



Republic of the Philippines
OFFICE OF THE PRESIDENT
COMMISSION ON HIGHER EDUCATION



CHED MEMORANDUM ORDER

No. 01

Series of 2018

SUBJECT: POLICIES, STANDARDS AND GUIDELINES FOR THE DOCTOR OF VETERINARY MEDICINE (DVM) PROGRAM

In accordance with the pertinent provisions of Republic Act (RA) No. 7722, otherwise known as the "*Higher Education Act of 1994*," in pursuance of an outcomes-based quality assurance system as advocated under CMO No. 46 s. 2012, and by virtue of Commission en banc Resolution No. 467-2017 dated July 4, 2017 the following policies, standards and guidelines (PSG) are hereby adopted and promulgated by the Commission.

**ARTICLE I
INTRODUCTION**

Section 1. Rationale

Based on the *Guidelines for the Implementation of CMO No. 46 s 2012*, this PSG implements the "shift to learning competency-based standards/ outcomes-based education." It specifies the 'core competencies' expected of Doctor of Veterinary Medicine graduates "regardless of the type of HEI they graduate from." However, in "recognition of the spirit of outcomes-based education and ... of the typology of HEIs," this PSG also provides "ample space for HEIs to innovate in the curriculum in line with the assessment of how best to achieve learning outcomes in their particular contexts and their respective missions..."

**ARTICLE II
AUTHORITY TO OPERATE**

Section 2. Government Recognition

All private higher education institutions (PHEIs) intending to offer Doctor of Veterinary Medicine (DVM) program must first secure proper authority from the Commission in accordance with this PSG. All PHEIs with an existing Doctor of Veterinary Medicine (DVM) program are required to shift to an outcomes-based approach based on this PSG. State universities and colleges (SUCs), and local colleges and universities (LCUs) shall likewise strictly adhere to the provisions in these policies and standards.

ARTICLE III GENERAL PROVISIONS

Per Section 13 of RA 7722, the higher education institution shall exercise academic freedom in its curricular offerings but must comply with the minimum requirements for specific academic programs, the general education distribution requirements and the specific professional courses.

Section 3. The Articles that follow give minimum standards, and other requirements and prescriptions. The minimum standards are expressed as a minimum set of desired program outcomes which are given in Article IV Section 6. CHED designed a curriculum to attain such outcomes. The curriculum is shown in Article V Section 8. The number of units of this curriculum is herein prescribed as the “minimum unit requirement” under Section 13 of RA 7722. In designing the curriculum, CHED employed a curriculum map which is shown in Article V Section 10 as a **sample** curriculum map.

Using a learner-centered/outcomes-based approach, CHED also determined appropriate curriculum delivery methods shown in Article V Section 11. The sample course syllabi given in Article V Section 12 show some of these methods.

Based on the curriculum and the means of its delivery, CHED determined the physical resource requirements for the library, laboratories and other facilities and the human resource requirements in terms of administration and faculty. See Article VI.

Section 4. The HEIs are allowed to design curricula suited to their own contexts and missions provided that they can demonstrate that the same leads to the attainment of the required minimum set of outcomes, albeit by a different route. In the same vein, they have latitude in terms of curriculum delivery and in terms of specification and deployment of human and physical resources, as long as they can show that the attainment of the program outcomes and satisfaction of program educational objectives can be assured by the alternative means they propose.

The HEIs can use the **CHED Implementation Handbook for Outcomes-Based Education (OBE) and the Institutional Sustainability Assessment (ISA)** as a guide in making their submissions for Sections 17 to 22 of Article VII.



**ARTICLE IV
PROGRAM SPECIFICATIONS**

Section 5. Program Description

5.1 Degree Name

The degree program shall be called Doctor of Veterinary Medicine (DVM).

5.2 Nature of Field of Study

The Doctor of Veterinary Medicine Program is a professional course involved in the prevention, diagnosis, treatment and control of diseases of animals, including terrestrial and aquatic animals. The program includes courses on general education, basic science, zootechnics (animal science) and veterinary medical science, as well as on professional skills that the graduates need to be able to carry out the duties of safeguarding animal health, public health, the environment, and to be capable of utilizing effectively the tools of communication in the pursuit of further knowledge and in information dissemination of such in both local and international settings.

5.3 Program Educational Objectives/Program Goals

1. DVM graduates are globally competent in the prevention, diagnosis, treatment and control of diseases of different animal species;
2. DVM graduates are globally competent to formulate, communicate and implement programs in animal health, animal production and health management, food safety, public health, animal welfare and environmental protection and preservation;
3. DVM graduates are achievers, team players and leaders in the profession or related fields of practice;
4. DVM graduates are capable to handle and conduct researches in pharmaceutical, biotechnological and other industrial fields; and
5. DVM graduates are capable of imparting knowledge, conducting trainings and extension services.

Note: HEIs may add additional statement referring to their VMGO.

5.4 Specific Professions and Allied Fields/Careers/Occupation for graduates

Specific employment areas and fields of practice for DVM graduates:

1. National veterinary service;
2. Local veterinary service;
3. Academe;



4. Private practice;
5. Public Health;
6. Concentration on leisure and companion animals;
7. Technical consultancies;
8. Livestock and poultry industry;
9. Fisheries and aquaculture;
10. Concentration on zoos, exotic animals and wildlife;
11. Concentration on laboratory animals;
12. Animal feeds and nutrition;
13. Food production;
14. Food inspection and certification;
15. Professional and non-government organizations;
16. Animal welfare;
17. Veterinary corps;
18. Research and development;
19. Trade and marketing;
20. Public and Private Administration; and
21. Border Control.

5.5 Allied Programs

DVM is closely related to Agriculture, Fisheries, Medicine, Environmental Science, Pharmacy, Biology, Molecular Biology, Medical Technology, Food Technology and Economics and Management.

Section 6. Program Outcomes

The minimum standards for the Doctor of Veterinary Medicine program are expressed in the following minimum set of learning outcomes.

6.1 Common to all programs in all types of schools

- a. Articulate and discuss the latest developments in the specific field of practice (PQF level 6 descriptor);
- b. Effectively communicate orally and in writing using both English and Filipino;
- c. Work effectively and independently in multi-disciplinary and multi-cultural teams (PQF level 6 descriptor);
- d. Act in recognition of professional, social, and ethical responsibilities; and
- e. Preserve and promote "*Filipino historical and cultural heritage*" (based on RA 7722).



6.2 Common to the discipline

- f. Generate and share knowledge relevant to specific fields in the study of agriculture; and
- g. Formulate and implement agricultural development plans and programs.

6.3 Specific to sub-discipline and a major

- h. Understand and apply biological principles and mechanisms underlying animal production, health and diseases;
- i. Apply diagnostic methods and interpret results for accurate disease diagnosis;
- j. Prescribe and implement treatment to remedy diseases and abnormalities of animals or prescribe termination of cases, as necessary;
- k. Develop and formulate plans and programs for prevention and control of diseases; and
- l. Design and engage in social and economic entrepreneurial ventures in the field of practice.

6.4 Common to a horizontal type as defined in CMO No. 46 s 2012

- a. For professional institutions: a service orientation in one's profession;
- b. For colleges: an ability to participate in various types of employment, development activities, and public discourses particularly in response to the needs of the community one serves; and
- c. For universities: an ability to participate in the generation of new knowledge or in research and development projects.

Graduates of State Universities and Colleges must, in addition, have the competencies to support "national, regional and local development plans," as indicated in RA 7722.

A PHEI, at its option, may adopt mission-related program outcomes that are not included in the minimum set.

