. Nevertheless, the student is expected to use appropriate scientific research methods and provide science-based interpretation suitable for the approach taken.

The applied research project might be conceptualized as closer to the research activities carried out in the field of practice rather than those done in academic settings.

As with the grant proposal option, the student will need to discuss potential topics with the advisor and agree on both the topic and the appropriate credit hours. Because the applied research project need not be a response to a specific sponsor, the student is not required to identify an RFP or target funding source; however, if he/she has any interest in expanding the scope of their research that might be a useful step.

The details of the final report for this type of project are provided below. The sections listed should be included in most cases; however, modification may be appropriate for particular topics. In such cases, the student should provide some rationale for departure from the typical structure and have the adviser's approval.

<u>Sections to be included in an Applied Research Culminating Project:</u>

1. **Cover Page (Appendix C)**

2. **Abstract**

An abstract is a brief summary of approximately 250-500 words. The major components are: Main Problem addressed by the Applied Research, Objective(s) and Purpose, Materials and Methods used, Results obtained, and Discussion/Conclusion(s)/Recommendation(s).

3. Table of Contents
The table of contents lists all the major topical areas of the document with the corresponding page numbers.

Note: If numerous tables and figures are to be included then a **List of Tables** and/or a **List of Figures** should also be included.

4. Introduction
The introduction has three major elements or subsections: preamble, comprehensive literature review, and goals, objectives, and purpose.

Preamble: This subsection should state the basic rationale for the project (the main VPH problem to be addressed with this CP), what the student proposes to do (objectives), and why it is important (what impact is expected).

Comprehensive Literature Review. A literature review is a synthesis of what researchers/scholars have written about the main topic in which the research is focused, organized according to a guiding concept. The purpose is not to list as many articles as possible, but rather to demonstrate the student's ability to recognize relevant information, to synthesize the information and evaluate it according to the guiding concept that the student has identified for his/her project. The literature review should include relevant information to the main topic of the applied research providing background on the problem and discussing any gaps in the literature that the student has identified. Remember to define specific terms that will be used in the text of the report and remember to "tell a story".

Goals, Objectives, *and Purpose:* The project goals and objectives define the scope and the direction of the research project. Goals are broad timeless statements that include all aspects of a program. Objectives outline in measurable terms the specific outcomes or products of the student's work. Finally, the student needs to describe what would be the expected impact or main purpose accomplished **if the research is successful.**

5. Materials and Methods
Agency/Organization Description. If relevant, describe the agency/organization in which the project took placed. This should include a graphic presentation of the organizational structure and a discussion of how the project relates to the mission and other programs of the agency/organization.

Materials and Methods. Describe what materials, methods, and procedures were applied to collect and analyze data using the scientific method. Each research project is different, so it is not possible to provide a unique list of subsections that should be here included. Therefore, consult your advisor to determine which subsections should go in the Material and Methods. In any case, this section

should be very detail so future students and researchers could follow such methodology and obtain similar results.

Ethics. If human or animal subjects were present in the study, the student must address how they were treated. Please note that if human subjects or their private information are involved in any way in his/her research, they will need to have their proposal reviewed by the OSU Institutional Review Board before they begin any data collection. Similarly, if animal subjects are involved in any way in the student's research, he/she will need to have IACUC protocol approved. ***This is not optional, and failure to follow appropriate procedures could expose the student to legal liability and threaten his/her ability to use their work to meet degree requirements!***

6. Results
All the findings of the applied research should be presented in this section. Describe the results of the observations/experiments, as well as the results of data analyses performed, using a standard peer-review research publication format. All tables and figures should be referred to within the text. If a table or a figure is used from another source, there needs to be a reference citation. If possible, smaller tables and figures should be placed within the text; larger tables and figures may be included in an appendix.

7. Discussion, Conclusions and Recommendations
Discussion of the findings (interpretation of the data) as they relate to the project questions, goals, and objectives should be presented in this section. Implications and Public Health importance of the findings should be also included. Limitations and recommendations for use of the findings and for future research should also be presented in this section. Conclusions that refer to the objectives and hypothesis establish for the student's research should be included and discussed as a closing paragraph.

8. Acknowledgement
Include acknowledgements to anyone who helps with the project along the way (*i.e.* peers/coworkers, professors, mentors, family, organization, institution, etc.).

9. References
All literature and personal communications cited in the manuscript must be listed in the reference section. References should follow a standard citation format, ideally that used by the Journal of the American Veterinary Medicine Association (JAVMA). The student can also choose the format of the peer-reviewed publication where will it will be submitted or published.

10. Appendices
Anything not included in the text of the project report that is important for the understanding of the design, implementation, or conclusions of the project should be attached as an appendix. For example: instruments, consent forms, timeline, surveys, etc. All appendices must have references within the text and must be included as part of the table of contents.

THESIS OPTION

Students choosing the thesis option are usually planning to pursue a career in research and/or academia. Students will use skills in research design and data analysis. Usually, completion of a thesis option will entail working with original data produced by the student, and the expectation is to produce a scientific peer-review publication. Students are expected to generate and analyze data specifically collected for the thesis option or analyze a very comprehensive, previously existing, data set.

