

PROGRAM SPECIFICATION

Program title: Veterinary Medicine

Degree: Undergraduate

Program: Doctor of Veterinary Medicine

Program code: 526401

Type of program: Full-time

Program duration: 05 years

Total required credits: 160

Degree name: Doctor of Veterinary Medicine

Awarding Institution: Vietnam National University of Agriculture

1. PROGRAM EDUCATIONAL OBJECTIVES AND LEARNING OUTCOMES

1.1 Program educational objectives (POs)

General objectives of program

The program aims to train students become veterinarians who gain strong political character, good health and attitudes, professional knowledge and skills, meeting the human resource needs of society in the field of veterinary medicine.

Specific objectives of program

For the first few years after graduation, graduates can:

PO1: To diagnose, prevent, treat, and control animal diseases professionally and heartily towards protecting human health, animal welfare and the ecosystem.

PO2: To pursue lifelong learning, innovation and creativity to solve practical severe problems.

PO3: To contribute significantly to sustainable development and international integration of the animal health and production sectors of Vietnam.

1.2 Program learning outcomes (PLOs)

Upon completion of the program, students are able to:		
	<i>PLOs</i>	<i>PPC</i>
<i>General knowledge</i>	PLO1: Apply the natural and social science knowledge and understanding of contemporary issues to the field of veterinary medicine.	1.1: Apply natural science knowledge (math, chemistry, biology, environment) to the field of veterinary medicine 1.2: Apply social science knowledge (politics, economics) and the understanding of contemporary issues to the field of veterinary medicine

Upon completion of the program, students are able to:		
	<i>PLOs</i>	<i>PPC</i>
Professional knowledge	PLO2: Apply veterinary knowledge to the prevention and control of animal diseases effectively	2.1: Apply veterinary knowledge to analyze natural, economic, and social factors related to animal disease prevention and control 2.2: Apply veterinary knowledge to design animal disease prevention and control programs 2.3: Apply veterinary knowledge to implement animal disease prevention and control programs
	PLO3: Apply veterinary knowledge to the animal disease diagnosis and treatment effectively.	3.1: Apply veterinary knowledge to monitor animal health 3.2: Apply veterinary knowledge to treat animals 3.3: Apply veterinary knowledge to evaluate the effectiveness of diagnosis and treatment 3.4: Apply veterinary knowledge to improve animal health
	PLO4: Design programs for diagnosis and treatment of disease for domestic animals, procedures for disease prevention and control for animals according to prescribed standards.	4.1: Design programs for diagnosis and treatment of disease for domestic animals according to prescribed standards. 4.2: Create disease prevention and control strategy for animals according to prescribed standards.
General skills	PLO5: Apply critical and creative thinking and evidence-based inference to solve veterinary problems effectively.	5.1: Apply critical and creative thinking and evidence-based inference to demonstrate critical ability in analyzing and evaluating information and data 5.2: Apply critical and creative thinking and evidence-based inference to demonstrate critical ability in analyzing and evaluating arguments 5.3: Apply critical and creative thinking and evidence-based inference to demonstrate problem-solving abilities including identifying problems, defining when and how to gather information, evaluating and selecting essential information for problem-solving 5.4: Apply critical and creative thinking and evidence-based inference to demonstrate different and creative ideas, and creativity when solving problems
	PLO6: Work in team as a member or the leader to achieve proposed goals.	6.1: Demonstrate planning and time management skills during teamwork 6.2: Develop internal relationships including establishing connections, resolving conflicts, and developing external relations during teamworking 6.3: Evaluate performance of individuals and team for continuous improvement
	PLO7: Communicate effectively using multimedia means and in multicultural	7.1: Use context-appropriate language for academic and social communication 7.2: Comprehend the importance of communication factors: feelings, emotions, and values

Upon completion of the program, students are able to:		
	PLOs	PPC
	environments; Use information technology proficiently for work achieve B1- level English according to regulation of the Ministry of Education and Training.	7.3: Behave appropriately towards stakeholders within diverse environment; respect multicultural differences 7.4: Use information technology proficiently for work 7.5: Use B1-level English for communication
Professional skills	PLO8: Implement proficiently clinical and non-clinical skills, technical procedures in disease diagnosis and treatment for domestic animals, and animal disease prevention and control to contribute to the protection of public health	8.1: Implement proficiently clinical and non-clinical skills, and technical procedures in the disease diagnosis and treatment for animals to contribute to the protection of public health 8.2: Implement proficiently clinical and non-clinical skills, technical procedures in animal disease prevention and control to contribute to the protection of public health
	PLO9: Consult on techniques, technology and business in the veterinary field to bring economic benefits with consideration of human safety, animal health, and the ecological environment.	9.1: Consult on veterinary techniques oriented to bring economic benefits 9.2: Consult on technology in the veterinary field. 9.3: Consult on business in the field of veterinary oriented to bring economic benefits
	PLO10: Use proficiently information technology and modern equipment of the veterinary industry to serve animal disease diagnosis, treatment, prevention and management to achieve the set goals	10.1: Use information technology for animal disease diagnosis, treatment, prevention and management to achieve the set goals 10.2: Use modern veterinary equipment for animal disease diagnosis, treatment, prevention and management to achieve the set goals
	PLO11: Research to solve the problems in the veterinary field successfully	11.1: Apply survey and research skill to identify research problems 11.2: Apply scientific research methods appropriately include assess accurately the strengths, weaknesses, similarities, and differences of the survey methods to select the appropriate methods 11.3: Apply exactly survey and research methods 11.4: Apply research result to solve successfully veterinary issues

Upon completion of the program, students are able to:		
	<i>PLOs</i>	<i>PPC</i>
Autonomy and Responsibility	PLO12: Comply with regulations and law, maintain professional ethics	12.1: Comply with regulations and laws of veterinary 12.2: Maintain professional ethics of veterinarians
	PLO13: Demonstrate responsibility to protect the environment, improve public health and show love for animals	13.1: Demonstrate responsibility to protect the environment, improve human health through veterinary work 13.2: Show love for animals
	PLO14: Define clearly the future direction and willingness for life-long learning to respond to the rapid changes in veterinary field in the context of globalization.	14.1: Define clearly the future direction 14.2: Define long-term learning orientation to improve the knowledge and competences of veterinarians 14.3: Look for learning opportunities to improve the knowledge and competences of veterinarians 14.4: Prepare life-long learning competences to respond to the rapid changes in the veterinary field in the context of globalization

2. CAREER PROSPECTS

Doctor of veterinary medicine can work in the positions and workplaces as bellows:

- **Positions:**
 - Veterinary practice (office, freelance therapy)
 - Trading in veterinary drugs, animal feed, and science and technology services on animal husbandry
 - Farm management
 - Animal disease management (managers, quarantine officers at state management agencies in the field of veterinary medicine)
 - The agricultural extension (consultation, training, training in veterinary medicine)
 - Research in the field of veterinary medicine (research institutes, centers, companies)

- **Work places:**

The graduated students can work at:

- The companies are engaged in the production and trading of veterinary drugs and animal feeds nationwide.
- Vet clinics and hospital
- Wildlife sanctuaries; botanical garden; centre for veterinary science and technology research and transfer; livestock breeding farm, food processing companies, seafood processing companies, ecological environment protection establishments
- Department of Animal Health, Research Institute, Provincial Veterinary Sub-Department, Regional Veterinary Agency, District Veterinary Station
- Universities
- The own business activities

- Working abroad such as: Japan, Korea, Israel, other Southeast Asian countries.
- Working for International Organizations in Vietnam, International projects and programs related to Livestock, Veterinary Medicine and Fisheries.

- ***Post-graduate study opportunities***

The doctors graduating from the Veterinary Medicine program can continue to study and research further at master and doctoral levels in the Veterinary Medicine and other related fields in Vietnam and abroad such as Biotechnology, Food Hygiene and Public Health.

3. ADMISSION TO THE PROGRAM

Applicants must satisfy the University's general and specific requirements for admission to the program:

**** Vietnamese students***

People who graduated from high school can be recruited by 3 methods: (1) Direct entrance/admission to the university; (2) Based on high school academic results; (3) Based on the results of the national high school graduation exam organized by the Ministry of Education and Training

(Note: Enrollment methods are reviewed and may change from year to year)

**** International students***

International students who graduated from high school and submit academic transcripts and a motivation letter to the International Cooperation Office. The International Cooperation Office will be responsible to contact with Office of Education Management and relevant faculties for approval.

4. EDUCATIONAL PHILOSOPHY, TEACHING AND LEARNING STRATEGIES

**** Educational Philosophy:***

Students approach to master knowledge and gain experience through practice based on putting learners at the centre to bring values to them such as: knowledge discovery, practical experience, belief, learning motivation, equity, cooperation and flexibility.

**** Teaching and learning strategy***

Organizational learning is through practice with a learner-centered perspective of the program according to the knowledge roadmap, with enough lecture halls, learning facilities and practice environment. Teaching methods are designed and used flexibly according to each module and each stage of the learning process. Methods used include: Lectures, practice curriculum, case studies, student exchange.

5. ASSESSMENT METHODS

Evaluation of Veterinary students is a process and final assessment. The assessment methods are designed to assess and measure the knowledge, skills, attitudes and perceptions of students in each module. Assessment methods have specific and clear criteria based on rubric of assessment content and are published to students.

For assessment of the course and at the end of the course: The students are assessed based on their participation in the course, through exercises and short tests; seminars, exercises and group discussions; Pair discussion, interview, multiple choice, assignment and essay.

For the summative assessment: The training output standards includes making the graduation thesis and defending the graduation thesis. The final course evaluation includes the assessment of the graduate thesis instructor and the dissertation committee on knowledge, skills, attitudes and perceptions from the time the thesis is delivered to the time of defense.

6. REGULATION OF ASSESSMENT AND ACADEMIC STANDARDS

Grading system: 4

Summary of grade and mark classification

No.	10-point scale GPA	4-point scale GPA		Pass/Fail	Classification
		Grade	Score		
1	8.5 – 10	A	4.0	Pass	Outstanding
2	8.0 – 8.4	B+	3.5	Pass	Excellent
3	7.0 – 7.9	B	3.0	Pass	Good
4	6.5 – 6.9	C+	2.5	Pass	Good
5	5.5 – 6.4	C	2.0	Pass	Pass
6	5.0 – 5.4	D+	1.5	Pass	Pass
7	4.0 – 4.9	D	1.0	Conditional Pass	Conditional Pass
8	< 4.0	F	0	Fail	Fail

Summary of Degree classification

No.	Cumulative Point Average	Degree classification
1	3.60 – 4.00	Outstanding
2	3.20 – 3.59	Excellent
3	2.50 – 3.19	Good
4	2.00 – 2.49	Pass
5	< 2.00	Fail

Training process:

The program is organized in semesters, 2 semesters/year. The maximum time for studying is 5 years.

Students accumulating 160 credits, of which 39 credits for general knowledge, 34 credits for fundamental knowledge and 77 credits for specialized knowledge (67 compulsory credits, 10 elective credits).

Award requirements:

Students are eligible to graduate program only when completing all 160 credits of the program, having accumulative point average above 2.0 and minimum TOEIC English score of 400 or equivalent, achieving physical and Citizen Military Training and soft skill certificates, having paid all tuition fees, completed students' obligations and submitted forms to Office of Education Management of the University for graduation.