Section 7. Sample Performance Indicators

Performance Indicators are specific, measurable statements identifying the performance(s) required to meet the outcome, confirmable through evidence.



PROGRAM OUTCOMES	PERFORMANCE INDICATORS
h. Understand and apply biological principles and mechanisms underlying animal production, health and diseases	<ul style="list-style-type: none"> a. Differentiate normal from diseased animals b. Identify animal diseases and their causative agents and explain the pathogenesis and epidemiology
i. Apply diagnostic methods and interpret results for accurate disease diagnosis	<ul style="list-style-type: none"> a. Demonstrate the appropriate technique or approach in disease diagnosis b. Interpret and analyze diagnostic findings
j. Prescribe and implement treatment to remedy diseases and abnormalities of animals, or prescribe termination of cases, as necessary	<ul style="list-style-type: none"> a. Select appropriate drugs or medications and therapy for specific conditions b. Administer drug properly c. Perform surgical operations as applied in different conditions
k. Develop and formulate plans and programs for prevention and control of diseases	<ul style="list-style-type: none"> a. Design biosecurity procedures b. Recognize emerging and re-emerging diseases c. Recommend proper nutrition and management protocols to prevent and control diseases
l. Design and engage in social entrepreneurship ventures in the field of practice	<ul style="list-style-type: none"> a. Apply management tools in establishing veterinary practice b. Apply ethical principles in veterinary practice

The program outcomes from (h) to (l) set the minimum requirements for a graduate of the Doctor of Veterinary Medicine program. PHEIs/LUCs/SUCs may add additional outcomes as necessary and appropriate.

ARTICLE V CURRICULUM

Section 8. Curriculum Description

The program for the degree Doctor of Veterinary Medicine (DVM) shall be a six-year program consisting of a one-year general education courses and a five-year professional veterinary medicine curriculum with a minimum total of 229 units. The courses in the curriculum shall include the following areas:

1. One-year general education courses – not less than thirty-six (36) units, and PE and NSTP – not less than fourteen (14) units;
2. Basic Science courses - not less than twelve (12) units;



3. Zootechnic (Animal Science) courses – not less than twenty-two (22) units; and
4. Veterinary Medicine courses – not less than one hundred forty-two (142) units consisting of pre-clinical and clinical courses.

Each course shall have a syllabus. In addition, each laboratory course shall have a laboratory manual or guide.

Section 9. Sample Curriculum

SUMMARY

General Education Courses	36 units
Physical Education (PE) and National Service Training Program (NSTP)	14 units
Basic Science Courses	12 units
Zootechnic (Animal Science) Courses	22 units
Veterinary Medical Science Courses	<u>145 units</u>
TOTAL	229 Units

General Education		36
A. Core Courses		24
Understanding the Self	3	
Readings in Philippine History	3	
The Contemporary World	3	
Mathematics in the Modern World	3	
Purposive Communication	3	
Science, Technology and Society	3	
Art Appreciation	3	
Ethics	3	
B. Elective Courses		9
Elective 1	3	
Elective 2	3	
Elective 3	3	
C. Mandated Course		3
Life and Works of Rizal	3	
Basic Science Courses		12
Organic Chemistry	3	
Biochemistry	4	
Biostatistics	3	
Research Methods and Scientific Writing	2	
Zootechnic (Animal Science) Courses		22
Principles of Animal Production and Economics	3	
Principles of Animal Nutrition	3	
Principles of Animal Breeding and Genetics	3	
Poultry Production and Flock Health Management	3	
Swine Production and Herd Health Management	3	
Ruminant Production and Herd Health Management	3	
Equine Production and Health Management	2	
Animal Welfare	2	



Veterinary Medical Science Courses		145
A. Veterinary Anatomy		15
Gross Veterinary Anatomy	4	
Comparative Veterinary Anatomy	4	
Veterinary Developmental Anatomy (Embryology)	3	
Veterinary Microscopic Anatomy (Histology)	4	
B. Veterinary Physiology		11
General Veterinary Physiology	4	
Systemic Veterinary Physiology	4	
Veterinary Reproductive Physiology & Endocrinology	3	
C. Veterinary Pathology		11
General Veterinary Pathology	4	
Systemic Veterinary Pathology	4	
Veterinary Clinical Pathology	3	
D. Veterinary Microbiology		11
General Veterinary Microbiology	4	
Veterinary Bacteriology and Mycology	3	
Veterinary Virology	2	
Fundamentals of Immunology	2	
E. Veterinary Parasitology		8
Veterinary Entomology & Protozoology	4	
Veterinary Helminthology	4	
F. Veterinary Public Health		11
Veterinary Epidemiology	3	
Zoonoses, EIDs & One Health	3	
Veterinary Food Safety & Hygiene	3	
Environmental Animal Health and Biosafety	2	
G. Veterinary Pharmacology		8
Basic Veterinary Pharmacology	4	
Veterinary Clinical Pharmacology	4	
H. Veterinary Medicine		26
General Principles of Veterinary Medicine	2	
Canine Medicine	2	
Feline Medicine	2	
Ruminant Medicine	2	
Equine Medicine	2	
Poultry Medicine	2	
Swine Medicine	2	
Theriogenology	2	
Veterinary Jurisprudence and Ethics	2	
Veterinary Practice Management & Entrepreneurship	2	
Aquaculture and Aquatic Animal Medicine	2	
Laboratory Animal Management and Medicine	2	
Apiculture, Wildlife Conservation and Medicine	2	



I. Veterinary Surgery		12
Principles of Veterinary Surgery and Anesthesiology	3	
Veterinary Diagnostic Imaging	3	
Small Animal Surgery	3	
Large Animal Surgery	3	
J. Veterinary Clinics		28
Clinico-Pathological Conference 1	1	
Clinico-Pathological Conference 2	1	
Introduction to Veterinary Clinics	2	
Veterinary Clerkship	2	
Veterinary Internship 1	10	
Veterinary Internship 2	12	
K. Thesis		4
Thesis 1 (Thesis Proposal and Outline Defense)	2	
Thesis 2 (Thesis Conduct and Defense)	2	

9.1 Program of Study

First Year

First Semester	Units	No. of Hours		
		Lec	Lab	Total
Understanding the Self	3	3	0	3
Readings in Philippine History	3	3	0	3
Mathematics in the Modern World	3	3	0	3
Science, Technology and Society	3	3	0	3
Ethics	3	3	0	3
Organic Chemistry	3	2	3	5
PE	2			2
NSTP	3			3
Total	23	17	3	25

Second Semester	Units	No. of Hours		
		Lec	Lab	Total
The Contemporary World	3	3	0	3
Purposive Communication	3	3	0	3
Elective 1	3	3	0	3
Elective 2	3	3	0	3
Elective 3	3	3	0	3



Biochemistry	4	3	3	6
PE	2			2
NSTP	3			3
Total	24	18	3	26

Second Year

First Semester Subject	Units	No. of Hours		
		Lec	Lab	Total
Biostatistics	3	3	0	3
Principles of Animal Production and Economics	3	3	0	3
Principles of Animal Nutrition	3	3	0	3
Principles of Animal Breeding and Genetics	3	3	0	3
Animal Welfare	2	2	0	2
Veterinary Developmental Anatomy (Embryology)	3	2	3	5
Gross Veterinary Anatomy	4	2	6	8
PE	2			
Total	23	18	9	27

Second Semester Subject	Units	No. of Hours		
		Lec	Lab	Total
Poultry Production and Flock Health Management	3	2	3	5
Veterinary Microscopic Anatomy (Histology)	4	2	6	8
Ruminant Production and Herd Health Management	3	2	3	5
Equine Production and Health Management	2	2	0	2
Comparative Veterinary Anatomy	4	2	6	8
Art Appreciation	3	3	0	3
PE	2			
Total	21	13	18	31