The Graduate School has additional requirements for a Master's Thesis option and some different forms are required. These requirements can be found in the Graduate Student Handbook: https://gradsch.osu.edu/handbook/all.

In addition, the Graduate School has very specific requirements in regards to the thesis formatting that the student will have to comply with. Please check such requirements on the Graduate School website: https://gradsch.osu.edu/completing-your-degree/dissertations-theses/format-review-and-submission In any case, a thesis is typically (but not exclusively) organized as follows:

- Cover/Title Page
· Copyright
· Abstract
- Dedication (optional)
- Acknowledgments (optional)
- Vita
· Table of Contents
· List of Tables (if applicable)
· List of Figures, Illustrations, etc. (if applicable)
- Chapter 1   Introduction
- Chapter 2   Literature Review
- Chapter 3   Material and Methods
- Chapter 4   Results
- Chapter 5   Discussion, Conclusions and Recommendations
- References
· Appendices (if applicable)

The sections mention above should also follow the guidelines listed below:

1. **Cover Page (Appendix C)**

2. **Abstract**
An abstract is a brief summary of approximately 250-500 words. The major components are: Main Problem addressed by the Research, Objective(s) and Purpose, Materials and Methods used, Results obtained, and Discussion/Conclusion(s)/Recommendation(s).

3. **Acknowledgement**

Include acknowledgements to anyone who helps with the project along the way (*i.e.* peers/coworkers, professors, mentors, family, etc.).

4. Table of Contents

The table of contents lists all the major sections and chapters of the document with the corresponding page numbers.

Note: If numerous tables and figures are to be included then a **List of Tables** and/or a **List of Figures** should also be included.

5. Introduction

The introduction has three major elements or subsections: preamble, comprehensive literature review, and goals, objectives, and purpose.

Preamble: This subsection should state the rationale for the research project (the main VPH problem that was addressed with this CP), as well as a general description about the research the student performed and why it is important. The hypotheses or problem statement should also be described in this section, including the objectives and goals for this research. In addition the introduction should also contain the following components:

Comprehensive Literature Review. A literature review is a synthesis of what researchers/scholars have written about the main topic in which the research is focused, organized according to a guiding concept. The purpose is not to list as many articles as possible, but rather to demonstrate the student's ability to recognize relevant information, to synthesize the information and evaluate it according to the guiding concept that he/she has identified for their project. The literature review should include relevant information to the main topic of the thesis, as well as to identify any gaps in the literature. Remember to define specific terms that will be used in the text of the student's report and remember to "tell a story".

Goals, Objectives, and Purpose. The project goals and objectives define the scope and the direction of the research project. Goals are broad timeless statements that include all aspects of a program. Objectives outline in measurable terms the specific outcomes or products of the student's work. Finally, the student needs to describe what would be the expected impact or main purpose accomplished if the project is successful.

6. Materials and Methods

Agency/Organization Description. If relevant, describe the agency/organization in which the project took placed. This should include a graphic presentation of the organizational structure and a discussion of how the project relates to the mission and other programs of the agency/organization.

Materials and Methods. Describe what materials, methods, and procedures were applied to collect and analyze data using the scientific method. Each research project is different, so it is not possible to provide a unique list of subsections that should be here included. Therefore, consult your advisor to determine which subsections should go in the Material and Methods. In any case, this section

should be very detail so future students and researchers could follow such methodology and obtain similar results.

Ethics. If human or animal subjects were present in the study, the student must address how they were treated. Please note that if human subjects or their private information are involved in any way in his/her research, they will need to have their proposal reviewed by the OSU Institutional Review Board before they begin any data collection. Similarly, if animal subjects are involved in any way in the student's research, he/she will need to have IACUC protocol approved. ***This is not optional, and failure to follow appropriate procedures could expose the student to legal liability and threaten his/her ability to use their work to meet degree requirements!***

7. Results

All the findings of the research should be presented in this section. Describe the results of the observations/experiments, as well as the results of data analyses performed, using a standard peer-review research publication format. All tables and figures should be referred to within the text. If a table or a figure is used from another source there needs to be a reference citation. If possible, smaller tables and figures should be placed within the text; larger tables and figures may be included in an appendix.

8. Discussion, Conclusions and Recommendations

Discussion of the findings (interpretation of the data) as they relate to the project questions, goals, and objectives should be presented in this section. Implications and importance of the findings should be also included. Limitations and recommendations for use of the findings and for future research should also be presented in this section. Finally, conclusions that refer to the objectives and hypothesis establish for the student's research should be included and discussed as a closing paragraph.

9. References

All literature and personal communications cited in the proposal must be listed in the reference section. References should follow a standard citation format as indicated previously in the applied research projects section.

10. Appendices

Anything not included in the text of the project report that is important for the understanding of the design, implementation, or conclusions of the project should be attached as an appendix. For example: instruments, consent forms, timeline, surveys, etc. All appendices must have references within the text and must be included as part of the table of contents.

Students choosing a thesis option should plan to present their work at a national meeting and submit it for publication in a scientific peer-reviewed journal.