7. CURRICULUM STRUCTURE & CONTENT

Curriculum structure

GENERAL COURSES (29 credits) POLITICS (11 credits) 1. Philosophy of marxism and Leninism (3) 2. Political economics of marxism and leninism (2) 3. Scientific socialism (2) 4. History of the Communist Party of Vietnam (2) 5. Ho Chi Minh Ideology (2) LAW 1. Basic law (2) MATHEMATICS (6 credits) 1. Higher mathematics (3) 2. Probability and statistics (3) SCIENCE (10 credits) 1. General biology (2) 2. Organic chemistry (2) 3. Analytic chemistry (2) 4. General Microbiology (2) 5. General biochemistry (2)	FOUNDATIONAL COURSES (34 credits) 1. Zoology (3) 2. Terminology (1) 3. Animal biochemistry (2) 4. Animal physiology 1 (2) 5. Animal physiology 2 (2) 6. Veterinary immunology (2) 7. Veterinary microbiology (3) 8. Veterinary Pathology 1 (2) 9. Veterinary Pathology 2 (3) 10. Veterinary Pharmacology (3) 11. Veterinary medicinal herbs (2) 12. Domestic animal anatomy 1 (3) 13. Domestic animal anatomy 2 (2) 14. Histology 1 (2) 15. Histology 2 (2)	SPECIALISED COURSES (39 credits) COMPULSORY (29 credits) 1. Veterinary diagnosis (2) 2. Veterinary internal medicine 1 (3) 3. Veterinary internal medicine 2 (2) 4. Veterinary epidemiology (2) 5. Veterinary infectious diseases 1 (2) 6. Veterinary infectious diseases 2 (2) 7. Veterinary law (1) 8. Veterinary Surgery (2) 9. Veterinary theriogenology 1 (2) 10. Veterinary theriogenology 2 (2) 11. Veterinary parasitology 1 (2) 12. Veterinary Parasitology 2 (2) 13. Veterinary Inspection (3) 14. Animal-originated food safety (2) ELECTIVE (10 credits) Research orientation 1. Zoonotic diseases (3) 2. Wild animal Diseases (2) 3. Applied Immunology (2) 4. Animal Welfare (2) 5. Poultry production (3) 6. Veterinary Drug Inspection (2) 7. Aqua Diseases (3) 8. Nutrition disorders (2) 9. Api Diseases (2) 10. Experimental Methods (2) 11. Veterinary Toxicology (2) 12. Veterinary Mycology (2) 13. Veterinary Embryology (2) 14. Animal Nutrition (3) 15. Veterinary Parasitic Immunology (2) Clinical orientation 1. Veterinary Practical Surgery (3) 2. Veterinary Acupuncture (2) 3. Dog and cat diseases (2) 4. Veterinary diagnostic Imaging (2) 5. Pig production (3) 6. Cattle and Buffalo Production (2) 7. Animal feed (2) 8. Clinical Pharmacology (2)	ECONOMIC MANAGEMENT AND ENVIRONMENT (10 credits) COMPULSORY (10 credits) 1. One health in Veterinary Medicine (2) 2. Basics of Marketing 1 (2) 3. Management of Environment (2) 4. Veterinary hygiene 1 (2) 5. Veterinary hygiene 2 (2)	VETERINARIAN (160 credits) GRADUATION THESIS (10 Credits) CONDITIONAL COURSES (non-credit) 1. Physical Education (0) 2. National Defense Education (0)
SUPPLEMENTAL COURSES (10 credits) Information technology (2 credits) 1. Basics of Informatics Language (8 credits) 1. Supplementary English (0) 2. Pre-English (0) 3. English 1 (3) 4. English 2 (3) 5. Professional English (2)				PROFESSIONAL PRACTICE (SKILL PRACTICE, INTERNSHIP)* (28 Credits) 1. Veterinary Professional Skill Practice 1 (4) 2. Veterinary Professional Skill Practice 2 (4) 3. Diagnosis and Internal medicine Internship (4) 4. Infectious Disease Internship (4) 5. Surgery-Theriogenology Internship (6) 6. Parasitology Internship (3) 7. Veterinary Inspection – Food safety Internship (3) *Professional practice is held at school and in an external veterinary facility:: - Skill practice: Students practice professional skills in the laboratory or veterinary hospital at school. - Internship: Students go to the external veterinary facility for 2-3 weeks to practice their profession.

Curriculum content

No	Year	Course Code	Course name	Credits	Theory	Practice	Course status	Prerequisite course
1	1	SH01001	General biology	2	1.5	0.5	Compulsory	None
2	1	TH01011	Higher mathematics	3	3	0	Compulsory	None
3	1	MT01004	Analytic chemistry	2	1.5	0.5	Compulsory	None
4	1	MI01020	Philosophy of Marxism and Leninism	3	3	0	Compulsory	None
5	1	MT01002	Organic chemistry	2	1.5	0.5	Compulsory	None
6	1	TY02005	General Microbiology	2	1.5	0.5	Compulsory	None
7	1	TH01009	Basics of informatics	2	1.5	0.5	Compulsory	None
8	2	TH01007	Probability and statistics	3	3	0	Compulsory	Higher mathematics
9	2	ML01021	Political economics of Marxism and Leninism:	2	2	0	Compulsory	None
10	2	CN02301	General biochemistry	2	1.5	0.5	Compulsory	Organic Chemistry
11	2	ML01009	General Laws	2	2	0	Compulsory	None
12	3	ML01022	Scientific Socialism	2	2	0	Compulsory	None
13	2	ML 010052	Ho Chi Minh Ideology	2	2	0	Compulsory	Philosophy of marxism and Leninism
14	5	ML01023	History of the Communist Party	2	2	0	Compulsory	None
15	2	SN01032	English 1	3	3	0	Compulsory	None
16	4	SN01033	English 2	3	3	0	Compulsory	English 1

No	Year	Course Code	Course name	Credits	Theory	Practice	Course status	Prerequisite course
17	8	SN03055	English for Veterinary Medicine	2	2	0	Compulsory	English 2
Fundamental knowledge								
1	2	CN02101	Zoonology	2	1.5	0.5	Compulsory	General Biology
2	2	TY01002	Terminology	3	3	0	Compulsory	None
3	3	CN02302	Animal biochemistry	2	1.5	0.5	Compulsory	General Biochemistry
4	3	TY02014	Veterinary immunology	2	2	0	Compulsory	General microbiology
5	3	CN02303	Animal physiology 1	2	1.5	0.5	Compulsory	Zoonology
6	3	TY02001	Domestic animal anatomy 1	3	2	1	Compulsory	Zoonology
7	3	TY02003	Histology 1	2	1.5	0.5	Compulsory	Zoonology
8	4	TY02002	Domestic animal anatomy 2	2	1	1	Compulsory	Domestic animal anatomy 1
9	4	TY02004	Histology 2	2	1.5	0.5	Compulsory	Histology 1
10	4	CN02305	Animal physiology 1	2	1.5	0.5	Compulsory	Animal physiology
11	4	TY02019	Veterinary microbiology	3	2.5	0.5	Compulsory	General Microbiology
12	4	TY02020	Veterinary pathology 1	2	1.5	0.5	Compulsory	Animal physiology 1
13	4	TY02006	Veterinary pharmacology	3	2.5	0.5	Compulsory	None
14	5	TY02011	Veterinary pathology 1	3	2	1	Compulsory	Veterinary pathology 1