Third Year

First Semester	Units	No. of Hours		
		Lec	Lab	Total
Life and Works of Rizal	3	3	0	3
Swine Production and Herd Health Management	3	2	3	5
General Veterinary Physiology	4	3	3	6
General Veterinary Microbiology	4	3	3	6
General Veterinary Pathology	4	3	3	6
Basic Veterinary Pharmacology	4	3	3	6
Total	22	17	15	32

Second Semester	Units	No. of Hours		
		Lec	Lab	Total
Systemic Veterinary Physiology	4	3	3	6
Veterinary Bacteriology and Mycology	3	2	3	5
Veterinary Entomology & Protozoology	4	2	6	8
Veterinary Clinical Pharmacology	4	3	3	6
Systemic Veterinary Pathology	4	3	3	6
Total	19	13	18	31

Fourth Year

First Semester	Units	No. of Hours		
		Lec	Lab	Total
Reproductive Physiology & Endocrinology	3	2	3	5
General Principles of Veterinary Medicine	2	2	0	2
Veterinary Virology	2	2	0	2
Veterinary Helminthology	4	2	6	8
Veterinary Clinical Pathology	3	2	3	5
Principles of Veterinary Surgery and Anesthesiology	3	2	3	5
Total	17	12	15	27



Second Semester		Units	No. of Hours		
Subject	Lec		Lab	Total	
Fundamentals of Immunology	2	2	0	2	
Poultry Medicine	2	2	0	2	
Ruminant Medicine	2	2	0	2	
Veterinary Diagnostic Imaging	3	2	3	5	
Small Animal Surgery	3	1	6	7	
Research Methods & Scientific Paper Writing	2	2	0	2	
Canine Medicine	2	2	0	2	
Feline Medicine	2	2	0	2	
Total	18	15	9	24	

Fifth Year

First Semester		Units	No. of Hours		
Subject	Lec		Lab	Total	
Veterinary Epidemiology	3	3	0	3	
Veterinary Food Safety & Hygiene	3	2	3	5	
Large Animal Surgery	3	1	6	7	
Equine Medicine	2	2	0	2	
Swine Medicine	2	2	0	2	
Laboratory Animal Management and Medicine	2	2	0	2	
Veterinary Jurisprudence and Ethics	2	2	0	2	
Introduction to Veterinary Clinics	2	0	6	6	
Total	19	14	15	29	

Second Semester		Units	No. of Hours		
Subject	Lec		Lab	Total	
Zoonoses, EIDs & One Health	3	3	0	3	
Aquaculture and Aquatic Animal Medicine	2	2	0	2	
Apiculture, Wildlife Conservation and Medicine	2	2	0	2	
Theriogenology	2	1	3	4	
Veterinary Practice Management & Entrepreneurship	2	2	0	2	
Environmental Animal Health and Biosafety	2	2	0	2	
Veterinary Clerkship	2	0	6	6	
Thesis 1 (Thesis Proposal & Outline Defense)	2	0	6	6	
Clinico-Pathological Conference 1	1	0	3	3	
Total	18	12	18	30	



Sixth Year

First Semester	Units	No. of Hours		
Subject		Lec	Lab	Total
Clinico-Pathological Conference 2	1	0	3	3
Veterinary Internship 1	10	0	30	30
Thesis 2 (Thesis Conduct and Defense)	2	0	6	6
Total	13	0	39	39

Second Semester	Units	No. of Hours		
Subject		Lec	Lab	Total
Veterinary Internship 2	12	0	36	36
Total	12	0	36	36

The institution may enrich the sample/model program of study depending on the needs of the industry, provided that all prescribed courses/competencies required in the curriculum outline are offered and prerequisites and co-requisites are observed.

The program study herein is only an example. HEIs may use this sample and modify it according to its needs. They may also add other preferred courses.

Section 10. Sample Curriculum Map (Please see Annex B)

A curriculum map is "a matrix relating all the courses listed in the program curriculum with one or more of the declared program outcomes."

The HEIs/LUCs/SUCs shall create a complete curriculum map of their DVM curriculum. Refer to Annex B for a sample curriculum map that relates all the courses in the sample curriculum with the minimum set of program outcomes.

Section 11. Sample Means of Curriculum Delivery

The Doctor of Veterinary Medicine curriculum adheres to a learner-centered paradigm. It begins with clearly stated competencies students must acquire and demonstrate at the end of the six-year program. Appropriate teaching-learning strategies facilitate the acquisition of these competencies. Under this paradigm, students are the subject of the learning process enabling them to achieve their full potential. The teaching-learning process is interactive, participatory, collaborative and experiential. The teacher is a mentor, facilitator and collaborator.



The following methodologies/strategies may be used (based on the sample means of curriculum delivery):

- Lecture/discussion
- Case Report
- Demonstration
- Digital video
- Debate
- Problem solving/Case analysis
- Group case work
- Group discussion
- Field exposure trips (local or international)
- Literature review
- Filmshowing
- Use of cooperative / active learning strategies such as games, role play, project-based learning, dialogues, journals, buzz sessions, concept mapping, think-pair-share, counsel, brainstorming exercises
- Use of animal models
- Story telling
- Show and tell
- Scenario-thinking
- Community/Industry immersion
- Self-assessment/evaluation
- Reflective learning experience
- Creation of individual learning portfolio
- Community/Industry mapping exercise
- Critique or reflections
- Partnership and linkage
- Practical exercises
- Web-based instruction
- Hands – on activities

Program Outcome	Performance Indicators	Key Course/Subject	Assessment Tool
Discuss the biological principles and mechanisms underlying animal health and diseases	1. Differentiate normal from diseased animals	Pathology	Quizzes, Written exams
	2. Identify animal diseases and their causative agents and explain the pathogenesis and epidemiology	Medicine	Quizzes, Written exams, case study
Apply diagnostic methods and interpret results for accurate disease diagnosis;	1. Demonstrate the appropriate technique or approach in disease diagnosis	Medicine, Surgery, Clinics	Written and practical exams
	2. Interpret and analyze diagnostic findings	Clinical Pathology, Diagnostic Imaging, Clinics	Case reports; written and practical exams



Prescribe medications and implement treatment to remedy diseases, ailments and abnormalities of animals	1. Select appropriate drugs or medications and therapy for specific conditions	Medicine, surgery	Quizzes, Written exams
	2. Administer drug properly	Pharmacology	Quizzes, Written exams
	3. Perform surgical operations as applied in different conditions	Surgery	Written and practical exams
Apply various principles and mechanisms to prevent and control animal diseases and other related problems	1. Determine disease frequency, distribution and determinants for effective prevention and control	Epidemiology	Quizzes, Written exams, projects
	2. Formulate sound animal health programs for disease prevention and control	Medicine, Zootechnics	Quizzes, Written exams, reports

**Section 12. Sample Course Syllabi for Selected Core Veterinary Courses
(Please see Annex C)**

ARTICLE VI

REQUIRED RESOURCES

Section 13. Administration

13.1 Qualifications of a Dean

- a. Must have concurrent regular faculty appointment;
- b. Must be a Master's degree holder, preferably with a PhD degree in any field of veterinary medicine;
- c. Must have at least five (5) years teaching experience and three (3) years on research and/or extension work in veterinary medicine or related field; and
- d. Must be a Professional Regulation Commission (PRC) registered Veterinarian with updated PRC ID.