No	Year	Course Code	Course name	Credits	Theory	Practice	Course status	Prerequisite course
15	5	TY02012	Veterinary medicinal herbs	2	1.5	0.5	Compulsory	Veterinary pharmacology
Specialized knowledge								
1	5	TY03049	Veterinary diagnosis	2	1.5	0.5	Compulsory	Domestic animal anatomy 1
2	6	TY03008	Veterinary Surgery	3	2.5	0.5	Compulsory	Domestic animal anatomy 1
3	6	TY03053	Veterinary theriogenology 1	2	1.5	0.5	Compulsory	Animal physiology 1
4	6	TY03002	Veterinary internal medicine 1	2	1.5	0.5	Compulsory	Veterinary diagnosis
5	7	TY03003	Veterinary internal medicine 2	2	1.5	0.5	Compulsory	Veterinary internal medicine 1
6	7	TY03060	Veterinary epidemiology	2	1.5	0.5	Compulsory	Veterinary microbiology
7	7	TY03011	Veterinary parasitology 1	2	1.5	0.5	Compulsory	Veterinary pathology 1
8	7	TY03051	Veterinary infectious diseases 1	2	1.5	0.5	Compulsory	Veterinary infectious diseases 1
9	8	TY03006	Veterinary infectious diseases 2	2	1.5	0.5	Compulsory	Veterinary infectious diseases 1 1
10	8	TY03007	Veterinary Law	1	1	0	Compulsory	Veterinary infectious diseases 1
11	8	TY03010	Veterinary theriogenology 2	2	1.5	0.5	Compulsory	Veterinary theriogenology 1
12	8	TY03054	Veterinary parasitology 2	2	1.5	0.5	Compulsory	Veterinary Parasitology 1

No	Year	Course Code	Course name	Credits	Theory	Practice	Course status	Prerequisite course
13	9	TY03013	Veterinary inspection	3	2.5	0.5	Compulsory	Veterinary infectious diseases 1
14	9	TY03016	Animal-originated food safety	2	1.5	0.5	Compulsory	Veterinary hygiene 1
15	5	CN02701	Experimental Design	2	1.5	0.5	Elective	Probability and statistics
16	5	TY03001	Veterinary Toxicology	2	1.5	0.5	Elective	Veterinary pharmacology
17	5	TY02009	Veterinary mycology	2	1.5	0.5	Elective	None
18	5	TY02007	Embryology	2	1.5	0.5	Elective	None
19	5	CN02601	Animal Nutrition	3	2.5	0.5	Elective	Animal Biochemistry
20	7	TY03040	Zoonosis	3	2.5	0.5	Elective	Infectious diseases 1
21	7	TY03028	Wild animal diseases	2	1.5	0.5	Elective	None
22	7	TY03021	Veterinary drug production and inspection	2	1.5	0.5	Elective	None
23	7	TY03037	Animal Welfare	2	1.5	0.5	Elective	None
24	7	TY03024	Nutrition disorder	2	1.5	0.5	Elective	None
25	7	TY03023	Veterinary Practical surgery	3	1.5	1.5	Elective	None
26	7	TY03022	Veterinary acupuncture	2	1.5	0.5	Elective	Domestic animal anatomy 1
27	8	TY03017	Applied Immunology	2	1.5	0.5	Elective	Veterinary Immunology
28	8	CN03503	Poultry Production	3	2.5	0.5	Elective	None
29	8	TY 03025	Veterinary radiology	2	1.5	0.5	Elective	Veterinary diagnosis
30	8	CN03501	Pig production	3	2.5	0.5	Elective	None

No	Year	Course Code	Course name	Credits	Theory	Practice	Course status	Prerequisite course
31	8	CN03502	Cattle and buffalo productions	3	2.5	0.5	Elective	None
32	8	TY03019	Aqua diseases	3	2	1	Elective	None
33	9	NH03082	Api Disease	2	1.5	0.5	Elective	None
34	9	TY 03018	Dog and cat diseases	2	1.5	0.5	Elective	None
35	9	CN03302	Animal feed	2	1.5	0.5	Elective	Animal Nutrition
36	9	TY03020	Clinical pharmacology	2	1.5	0.5	Elective	Veterinary toxicology
37	9	TY03056	Veterinary Parasitology Immunology	2	1.5	0.5	Elective	None
38	5	KQ03107	Basic Marketing	2	2	0	Compulsory	None
39	7	TY03014	One Health in Veterinary Medicine	2	1.5	0.5	Compulsory	General microbiology
40	8	TY03055	One Health in Veterinary Medicine	2	2	0	Compulsory	None
41	9	MT02011	Management of Environment	2	2	0	Compulsory	None
42	9	TY03015	Veterinary hygiene 2	2	1.5	0.5	Compulsory	Veterinary hygiene 1
43	3	TY03048	Veterinary Professional Skill Practice 1	4	0	4	Compulsory	None
44	6	TY03043	Diagnosis and Internal Medicine Internship	4	0	4	Compulsory	Veterinary internal medicine 1
45	6	TY03045	Surgery - Theriogenology Internship	6	0	6	Compulsory	Veterinary Surgery/Veterinary theriogenology 1

No	Year	Course Code	Course name	Credits	Theory	Practice	Course status	Prerequisite course
46	7	TY03061	Veterinary Professional Skill Practice 2	4	0	4	Compulsory	Veterinary Surgery
47	8	TY03044	Veterinary infectious diseases Internship	4	0	4	Compulsory	Infectious diseases 2
48	9	TY03046	Parasitology Internship	3	0	3	Compulsory	Veterinary Parasitology
49	9	TY03047	Vet. Inspection - Food safety Internship	3	0	3	Compulsory	Veterinary inspection

Sum total of credits of the Curriculum

General knowledge	<i>39 credits</i>
Fundamental knowledge	<i>34 credits</i>
Professional knowledge	<i>77 credits: 67 Compulsory + 10/52 Elective</i>
Thesis	10 credits
Total credits	160

8. STUDY PLAN

Year	Semester	Course code	Course name	Compulsory/Elective	Total credit	Lecture	Practice	Prerequisite course
1	1	SH01001	General biology	Compulsory	2	1.5	0.5	None
1	1	TH01011	Higher mathematics	Compulsory	3	3	0	None
1	1	MT01004	Analytic chemistry	Compulsory	2	1.5	0.5	None
1	1	MI01020	Philosophy of Marxism and Leninism	Compulsory	3	3	0	None
1	1	MT01002	Organic chemistry	Compulsory	2	1.5	0.5	None
1	1	TY02005	General Microbiology	Compulsory	2	1.5	0.5	None
1	1	TH01009	Basics of informatics	Compulsory	2	1.5	0.5	None
1	2	TH01007	Probability and statistics	Compulsory	3	3	0	Higher mathematics
1	2	ML01021	Political economics of Marxism and Leninism:	Compulsory	2	2	0	None
1	2	CN02301	General biochemistry	Compulsory	2	1.5	0.5	Organic Chemistry
1	2	ML01009	General Laws	Compulsory	2	2	0	None
2	3	ML01022	Scientific Socialism	Compulsory	2	2	0	None
2	2	ML 010052	Ho Chi Minh Ideology	Compulsory	2	2	0	Philosophy of Marxism and Leninism
3	5	ML01023	History of the Communist Party	Compulsory	2	2	0	None
1	2	CN02101	Zoonology	Compulsory	3	2	1	General Biology
1	2	TY01002	Terminology	Compulsory	1	1	0	None
1	2	SN01032	English 1	Compulsory	3	3	0	None
2	3	CN02302	Animal biochemistry	Compulsory	2	1.5	0.5	General Biochemistry
2	3	TY02014	Veterinary immunology	Compulsory	2	2	0	General microbiology
2	3	CN02303	Animal physiology 1	Compulsory	2	1.5	0.5	Zoonology
2	3	TY02001	Domestic animal anatomy 1	Compulsory	3	2	1	Zoonology
2	3	TY02003	Histology 1	Compulsory	2	1.5	0.5	Zoonology
2	4	TY02002	Domestic animal anatomy 2	Compulsory	2	1	1	Domestic animal anatomy 1
2	4	TY02004	Histology 2	Compulsory	2	1.5	0.5	Histology 1
2	4	CN02305	Animal physiology 1	Compulsory	2	1.5	0.5	Animal physiology

Year	Semester	Course code	Course name	Compulsory/Elective	Total credit	Lecture	Practice	Prerequisite course
2	4	SN01033	English 2	Compulsory	3	3	0	English 1
2	4	TY02019	Veterinary microbiology	Compulsory	3	2.5	0.5	General Microbiology
2	4	TY02020	Veterinary pathology 1	Compulsory	2	1.5	0.5	Animal physiology 1
2	4	TY02006	Veterinary pharmacology	Compulsory	3	2.5	0.5	None
2	5	TY02011	Veterinary pathology 1	Compulsory	3	2	1	Veterinary pathology 1
2	5	TY02012	Veterinary medicinal herbs	Compulsory	2	1.5	0.5	Veterinary pharmacology
3	5	TY03049	Veterinary diagnosis	Compulsory	2	1.5	0.5	Domestic animal anatomy 1 1 (3)
3	6	TY03008	Veterinary Surgery	Compulsory	3	2.5	0.5	Domestic animal anatomy 1 1
3	6	TY03053	Veterinary theriogenology 1	Compulsory	2	1.5	0.5	Animal physiology 1
3	6	TY03002	Veterinary internal medicine 1	Compulsory	2	1.5	0.5	Veterinary diagnosis (2)
4	7	TY03003	Veterinary internal medicine 2	Compulsory	2	1.5	0.5	Veterinary internal medicine 1
4	7	TY03060	Veterinary epidemiology	Compulsory	2	1.5	0.5	Veterinary microbiology (2)
4	7	TY03011	Veterinary parasitology 1	Compulsory	2	1.5	0.5	Veterinary pathology 1 (2)
4	7	TY03051	Veterinary infectious diseases 1	Compulsory	2	1.5	0.5	Veterinary infectious diseases 1
4	8	SN03055	English for Veterinary Medicine	Compulsory	2	2	0	English 2
4	8	TY03006	Veterinary infectious diseases 2	Compulsory	2	1.5	0.5	Veterinary infectious diseases 1 1 (2)
4	8	TY03007	Veterinary Law	Compulsory	1	1	0	Veterinary infectious diseases 1 1 (2)
4	8	TY03010	Veterinary theriogenology 2	Compulsory	2	1.5	0.5	Veterinary theriogenology 1
4	8	TY03054	Veterinary parasitology 2	Compulsory	2	1.5	0.5	Veterinary Parasitology 1

Year	Semester	Course code	Course name	Compulsory/Elective	Total credit	Lecture	Practice	Prerequisite course
5	9	TY03013	Veterinary inspection	Compulsory	3	2.5	0.5	Veterinary infectious diseases 1 1 (2)
5	9	TY03016	Animal-originated food safety	Compulsory	2	1.5	0.5	Veterinary hygiene 1
3	5	CN02701	Experimental Design	Elective	2	1.5	0.5	Probability and statistics
3	5	TY03001	Veterinary Toxicology	Elective	2	1.5	0.5	Veterinary pharmacology
3	5	TY02009	Veterinary mycology	Elective	2	1.5	0.5	None
3	5	TY02007	Embryology	Elective	2	1.5	0.5	None
3	5	CN02601	Animal Nutrition	Elective	3	2.5	0.5	Animal Biochemistry
4	7	TY03040	Zoonosis	Elective	3	2.5	0.5	Infectious diseases 1
4	7	TY03028	Wild animal diseases	Elective	2	1.5	0.5	None
4	7	TY03021	Veterinary drug production and inspection	Elective	2	1.5	0.5	None
4	7	TY03037	Animal Welfare	Elective	2	1.5	0.5	None
4	7	TY03024	Nutrition disorder	Elective	2	1.5	0.5	None
4	7	TY03023	Veterinary Practical surgery	Elective	3	1.5	1.5	None
4	7	TY03022	Veterinary acupuncture	Elective	2	1.5	0.5	Domestic animal anatomy 1 1 (3)
4	8	TY03017	Applied Immunology	Elective	2	1.5	0.5	Veterinary Immunology (2)
4	8	CN03503	Poultry Production	Elective	3	2.5	0.5	None
4	8	TY 03025	Veterinary radiology	Elective	2	1.5	0.5	Veterinary diagnosis (2)
4	8	CN03501	Pig production	Elective	3	2.5	0.5	None
4	8	CN03502	Cattle and buffalo productions	Elective	3	2.5	0.5	None
4	8	TY03019	Aqua diseases	Elective	3	2	1	None
5	9	NH03082	Api Disease	Elective	2	1.5	0.5	None
5	9	TY 03018	Dog and cat diseases	Elective	2	1.5	0.5	None
5	9	CN03302	Animal feed	Elective	2	1.5	0.5	Animal Nutrition
5	9	TY03020	Clinical pharmacology	Elective	2	1.5	0.5	Veterinary toxicology