13.2 Qualifications of a Department Chair

- a. Must at least be a Master's degree holder in any veterinary medicine discipline relevant to the Department;
- b. Must have at least three (3) years teaching experience and two (2) years on research and/or extension in veterinary medicine field; and
- c. Must be a PRC-registered Veterinarian with updated PRC ID.



Section 14. Faculty

An institution offering a DVM degree program shall have at least twelve (12) full time faculty members, all of whom must be PRC-registered veterinarians with updated PRC IDs. It shall have at least one instructor in each of the following fields: Zootechnics, V. Anatomy, V. Physiology, V. Pathology, V. Microbiology, V. Parasitology, V. Public Health, V. Pharmacology, V. Medicine V. Surgery and, V. Clinics.

A faculty member shall have good scholastic record and good moral character and with practical/work experience, where applicable.

Seventy percent (70%) of the faculty members must have a graduate degree in any of the veterinary fields above.

Faculty Development - The veterinary medicine institution must develop and implement a system of faculty development for professional advancement of the faculty members for the professional subjects.

Section 15. Library

Library personnel, facilities and holdings shall conform to existing CHED requirements for libraries which are embodied in a separate CHED issuance. The library must maintain a collection of updated and appropriate/suitable textbooks and references used for the core courses in the curriculum. Library resources shall complement curriculum delivery to optimize the achievement of the program outcomes for the DVM program.

For the list of required textbook references, please refer to Annex D.

Section 16. Physical Facilities

16.1 The Veterinary School shall conform with the National Building Code of the Philippines and provincial/city/municipal ordinances.

16.2 Lecture Room – The lecture rooms shall be well-lighted, well-ventilated and conducive to learning. They shall contain the necessary equipment and furniture.

16.3 Audiovisual Room

The institution shall provide the necessary audiovisual room and facilities with appropriate equipment in support of the teaching-learning process such as but not limited to video/overhead/slide projector, sound system, LCD/DLP projectors, and projection screens.

16.4 Laboratory Rooms

16.4.1 The veterinary medicine institution shall have the following laboratories for instruction and research activities:

1. Gross Veterinary Anatomy
2. Veterinary Microscopic and Developmental Anatomy (Histology-Embryology)
3. Veterinary Physiology- Veterinary Pharmacology



4. Veterinary Parasitology
5. Veterinary Microbiology- Veterinary Public Health
6. Veterinary Pathology
7. Veterinary Surgery

16.4.2 The laboratory rooms shall be well-ventilated and well-lighted, contain the necessary furniture, specific laboratory equipment and must be provided with adequate water supply, emergency kits and biosecurity measures.

16.5 Veterinary Teaching Hospital and Diagnostic Laboratory

16.5.1 A veterinary teaching hospital and diagnostic laboratory must be available, complete with facilities for diagnosis, treatment and confinement of animals.

16.5.2 The building component shall have a floor area of at least 250 square meters consisting of rooms for reception, consultation, pharmacy, diagnostic, treatment, small animal surgery, large animal surgery, kennels, isolation, diagnostic imaging, clinical pathology and necropsy. Provisions for large animal cases shall be available.

16.6 Animal Facilities

Animal facilities shall be available for instructional and research purposes, complete with support facilities such as sheds for small and large ruminants, stables for horses, pens for pigs, houses for poultry, cages for laboratory animals with the size and design conforming with humane requirements with an area of not less than 5 hectares.

HEIs may enter into Memorandum of Understanding (MOU) or Memorandum of Agreement (MOA) with government agencies and/or non-government organizations to have access to aquaculture and wildlife facilities.

16.7 Laboratory Equipment (See Annex D)

ARTICLE VII COMPLIANCE OF HEIs

Using the *CHED Implementation Handbook for OBE and ISA* as reference, a HEI shall develop the following items which will be submitted to CHED when they apply for a permit for a new program:

Section 17. The complete set of program outcomes, including its proposed additional program outcomes.

Section 18. Its proposed curriculum, and its justification including a curriculum map.



- Section 19.** Proposed **performance indicators** for each outcome. Proposed measurement system for the level of attainment of each indicator.
- Section 20.** Proposed **outcomes-based syllabus** for each course.
- Section 21.** Proposed system of program assessment and evaluation.
- Section 22.** Proposed system of program **Continuous Quality Improvement (CQI)**.

For existing programs, CHED shall conduct regular monitoring and evaluation on the compliance of HEIs to this Policies, Standards and Guidelines using an outcomes-based assessment instrument.

ARTICLE VIII

TRANSITORY, REPEALING and EFFECTIVITY PROVISIONS

Section 23. Transitory Provision

All private HEIs, state universities and colleges (SUCs) and local universities and colleges (LUCs) with existing authorization to operate Doctor of Veterinary Medicine (DVM) program are hereby given a period of **three (3) years** from the effectivity thereof to fully comply with all the requirements in this CMO. However, the prescribed minimum curricular requirements in this CMO shall be implemented starting **Academic year 2018-2019**.

Section 24. Repealing Clause

Any provision of this Order, which may thereafter be held invalid, shall not affect the remaining provisions.

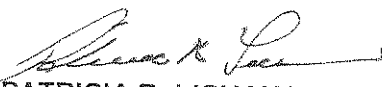
All CHED issuances or parts thereof inconsistent with the provision in this CMO shall deemed be modified or repealed.

Section 25. Effectivity Clause

This CMO shall take effect fifteen (15) days after its publication in the Official Gazette, or in two (2) newspaper of national circulation. This CMO shall be implemented beginning **Academic Year 2018-2019**.

Quezon City, Philippines January 12, 2018.

For the Commission:


PATRICIA B. LICUANAN, Ph.D.
Chairperson



Attachments:

Annex A – Definition of Terms

Annex B – Sample Curriculum Map

Annex C – Sample Course Syllabi

Annex D- Laboratory Equipment

Annex E- List of Textbook References



**ANNEX A
DEFINITION OF TERMS**

The PSGs shall adhere to the definition of terms as contained in CMO No. 46, and, additionally, to the following definitions:

TERMS/ACRONYMS	DEFINITION
Assessment	one or more process that identify, collect, analyze, and report data that can be used to evaluate achievement of the program educational objectives and program outcomes. Effective assessment uses relevant direct, indirect, quantitative and qualitative measures as appropriate to the outcome or objective being measured. (CMO No. 37, s. 2012)
Competency	is a statement of a set of related knowledge, attitudes and skills required to successfully perform a task that supports the desired program outcomes through a course or series of courses
Course Outcomes	the knowledge, values and skills all learners are expected to demonstrate at the end of a course to a certain level of performance.
Evaluation	one or more process interpreting the data and evidence accumulated through assessment processes. Evaluation determines the extent to which program or student outcomes are achieved. Evaluation results in decisions and actions regarding program continuous quality improvement. (CMO No. 37, s. 2012)
Learning outcomes	outcomes of a specific lesson supporting the Course outcomes.
Outcomes-based assessment	measure of students' demonstration of their learning with agreed explicit criteria for assessing each outcome.
Outcomes-based education	an approach that focuses and organizes the educational system around what is essential for all learners to know, value and be able to do to achieve a desired level of competence at the time of graduation.
Outcomes-based teaching and learning	the constructive alignment of intended learning outcomes with essential content, appropriate learner-centered activities and outcomes-based assessment.
Program Goal	Broad statements describe the career and professional accomplishments that the program is preparing graduates to achieve within 3-5 years of graduation. Program goals are based on the needs of the program constituencies.
Program Outcomes	the knowledge, values and skills all learners are expected to demonstrate to a certain level of performance at the time of graduation.



ANNEX B SAMPLE CURRICULUM MAP

Curriculum map is “a matrix relating all the courses listed in the program curriculum with one or more of the declared program outcomes.”