Year	Semester	Course code	Course name	Compulsory/Elective	Total credit	Lecture	Practice	Prerequisite course
5	9	TY03056	Veterinary Parasitology Immunology	Elective	2	1.5	0.5	None
3	5	KQ03107	Basic Marketing	Compulsory	2	2	0	None
4	7	TY03014	One Health in Veterinary Medicine	Compulsory	2	1.5	0.5	General microbiology
4	8	TY03055	One Health in Veterinary Medicine	Compulsory	2	2	0	None
5	9	MT02011	Management of Environment	Compulsory	2	2	0	None
5	9	TY03015	Veterinary hygiene 2	Compulsory	2	1.5	0.5	Veterinary hygiene 1
2	3	TY03048	Veterinary Professional Skill Practice 1	Compulsory	4	0	4	None
3	6	TY03043	Diagnosis and Internal Medicine Internship	Compulsory	4	0	4	Veterinary internal medicine 1
3	6	TY03045	Surgery - Theriogenology Internship	Compulsory	6	0	6	Veterinary Surgery/Veterinary theriogenology 1
4	7	TY03061	Veterinary Professional Skill Practice 2	Compulsory	4	0	4	Veterinary Surgery
4	8	TY03044	Veterinary infectious diseases Internship	Compulsory	4	0	4	Infectious diseases 2
5	9	TY03046	Parasitology Internship	Compulsory	3	0	3	Veterinary Parasitology
5	9	TY03047	Vet. Inspection - Food safety Internship	Compulsory	3	0	3	Veterinary inspection
5	10	TY04998	Graduation Thesis	Compulsory	10	0	10	Veterinary Professional Skill Practice 2

9. COURSE CONTENT AND WORK LOAD

9.1. General courses

- SH01001. General Biology. (2 credits: 1.5-0.5-4). Content:** Overview of living organism organization; Cell structure; Cell division and reproduction; Sensitivity and adaptation of organisms; Evolution.
- TH01011. Advanced Mathematics. (3 credits: 3-0-6). Content:** The course includes basic knowledge about matrices, determinants, systems of linear equations; differential calculus functions of one variable and functions of many variables; calculus of integral functions of one

variable and basic concepts of differential equations, how to solve some first order differential equations.

3. **MT01004. Analytical Chemistry. (2 credits: 1.5-0.5-4). Content:** Concept, role of analytical chemistry, method classification; Basic concepts in analytical chemistry. Basic principles, influencing factors, how to calculate results in precipitation mass analysis method. Principles, basic concepts, requirements of titration reactions, classification of titration methods, preparation of standard solutions, construction of titration curves, selection of indicators, calculation of results in methods analytical method for the mass of the precipitate.
4. **ML01020. Philosophy of Marxism and Leninism. (3 credits: 3-0-9; 135). Content:** The course consists of 3 chapters to help students have a basic and systematic understanding of the Marxist-Leninist philosophy, building a materialistic worldview and a materialist dialectical methodology. Contents include: Philosophy and the role of philosophy in life; dialectical materialism, including matter and consciousness, materialist dialectic, cognitive theory of dialectical materialism; historical materialism, including issues of socio-economic form, class and nation, state and social revolution, social consciousness, philosophy of man.
5. **MT01002. Organic Chemistry. (2 credits: 1.5-0.5-4; 90). Content:** Basic theory of organic chemistry: Isomerism and mutual influence between atoms, groups of atoms in molecules of organic compounds. Structure and basic properties of important organic functional groups. The main mechanism of organic reactions. Structure and properties of some natural organic groups: Glucose, lipids, amino acids, proteins, alkaloids, terpenoids... 3 exercises in wet laboratory.
6. **TY02005. General microbiology. (2 credits: 1.5-0.5-4). Content:** Objects and development history of microbiology. The role of microorganisms in production and life, morphology and structure of microbial groups, microbial physiology, bacterial genetics, viruses, distribution of microorganisms in nature, the influence of external factors on microorganisms.
7. **TH01009. Introduction to Informatics. (2 credits: 1.5-0.5-4). Content:** General introduction to informatics; Computer structure; Computer software and operating systems; Computer networks and the Internet; Social issues of information technology; MS Word and MS PowerPoint; MS Excel.
8. **TH02002. Probability and Statistics. (3 credits: 3-0-6). Content:** The course consists of 6 chapters with the content: Descriptive statistics; Probability; Random variable; Parameter estimation; Statistical hypothesis testing; Correlation and regression.
9. **ML01021. Political economy of Marxism and Leninism. (Credits: 2-0-6; 90). Content:** The course consists of 6 chapters to help students understand the basic and core knowledge of Marxist-Leninist political economy in the context of economic development of the country and the world today. Contents include: Objects, research methods and functions of Marxist-Leninist political economy; goods, markets and the role of market participants; surplus value in the market economy; competition and monopoly in the market economy; socialist-oriented market economy and economic interest relations in Vietnam; industrialization, modernization and international economic integration of Vietnam.

- 10. CN02301. General Biochemistry. (2 credits: 1.5-0.5-4). Content:** The course consists of 8 chapters: Proteins and amino acids; Vitamin; Enzyme; Nucleic acid; Protein and amino acid metabolism; Carbohydrates and carbohydrate metabolism; Lipids and lipid exchange; Metabolism and energy.
- 11. ML01009. Introduction to Laws. (2 credits: 0-2-4). Contents:** Some basic theoretical issues about the State and Law; Some basic contents about the State and Law of the Socialist Republic of Vietnam; Basic contents of Civil Law and Criminal Law; Basic contents of Economic Law, Labor Law, Marriage and Family Law; Basic content of the Administrative Law and the law on anti-corruption.
- 12. ML01022. Socialism. (2 credits: 2-0-6; 90). Contents:** The course consists of 7 chapters to help students grasp the most basic and core knowledge about scientific socialism. Contents include: Introduction to scientific socialism; historical mission of the working class; socialism and the transition to socialism; socialist democracy and socialist state; social structure - classes and alliances of classes and classes in the transition to socialism; ethnic and religious issues in the transition to socialism; family problems during the transition to socialism.
- 13. ML01005. Ho Chi Minh Ideology. (2 credits: 2-0-4). Content:** The module is Ho Chi Minh's thought on the path of national liberation and building a new society.
- 14. ML01023. Vietnamese Communist Party History (2 credits: 2-0-6; 90). Content:** The course equips students with an understanding of the objects, purposes, tasks, research methods, studying the History of the Communist Party of Vietnam and basic, systematic and core knowledge about: the history of the Communist Party of Vietnam. the birth of the Communist Party of Vietnam (1920-1930); the process of leading the struggle for power (1930-1945); led two resistance wars against the French colonialists and the American invaders, completing national liberation and reunification (1975-2018); affirming the successes, limitations, summarizing the experience of the revolutionary leadership of the Communist Party of Vietnam.
- 15. SN01032. English 1. (3 credits: 3-0-6). Content:** The course provides basic knowledge of sentences and structures that are frequently used with the present simple, adverbs of frequency, gerunds, comparative sentences, modal verbs such as can and can't, must and have to; provides the vocabulary needed for everyday communication on familiar topics such as work, vacations, cities, wildlife, and sports. The subject of practicing pronunciation, practicing sentence stress and intonation in questions; practice and develop listening, speaking, reading and writing skills related to work, vacation, city, wildlife, and sports topics.
- 16. SN01033. English 2. (3 credits: 2-1-9; 135). Content:** SN01033. English 2. (3 credits: 2-1-9; 135). **Content:** This course consists of 6 units at the pre-intermediate level about the five topics including Changes (Unit 1), Money (Unit 2), Nature (Unit 3), Society (Unit 4), Technology (Unit 5) and Fame (Unit 6). In each unit, English grammar, vocabulary, and skills are provided and practiced by students through different sections: Grammar/Function; Vocabulary; Pronunciation; Speaking; Reading; Listening; Writing. Prerequisite course: English 1
- 17. SN03055. English for Veterinary Medicine. (2 credits: 2-0-4). Content:** Organ and organ systems; The digestive system; The skeletal system; The excretory system; The circulatory system;

The respiratory system; The nervous system; Number of animals in herd/room with risk of disease); General aspect of examination or evaluation; Gastric function. Pre-course: English 1.

9.2. Fundamental courses

1. **CN02101. Zoology. (3 credits: 2-1-6; 135). Content:** The module includes: 10 theoretical chapters on the branches of Protozoa; Department of Botulism; Division Guts, comb jellyfish; Division Flatworms; The phylum Roundworms; Industry Worms; Molluscs Industry; Branch of Arthritis; Leather Industry; Livestream Industry. Three exercises on invertebrates and three exercises on vertebrates.
2. **TY01001. Terminology. (1 credits: 1-0-2). Content:** The module includes the following contents: (1) Latin letters and pronunciation, (2) Basic concepts of Latin words, the relationship between Latin-English-Vietnamese (3) Variables change of nouns, adjectives (4) Rules for writing technical terms (names of microorganisms, parasites, names of animals, plants, disease names...) and application of Latin word formation rules in development English, specialized French, (5) Terminology analysis, (6) Drug labels and prescriptions in Latin
3. **CN02302. Animal Biochemistry. (2 credits: 1.5-0.5-4). Content:** The course consists of 7 theoretical chapters: Hormones; Biofilms and the transport of substances across membranes; Immunochemistry; Carbohydrate metabolism in animals; Lipid exchange in animals; Protein metabolism in animals; The relationship between the transformations.
4. **TY0214. Immunology Veterinary. (2 credits: 2-0-6). Content:** The course includes knowledge: The concept of immunity and classification of immunity; Non-specific natural immunity; Antigen; The body's immune system; Specific humoral antibodies; Reaction between antigens and antibodies; Immune response and immunomodulation; Immunity and infection; Immunological aberrations and pathological immunity; Immunology of aquaculture subjects.
5. **CN02303. Animal Physiology 1. (2 credits: 1.5-0.5-4). Content:** The course consists of 6 theoretical chapters presenting the physiology of the control systems in the body such as: neurophysiology, endocrine physiology, arousal physiology..., and 3 practice sessions related to experiments prove the theoretical chapters learned.
6. **TY02001. Domestic Animal Anatomy 1. (3 credits: 2-1-6). Content:** The course introduces the body structure of domestic animals: Cows, buffaloes, pigs, horses, dogs, cats, and poultry. The main content of the course includes: Introduction to the organ systems in the body (skeletal system, muscular system, nervous system and senses, circulatory system, lymphatic system, endocrine system, digestive system, respiratory system, urinary system, genitourinary system); location, morphology, macroscopic structure, distribution of vascular-nervous vessels, function of the organ and the relationship between organs and organ systems in the body.
7. **TY0203. Veterinary Histology 1. (2 credits: 1.5-0.5-4). Content:** The basic concepts; Cytology, epithelium, connective Tissue, muscle tissue, nervous tissue.
8. **TY0202. Domestic Animal Anatomy 2. (2 credits: 1-1-4). Content:** Animal anatomy module II studies: Local anatomy of the head and neck (cranial sinuses, eye sockets, oral sinuses, nasal

sinuses, neck region); chest area; abdominal area; pelvic region; local anatomy of front limbs and local anatomy of hind limbs of different livestock subjects (Horse, buffalo, cow, pig, dog, cat).

9. **TY02004. Veterinary Histology 2. (2 credits: 1.5-0.5-4). Content:** Basic structure and function of the nervous system; Vascular system and blood-forming organs; Endocrine system; Digestive system; Urinary system; Reproductive system.
10. **CN02303. Animal Physiology 2. (2 credits: 1.5-0.5-4). Content:** The module includes 6 theoretical chapters presenting the physiology of the body's systems such as: digestive physiology, blood physiology, circulatory physiology, respiratory physiology, excretory physiology, and physiological physiology. production...., and 3 practical sessions involving experiments to demonstrate the theoretical chapters studied.
11. **TY2019. Veterinary Microbiology. (3 credits: 2.5-0.5-9). Content:** *Micrococcaceae* family; *Corynebacteriaceae* family; *Parvobacteriaceae* family; *Enterobacteriaceae* family; *Bacillaceae* family; The anaerobic bacillus *Clostridiaceae* family; *Mycobacteriaceae* family; *Spirochaetaceae* family; Group of viruses causing hemolytic disease, Group of viruses causing immunodeficiency, Group of neurotropic viruses, Group of viruses that cause epidermal.
12. **TY02020. Veterinary Pathology 1. (2 credits: 1.5-0.5-4). Content:** The basic concepts: Heat-regulating disorders; Mechanism and morphology of cellular injury; Metabolism disorders & tissue degeneration; Vascular disorders; Inflammation and Healing. Pre-course: Animal Physiology 1
13. **TY02006. Veterinary Pharmacology. (3 credits: 2.5-0.5-6). Content:** Basic concept; pharmacokinetics; pharmacology of drugs; drugs acting on systemic organs and metabolism of the body; disinfectants, antiseptics; antibiotics; antifungal and viral drugs; anti-parasitic drugs. Pre-study course: No
14. **TY02011. Veterinary Pathology 2. (3 credits: 2.5-0.5-6). Content:** Pathology of the circulatory system; Pathology of the respiratory system; Pathology of the digestive system; Pathology of the urinary system; Pathology of the Genito-urinary system; Pathology of chronic infectious diseases caused by bacteria; Pathology of acute infectious diseases caused by bacteria; Pathology of viral diseases. Pre-course: Veterinary Pathology 1
15. **TY02012. Veterinary Herbal Medicine. (2 credits: 1.5-0.5-4). Content:** Basic knowledge of medicinal herbs includes concepts, origin, classification, principles of collection, preservation and processing of medicinal herbs, main groups of active ingredients, pharmacological effects and their applications in veterinary medicine. Introduction of basic medicinal groups including plants, minerals and medicinal herbs of animal origin used for prevention and treatment of diseases for animals is introduced. During the introduction, medicinal herbs with high applicability in animal husbandry are presented in detail so that students can easily apply in their careers after graduation. Pre-course: Veterinary Pharmacology