The HEIs/LUCs/SUCs shall create a complete curriculum map of their current existing Doctor of Veterinary Medicine Curriculum. Refer to sample curriculum map below to show how all the courses in the sample curriculum relate with the minimum set of program outcomes.

The graduate of the Doctor of Veterinary Medicine program shall have developed the ability to:

- a. Articulate and discuss the latest developments in the specific field of practice
- b. Effectively communicate orally and in writing using both English and Filipino
- c. Work effectively and independently in multi-disciplinary and multi-cultural teams
- d. Act in recognition of professional, social, and ethical responsibilities
- e. Preserve and promote “*Filipino historical and cultural heritage*”
- f. Generate and share knowledge as it applies to specific problems in the discipline
- g. Formulate sustainable and productive agricultural development plans and programs
- h. Understand and apply biological principles and mechanisms underlying animal production, health and diseases
- i. Apply diagnostic methods and interpret results for accurate disease diagnosis;
- j. Prescribe and implement treatment to remedy diseases and abnormalities of animals or prescribe termination of cases, as necessary;
- k. Develop and formulate plans and programs for prevention and control of diseases
- l. Design and engage in social entrepreneurial ventures in the field of practice

Legend:

- I - Introduced to concepts/principles
- P - Practiced with supervision
- D - Demonstrated with minimal supervision



Courses	a	b	c	d	e	f	g	h	i	j	k	l
Zootechnic (Animal Science) Courses												
Principles of Animal Production & Economics	I	P				I		I				I
Principles of Animal Nutrition	I	P						IP	I			I
Principles of Breeding and Genetics	I	P						I				I
Poultry Production and Flock Health Management	I	P				I		IP	I	I	I	I
Swine Production and Herd Health Management	P	P				I		IP	I	I	I	I
Ruminant Production & Herd Health Management	P	P				I		IP	I	I	I	I
Equine Production & Health Management	P	P				I		I	I	I	I	I
Veterinary Medical Science Courses												
Veterinary Anatomy		P						IP				
Gross Veterinary Anatomy		P						IP				
Veterinary Developmental Anatomy (Embryology)		P						IP				
Veterinary Microscopic Anatomy (Histology)		P						IP				
Veterinary Physiology												
General Veterinary Physiology	I	P						IP				
Systemic Veterinary Physiology	I	P				I		IP				
Veterinary Reproductive Physiology & Endocrinology	I	P				I		I				
Veterinary Pathology												
General Veterinary Pathology	I	P						IP				
Systemic Veterinary	I	P				I		IP	I			



Pathology													
Veterinary Clinical Pathology	P	P				I		IP	I				
Veterinary Microbiology													
General Veterinary Microbiology	I	P				I		IP	I	I			
Veterinary Bacteriology & Mycology	I	P				I		IP	I	I	I		
Veterinary Virology	I	P							I	I	I		
Fundamentals of Immunology	I	P				I		I					
Veterinary Parasitology													
Veterinary Entomology & Protozoology	I	P						IP	I	I	I		
Veterinary Helminthology	I	P						IP	I	I	I		
Veterinary Public Health													
Veterinary Epidemiology	I	P					I	IP	I	I			I
Zoonoses, EIDs & One Health	I	P						I	I	I	I	I	
Veterinary Food Safety and Food Hygiene	I	P						IP	I	I	I		
Veterinary Pharmacology													
Basic Veterinary Pharmacology	I	P						IP					
Veterinary Clinical Pharmacology	P	P				I		IP	I	I	I		
Veterinary Medicine													
General Principles of Veterinary Medicine	I	P		I				I	I	I	I		
Canine Medicine	P	P						I	I	P	P		
Ruminant Medicine	P	P						I	I	P	P		
Equine Medicine	P	P						I	I	P	P		
Poultry Medicine	P	P						I	I	P	P		
Swine Medicine	P	P						I	I	P	P		
Theriogenology	P	P						I	IP				



Aquaculture and Aquatic Animal Medicine	P	P						I	I	P	P	
Laboratory Animal Management and Medicine	P	P						I	I	P	P	
Apiculture, Wildlife Conservation and Medicine	P	P						I	I	P	P	
Veterinary Jurisprudence and Ethics	P	P	I	I	I			I				P
Veterinary Surgery												
Principles of Veterinary Surgery and Anesthesiology	P	P		I				I	I	I	I	
Veterinary Diagnostic Imaging	P	P						IP	P	P		
Small Animal Surgery	P	P						IP	IP	IP		
Large Animal Surgery	P	P						IP	IP	IP		
Veterinary Clinics												
Clinico-Pathological Conference 1	P	P			IP	I	I	D	I	I	I	I
Introduction to Veterinary Clinics	I	P	P	P		I	I	D	P	I	I	I
Veterinary Clerkship	P	P	P		D	I	I	D	P	P	P	P
Veterinary Internship 1	P	P	D	P	D	I	I	D	P	P	P	P
Veterinary Internship 2	D	D	D	P	D	P	P	D	D	D	D	D
Thesis Work												
Thesis 1	P	P	P	P	D	P	I					
Thesis 2	D	D	D	P	P	D	D					



**ANNEX C
SAMPLE COURSE SYLLABI**

COURSE TITLE	General Principles of Veterinary Medicine		
COURSE DESCRIPTION	Principles of diagnosis, treatment, prevention and control of animal diseases.		
COURSE OUTCOMES	<ol style="list-style-type: none"> 1. Discuss the general principles of disease diagnosis 2. Identify the clinical manifestations of diseases in animals 3. Distinguish the basic diagnostic procedures used in animals 4. Describe the different methods of therapy used in animals 5. Differentiate principles of diagnosis, treatment, prevention and control among different species of animals. 6. Recognize different prevention and control measures of animal diseases. 		
COURSE CREDIT	2 units		
PREREQUISITES	Parasitology II, Clinical Pharmacology		
INTENDED LEARNING OUTCOMES	LECTURE TOPICS	TEACHING AND LEARNING ACTIVITIES	ASSESSMENT TASKS
1,5	Introduction Principles of Disease Diagnosis	Lecture	Exam
1,5	Handling a case: the POMR as a guide	Lecture/discussion	Recitation, Exam
2, 5	Manifestation of clinical disease	Lecture/discussion	Recitation, Quizzes, Exam
2, 5	History Taking		Quizzes, Exam
2, 5	General clinical examination	Lecture/Demonstration Group role playing	Group Report, Exam
3, 5	Systemic Evaluation	Lecture/ Discussion Recitation Research work	Exam
4,5	Principles of Therapy	Lecture, discussion Reporting	Exam, Assignment
4,5	Chemotherapy	Lecture, discussion, case	Case report analysis



		analysis	Exam
4,5	Nutritional therapy	Lecture, discussion, assignment	Case report analysis Exam
4.5	Fluid and electrolyte therapy	Lecture, discussion, case analysis	Case report analysis Exam
4.5	Physical therapy	Lecture, discussion,	Exam
4.5	Alternative medicine	Lecture, discussion, oral report	Research written report, Exam
4.5	Emergency medicine	Lecture, recitation	Exam
5,6	Preventive Medicine	Lecture, discussion	Case report analysis, Exam
COURSE EVALUATION	Passing Grade: 75%	Average of Long Exams, Quizzes, Case Reports	
EQUIPMENT	<ol style="list-style-type: none"> 1. LCD/DLP Projector 2. Computer 		
TEXTBOOKS AND REFERENCES	<p>Ettinger: Textbook of Veterinary Internal Medicine, Diseases of Dogs & Cats</p> <p>Kirk: Current Veterinary Therapy. Small Animal Practice</p> <p>Other specialized books and assigned journal readings dealing with diseases of specific organ systems.</p> <p>Schaer, M. 2003. Clinical Medicine of the Dog and Cat. Blackwell, Ames, Iowa.</p> <p>Blood, Henderson and Radostits</p>		

COURSE TITLE	Veterinary Epidemiology
COURSE NO.	VPH 205
COURSE DESCRIPTION	Principles and methods of epidemiology
COURSE OUTCOMES	<p>After completing the course, the students shall be able to:</p> <ol style="list-style-type: none"> 1. Develop a complete familiarity with the terminology of epidemiology and understand key epidemiological principles. 2. Develop a good understanding of the concepts underlying population-based measures of disease frequency and production. 3. Gain a good understanding of the patterns of disease spread, basic epidemic theory and the concept of herd immunity.



	<p>4. Grasp the nature of and the principles underlying the major types of epidemiological studies including observational (qualitative, case, cross-sectional, retrospective and prospective, health and productivity profiles) and experimental studies.</p> <p>5. Explain the determinants of diseases including the concept of risk and risk factors.</p> <p>6. Calculate epidemiological measures of association and interpret observed associations in causal terms.</p> <p>7. Understand the principles of sampling in populations, and its applications to issues facing field and research veterinarians.</p> <p>8. Gain knowledge of routine and structured methods of data collection relevant to disease monitoring and surveillance in animal populations and of animal health information systems.</p> <p>9. Explain the principles associated with the use and interpretation of diagnostic tests</p> <p>10. Comprehend concepts underlying general approaches to outbreak investigations and disease control</p> <p>11. Grasp clearly the principles underlying the description and analysis of epidemiological data.</p> <p>12. Correctly interpret routine descriptive statistics.</p> <p>13. Demonstrate the use of selected epidemiological software packages such as Winepiscopes, Survey Toolbox and Epi-Info.</p>		
COURSE CREDIT	3 units		
PREREQUISITES	General Microbiology and Statistics		
INTENDED LEARNING OUTCOMES	LECTURE TOPICS	TEACHING AND LEARNING ACTIVITIES	ASSESSMENT TASKS
1	<p>Overview of Epidemiology</p> <p>Definition and Scope of Epidemiology</p> <p>Interaction with Other Disciplines</p> <p>Relationship with Other Disciplines</p> <p>Applications of Epidemiology</p>	Lecture, Discussion	Quizzes, Class Exercise, Recitation
1,2	<p>Disease in Population</p> <p>Case Definition</p>	Lecture, Discussion,	Quizzes, Class Exercise, Assignment



	Natural History of Disease Chain of Infection Factors Influencing Spread of Disease		
2,3	Measures of Disease Frequency The Importance of Counting Absolute Versus Relative Frequency Ratios, Proportions, Rates Measures of Morbidity Measures of Mortality	Lecture, Discussion	Quizzes, Class Exercise, Assignment
3,5	Disease Determinants Host Determinants Agent Determinants Environment Determinants	Lecture, Discussion, Reporting	Quizzes, Class Exercise
3,5	Patterns of Disease Epidemiologic Variables Animal Patterns Temporal Patterns Spatial Patterns	Lecture, Discussion	Quizzes, Class Exercise, Assignment
5,6	Demonstrating Association and Causation Causes of Disease Concept of Risk and Risk Factors Establishing a Cause and Effect Relationship	Lecture, Discussion	Quizzes, Class Exercise, Assignment
4,5,6,7	Types of Epidemiologic Studies Observational Studies Descriptive Studies Analytical Studies Intervention Studies	Lecture, Discussion, Research work	Quizzes, Class Exercise, Assignment
4,6,13	Sampling in Animal Populations The Sampling Process Sampling Methods	Lecture, Discussion	Quizzes, Class Exercise, Assignment



	Sample Size Calculations		
9,13	Diagnostic Tests Screening and Diagnostic Tests Test Characteristics Evaluation of Diagnostic Test Performance Multiple Testing	Lecture, Discussion	Quizzes, Class Exercise, Assignment
9,11	Precision and Validity Precision Methods to Improve Precision Validity Bias and Methods Used to Control Bias Importance of Precision and Validity	Lecture, Discussion	Quizzes, Class Exercise, Assignment
10,11	Outbreak Investigation and Response Steps in Outbreak Investigation Early Detection, Early Response	Lecture, Discussion, Case report	Quizzes, Class Exercise, Assignment
8,11,13	Monitoring and Surveillance Objectives of Surveillance Classification of Surveillance Activities Uses of Surveillance Data Approaches to Surveillance	Lecture, Discussion, Reporting, Research work	Quizzes, Class Exercise
11,12,13	Describing and Analyzing Epidemiologic Data Types of Data Preparing the Data for Analysis Describing and Presenting Data Estimation of Prevalence and 95% Confidence Interval Univariable and Multivariable Analysis	Lecture, Discussion, Report	Quizzes, Class Exercise, Assignment
	Disease Control programs Key Principles and Methods in the		



	Control of Infectious Diseases Zoning and Compartmentalization Stages in Disease Control Programs		
COURSE EVALUATION	Examination 60% Quizzes 20% Class Exercises 20% Passing Score: 75%		
EQUIPMENT	DLP Projector, Laptop, Calculator		
TEXTBOOKS AND REFERENCES	M. Thrusfield. 2007. Veterinary Epidemiology, 3 rd Edition B. Toma, et al. 1999. Dictionary of Veterinary Epidemiology K Rothman & S. Greenland. 1998. Modern Epidemiology, 2 nd Edition R. Fletcher, et al. 1996. Clinical Epidemiology: The Essentials, 3 rd Edition J. Last, 1995. A Dictionary of Epidemiology, 3 rd Edition D. Altman. 1991 Practical Statistics for Medical Research D. Kennedy. 1990. Epidemiology at Work: Refresher Course for Veterinarians D. Kennedy. 1990. Epidemiological Skills in Animal Health S. Martin, et al. 1987. Veterinary Epidemiology: Principles and Methods		

Course Title	Animal Welfare			
Course Description	Principles and Concepts in Animal Welfare			
Credit	2 hours a week (2 class)			
Course Outcomes	After completing the course, the student must be able to: 1. explain the concepts of animal welfare 2. discuss the role and interaction of human society in animal welfare 3. assess animal welfare and issues in different animals 4. formulate veterinary disaster management procedures 5. enumerate ways of protecting animal welfare			
Course Coverage				
Week	COURSE OUTCOMES	TOPIC	TLA	AT
1	CO 1	Course Orientation Introduction to Animal Welfare	Lecture, Discussion	Exam 1
2	CO 1,2	History of Human – Animal Interaction Welfare Assessment and the Five Freedoms	Ppt Lecture/ Discussion	Exam 1
3	CO 1,2	Behaviour and Animal	Ppt Lecture/	Exam 1, Quiz



		Welfare	Discussion	
4	CO 1	Assessment of Animal Welfare – Physiological and Behavioural	Ppt Lecture/ Discussion; Assignment	Exam 1, Quiz
5	CO 1, 2,3	Animal Welfare in Culture and Religion	Ppt Lecture/ Discussion	Exam 1, Quiz
6	CO 1,2,3	Animal Welfare in Entertainment and Special Missions	Ppt Lecture/ Discussion; Group presentation	Exam 1, Group Report
7	CO 1, 2,3	Animal Welfare in Research	Ppt Lecture/ Discussion	Exam 1, Quiz
8	CO 1, 2,3	Animal Welfare of Food and Working Animals	Ppt Lecture/ Discussion; Pictograph	Exam 1
9	CO 1, 2,3	First Long Examination		
10	CO 1, 2,3	Animal Welfare for Wild and Aquatic Animals	Ppt Lecture/ Discussion; video presentation	Exam 2, Quiz
11	CO 1, 2,3	Animal Welfare during transport and market	Ppt Lecture/ Discussion	Exam 2, Discussion
12	CO 1, 2,3	Companion Animal Welfare Animal Welfare Ethics	Ppt Lecture/ Discussion; Case Report	Exam 2, Case Analysis
13	CO 1, 3	Euthanasia and Slaughter	Ppt Lecture/ Recitation	Exam 2, Recitation
14	CO 3,4	Veterinary Disaster Management	Ppt Lecture/ Discussion; Video presentation	Exam 2, Quiz
15	CO 3,5	Animal Welfare Organizations, Laws Animal Welfare and Animal Rights Current Issues and Concerns	Ppt Lecture/ Discussion; Debate	Exam 2. Individual Project
16	CO 12,3,4,5	Second Long Examination		



References

Dunlop RH and Williams DJ. 1996. Veterinary Medicine: An Illustrated History.

Philips C and Piggins D. 1992. Farm Animals and the Environment.

Price EO. 2002. Animal Domestication & Behavior. Oxford, UK: CAB International Publishing.

Rollin BE. 1999. An Introduction to Medical Veterinary Ethics. Theory and Cases.

Tannenbaum J. 1995. Veterinary Ethics: Animal Welfare, Client Relationship, Competition & Collegiality

WAP modules, Concepts in Animal Welfare, 3rd Edition

Course Evaluation

Passing – 70 points; Exemption – 80 points

Final Grade: Pre-final grade – 70%; Final Exam – 30%

Instrument	Description	Points
Examinations	Two written examinations	30
Quizzes, group work, etc.	Regular written and/or oral	30
Presentation	Own choice – presenter, topic, mode	20
Recitation/Discussion	In-class (lecture) and out-class (on-line)	10
Special project	Individual project regarding lessons learned	10
TOTAL		100



**ANNEX D
LABORATORY EQUIPMENT AND SUPPLIES**

A. GROSS VETERINARY ANATOMY

- embalming set
- dissecting set
- mounted gross specimens of different domestic and aquatic animals
- Walk-in freezer

B. MICROSCOPIC ANATOMY

- binocular microscopes with 4 objectives
- embryology slide sets
- histology slide sets

C. ZOOTECHNICS

- poultry house and birds
- poultry equipment such as feeders and waterers
- swine pens and pigs
- barn and ruminants
- horse and stable
- sheep/goats
- weighing scale
- feeds and medications for different animals
- pasture area

D. PHYSIOLOGY

- Binocular microscopes
- Stethoscopes
- Laboratory animals (mice, rat, hamster, guinea pig, rabbit)
- Prepared blood smear slides (dog, cat, horse, pig ruminants, birds, reptiles, amphibians)
- 3-D model of an animal cell
- Prepared giant multipolar neuron slide
- Prepared slide of golgi complex
- 3-D model of glomerulus and bowman's capsule
- Differential cell counter
- Blood chemistry analyzer
- Hematology analyzer
- Kymograph
- Electrocardiograph machine
- Model of organs - heart, larynx, lungs
- Electric clipper
- Doppler
- Sphygmomanometer
- Stethoscope
- Spirometers
- Model of nephron
- Refractometers
- IV set
- IV butterfly or IV catheter
- Stained slides: various stages of estrus in bitch
- Percussion hammer



- Models of ear and eye
- Rectal thermometers
- Microhematocrit centrifuge
- Hemocytometer
- RBC and WBC pipettes
- Glasswares (glass slides, coverslips, grid glass slide ruled in mm, beakers, graduated cylinder, pipettes)
- Blood chemistry kits (calcium, albumin, total protein, creatinine kinase, amylase, lipase, glucose, progesterone, LH)
- Sodium bicarbonate
- Disposable gloves
- ECG gel
- Rubbing alcohol and cotton
- Adhesive bandage
- ECG paper
- Zoletil
- KCl
- Microhematocrit tubes
- Vacutainer with EDTA
- Vacutainer with heparin
- Phenol
- NaOH
- Tincture of iodine
- HCl
- Silver nitrate
- Diphenhydramine HCl injection
- Pepsin

E. PHARMACOLOGY

- laboratory animals
- sample veterinary drugs
- Digital weighing scale (0.1-1000g)
- Analytical weighing scale (1mg-100g)
- Oral gavage needles
- Penlight
- Refrigerator
- Brewer's yeast
- Aspirin suspension
- Paracetamol suspension
- 95% ethanol
- Thiopental sodium
- Caffeine
- Amphetamine
- Acetylcholine
- Physostigmine
- Tubocurarine chloride
- Succinylcholine
- Pilocarpine
- Nicotine
- Isoprenaline
- Digoxin injection
- Magnesium sulfate



- Milk of magnesia (MgOH)
- Mineral oil
- Acetazolamide liquid
- Frusemide injection
- Regular insulin injection
- Thyroxin tablets
- Oxytocin injection
- Syringes (1ml, 3ml, 5ml, 10ml)
- Ether
- Chloroform
- Disposable needles (G25, G23, G21, G19, G17)
- Disposable gloves
- Atropine ampules
- Epinephrine ampules
- Penicillin powder for injection (vial)
- Distilled water for injection
- Restraining muzzle
- Multivitamin tablets
- Multivitamin oral liquid
- Anesthetic drugs such as Lidocaine, Procaine, Tetracaine, Xylazine HCl
- Acepromazine injection
- Pentobarbital sodium
- Diazepam injection
- Dexamethasone injection
- SKF-525A
- Ergonovine injection
- Cotton
- Rubbing alcohol

F. MICROBIOLOGY

- Binocular microscopes – 4 objectives
- Refrigerators – different temperatures
- incubators – aerobic and anaerobic
- aerobic and anaerobic systems for microbes
- bacterial cultures
- bacterial stains
- different bacterial media, reagents and supplies for aerobic and anaerobic bacteria
- petri dishes, glasswares and test tubes
- Inoculating loops and needles
- Pipettes
- Gas supply
- Fume hoods
- Biosafety cabinets
- Laminar flow
- UV lamps
- Elisa Reader and accessories
- Conventional PCR machine and accessories
- Autoclave
- Centrifuge – clinical, eppendorf, hematocrit
- Biofreezer – minus 20; minus 80
- Disinfectants – alcohol



- Weighing scales
- Emergency kit

G. PARASITOLOGY

- Stereomicroscopes
- Inverted microscopes
- Binocular microscopes
- mounted and preserved specimens of parasitic arthropods, protozoa and helminths
- parasitology slide sets
- tissue sections with parasites
- glasswares and reagents
- clinical centrifuge
- McMaster slides

H. PATHOLOGY

- necropsy instruments
- necropsy table
- necropsy specimens
- binocular microscopes
- general pathology slide sets
- systemic pathology slide sets
- histotechnic equipment – for tissue processing such as microtome, etc.
- Histology stains – H & E stain, special stains
- clinical centrifuge
- refractometer
- hematology stains
- glass slides and cover slips
- pipettes
- urinalysis strips
- blood collection paraphernalia and supplies

I. PUBLIC HEALTH

- binocular microscopes
- bacterial media, reagents and supplies
- pH meter
- Colony counter
- Aerobic incubator
- Water bath
- Lactometer
- Water sampler
- BOD bottles
- Dissolved oxygen meter

J. SURGERY

- Pre-operation table
- surgical instruments, needles, sutures (different sizes)
- surgical gowns, mask, caps, drapes
- surgical tables
- surgical lamp
- surgical trays
- gas anesthetic machine and accessories



- stethoscope
- patient monitor
- endoscope (borescope)
- laryngoscope
- oxygen tanks
- veterinary drugs and anesthetics
- IV stands
- autoclave
- autoclave tapes
- disinfectants such as alcohol
- animal cages

K. MEDICINE AND VETERINARY CLINICS

- Binocular microscopes
- Hematology stains
- Hematology analyzer
- Clinical biochemistry analyzer
- Blood gas analyzer
- Glasswares, test tubes
- Specimen container
- ECG machine and accessories
- Ultrasound Machine and accessories
- X-ray machine and accessories
- Gas anesthetic machines and accessories - for small and large animals
- Patient monitor
- Laryngoscope
- Endoscope
- Surgical tables
- Surgical lamps
- IV stands
- Surgical trays and equipment
- Surgical packs – small and large
- Surgical instruments - minor and major surgeries
- Surgical needles and sutures- different sizes
- Stethoscopes, thermometers
- Medical drugs and supplies
- Autoclave
- Refrigerators
- Freezers
- Necropsy tables
- Necropsy equipment
- Animal cages
- Weighing scales – for small and large animals
- Records cabinets

L. OTHERS

- Teaching microscope
- Photomicroscope
- LCD projectors
- Sound system for audio-visual, TV or LED screens



ANNEX E

SUGGESTED LIST OF TEXTBOOKS AND REFERENCES FOR VETERINARY MEDICAL COURSES

1. Veterinary Anatomy

a. Macroscopic Anatomy I

- ◆ Getty, E. 1975 *Sisson and Grossman's The Anatomy of Domestic Animals* 5th ed. Vol. II. WB Saunders, Philadelphia
- ◆ Evans, HE and Christensen, GC. 1979. *Miller's Anatomy of the Dog*. WB Saunders, Philadelphia.
- ◆ De Lahunta, A. 1977. *Veterinary Neuroanatomy and Clinical Neurology*. WB Saunders, Philadelphia.
- ◆ Dyce, KM, Sack, WO, and Wensing, CJC. 1987. *Textbook of Veterinary Anatomy*. WB Saunders, Philadelphia.

b. Macroscopic Anatomy II

- ◆ Getty, R. 1975. *Sisson and Grossman's The Anatomy of Domestic Animals* vol. I and II. WB Saunders, Philadelphia.
- ◆ Nickel, RA, Schummer, A, Seiferle, E., and Sack, WO. 1979. *Viscera of Domestic Animals*. Verlag Paul Parey, Berlin
- ◆ Habel, RE. 1973. *Applied Veterinary Anatomy*. Published by the Author, Ithac, NY
- ◆ Popesko, P. 1980. *Atlas of Topographical Anatomy of Domestic Animals*. WB. Saunders, Philadelphia

C. Embryology

- ◆ Balinsky BI. 1981. *An Introduction to Embryology*. 5th ed. Philadelphia: W.B. Saunders Co.
- ◆ Mathews WW. 1972. *Atlas of Descriptive Embryology*. 1st ed. New York: The Macmillan Co.
- ◆ Noden DM and De Lahunta. 1985. *The Embryology of Domestic Animals*. Baltimore: Williams and Wilkins.
- ◆ De Ocampo GD. 2001. *Lecture Hand-outs in Veterinary Embryology*. 3rd ed. UPCVM, UPLB
- ◆ De Ocampo GD. 2001. *Laboratory Manual in Veterinary Embryology*. 3rd ed. UPCVM, UPLB
- ◆ Patten BM. 1971. *Early Embryology of the Chick and Pig*. 5th ed. New York: McGraw-Hill Book Company, Inc.

d. Histology

- ◆ Aughey E and Frye FL. 2001. *Comparative Veterinary Histology with Clinical Correlates*. Ames, Iowa: Iowa State University Press. Pp.
- ◆ Bacha WJ and Bacha LM. 2000. *Color Atlas of Veterinary Histology*. 2nd ed. Philadelphia: Lea and Febiger.



- ◆ Banks WJ. 1993. *Applied Veterinary Histology*. 3rd ed. St. Louis: Mosby Yearbook, Inc. pp.
- ◆ De Ocampo GD. 2001. *Lecture Hand-outs in Veterinary Histology*. UPCVM, UPLB
- ◆ De Ocampo GD. 2001. *Laboratory Manual in Veterinary Histology*. UPCVM, UPLB
- ◆ De Ocampo GD. 2004. *Veterinary Histology: An Outline Text*. UPCVM, UPLB
- ◆ Dellman HD and Eurell JA. 1998. *Textbook of Veterinary Histology*. 5th ed. Baltimore: Lippincott, Williams and Wilkins.
- ◆ Di Fiore. *Atlas of Human Histology*
- ◆ Ham AW. 1974. *Histology*. 7th ed. Philadelphia and Toronto: J.B. Lippincott Co.
- ◆ Zamora CS. 2000. *Veterinary Histology Tutorial Programs*. College of Veterinary Medicine, Washington State University
- ◆ Dellmann, Horst-Dieter. *Textbook of veterinary histology*, 4th ed. 1993. 351 p.

2. Veterinary Microbiology

a. General Microbiology

- ◆ Balows, Albert. *Manual of Clinical Microbiology* 5th ed. Washington D.C.: American Society for Microbiology, 1991. 1364 p.
- ◆ Hagan, William Arthur . *Hagan and Bruner's Infectious Diseases of Domestic Animals* 8th ed.
- ◆ Hagan, William Arthur. *Microbiology and Infectious Diseases of Domestic Animals*. Latest edition
- ◆ Zinsser, Hans. *Microbiology*. Latest edition. Connecticut: Appleton Century-Crofts

b. Fundamentals of Immunology

- ◆ Tizard Ian R. 2000. *Veterinary Immunology: An Introduction*
- ◆ Wise, DJ. And Carter GR. 2001. *Immunology: A Comprehensive Review*. Blackwell, Ames, Iowa

c. Bacteriology and Mycology

- ◆ J.F Timoney, et. al. 1981. *Hagans and Bruners Microbiology and Infections Diseases of Domestic Animals*
- ◆ Carter, GR and Wise, DJ. 2004. *Essentials of Veterinary Bacteriology and Mycology*. Blackwell, Ames Iowa.
- ◆ Gyles, CL, Thoen, CO, and Prescott, JF. 2004. *Pathogenesis of Bacterial Infections in Animals*. Blackwell, Ames, Iowa.



d. Virology

- ◆ J.F Timoney, et. al. 1981. Hagens and Bruners Microbiology and Infections Diseases of Domestic Animals
- ◆ S. Mohanty 1981. Veterinary Virology

3. Veterinary Pathology

a. General Pathology

- ◆ Cheville, NF. 1999. Introduction to Veterinary Pathology. Blackwell, Ames, Iowa.
- ◆ Thomson, R.G. General veterinary pathology, 2nd ed. 1984

b. Systemic Pathology

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5. DVM 360 (formerly DVM News Magazine)
6. FAO / IAEA Animal Production and Health Newsletter
7. Iranian Journal of Veterinary Research
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12. Journal of Protozoology Research
13. Journal of Veterinary Medical Science
14. Journal of Veterinary Science
15. Journal of Zoo And Wildlife Medicine
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17. Journal of the American Animal Hospital Association
18. Journal of the Veterinary Diagnostic Investigation
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20. Research in Veterinary Science
21. Small Animal Practice
22. The Veterinary Clinics of North America: Food Animal Practice
23. Veterinary Pathology
24. Veterinary Surgery
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29. Ceylon Journal of Science (Biological Science)
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