9.3. Specialized courses

1. **TY03052. Veterinary Service (Veterinary Surgery). (2 credits: 1.5-0.5-4). Content:** Surgical diseases include contents related to inflammation, mechanism of development and recovery of inflammatory organization, measures to treat inflammation. The module describes the contents related to surgical infections, types of infections, measures to prevent surgical infections and treatment of surgical infections. Closed and open lesions of soft tissues, diseases of systemic organs are introduced in veterinary surgical diseases module. Pre-course: Domestic Animal Anatomy 1
2. **TY03053. Veterinary Theriogenology 1. (2 credits: 1.5-0.5-4). Content:** Veterinary Theriogenology 1 includes contents related to reproductive activities of livestock. The module describes the biological nature of sexual reproduction, the physiological mechanisms regulating sexual reproduction, and maturation in mammals. Reproductive activity of male and female cattle, physiology of fertilization, reproductive hormones and applications in animal husbandry - veterinary medicine. Techniques for artificial insemination of cattle; embryo transfer technology and an overview of sex control in animal reproduction. Pre-course: Animal Physiology 1
3. **TY03002. Veterinary Internal Medicine 1. (2 credits: 1.5-0.5-4). Content:** This course provides basic knowledge of therapeutics, and at the same time deepens understanding of the pathological characteristics, causes, symptoms and methods of medical treatment in each organ in the animal's body. Pre-course: Diagnosis of Veterinary Diseases.
4. **TY03003. Veterinary Internal Medicine 2. (2 credits: 1.5-0.5-4). Content:** Brief description of content: The course provides basic knowledge of medical treatment, and at the same time, delves into the pathological characteristics, causes, symptoms and methods of medical treatment in each disease. in the body of cattle. Pre-course: Veterinary Internal Medicine 1
5. **TY03060: Veterinary Epidemiology. (2 credits: 2-6). Content:** This module covers the basic contents of Veterinary epidemiology such as course objectives and tasks; Concepts and terms common used in epidemiology; Epidemiology of infectious diseases; Measures to prevent infectious diseases; Epidemiological measurement parameters; Descriptive epidemiology; Analytical epidemiology; Method of sampling and calculating the number of research samples; Analyze and evaluate diagnostic tests.
6. **TY03011. Veterinary Parasitology 1. (2 credits: 1.5-0.5-4). Content:** Veterinary parasitology I helps students master the basic principles of parasitology such as parasites, hosts, routes of entry, harms and effects of parasites. parasite to the host. Students master basic knowledge about diseases, morphology, life cycle, epidemiology, pathogenesis, symptoms and lesions, thereby proposing diagnostic methods and preventive measures for some diseases. The parasite mainly parasitizes cattle, pigs and poultry. Pre-course: Veterinary Pathology 1
7. **TY03051. Veterinary Infectious Diseases 1. (2 credits: 1.5-0.5-4). Content:** Prevention of infectious diseases; common infectious diseases between animals and humans; infectious diseases of ruminants; infectious diseases of pigs and infectious diseases of poultry. Practice diagnosis of some common infectious diseases in livestock and poultry. Pre-course: Veterinary Microbiology

8. **SN03055. English for Veterinary Medicine. (2 credits: 2-0-4). Content:** Organ and organ systems; The digestive system; The skeletal system; The excretory system; The circulatory system; The respiratory system; The nervous system; Number of animals in herd/room with risk of disease); General aspect of examination or evaluation; Gastric function. Pre-course: English 1.
9. **TY03006. Veterinary Infectious Diseases 2. (2 credits: 1.5-0.5-4). Content:** Infectious diseases of pigs (Swine edema disease; Diarrhea syndrome; Infectious respiratory disease complex); Infectious diseases in poultry (respiratory syndrome in chickens; tumor causing diseases in poultry; Poultry pox). Pre-course: Veterinary Infectious Diseases 1.
10. **TY03007. Law Veterinary. (1 credits: 1-3). Content:** This module covers the basic contents of the Veterinary Law, including: General provisions of the law on veterinary medicine, prevention of animal diseases, quarantine of animals and animal products, control of animal slaughter, processing animals and animal products; Veterinary hygiene inspection, veterinary drug administration and veterinary practice.
11. **TY03010. Animal Reproduction 2. (2 credits: 1.5-0.5-4). Content:** Pregnancy phenomenon; The process of giving birth; Diseases during pregnancy; Diseases during calving; Postpartum diseases; Diseases of the mammary glands; Certain pathological processes in the ovaries; Non-reproductive phenomenon in cattle. Pre-course: Animal reproduction 1
12. **TY03054. Veterinary Parasitology 2. (2 credits: 1.5-0.5-4). Content:** The module helps students master the basic knowledge about the disease, morphology, life cycle, epidemiology, pathogenesis, symptoms of disease, thereby proposing diagnostic methods and prevention measures. Some parasitic diseases are mainly parasitic in cattle, pigs and poultry, dogs and cats and other animals. Basic principles and knowledge of zoonotic diseases. Pre-course: Veterinary parasitology 1.
13. **TY03013. Veterinary Inspection. (3 credits: 2.5-0.5-6). Content:** Transport and quarantine of animals; Veterinary hygiene requirements of animal products factories; Inspect and care for animals before slaughter; Slaughtering process and post-mortem veterinary inspection; Inspect and handle carcasses and viscera of animals that do not meet hygienic standards; Veterinary inspection of meat and meat products; Preservation and processing of meat; Veterinary inspection of eggs and egg products; Veterinary inspection of milk and dairy products. Pre-course: Veterinary Infectious Diseases 1
14. **TY03016. Food safety of animal products. (2 credits: 1.5-0.5-6). Content:** An overview of food of animal origin; Food-borne diseases of animal origin caused by microorganisms and parasites; Residues of antibiotics, hormones, chemicals and heavy metals in foods of animal origin; Toxic foods and measures to protect public health; Food safety management.
15. **CN02701. Experimental Design. (2 credits: 1.5-0.5-4). Content:** Some concepts in descriptive statistics; Estimation and hypothesis testing; Some concepts of experimental design; Design a one-factor experiment (completely randomized, randomized complete block, latin square); Design a two-factor experiment (crossover); Correlation and linear regression; Correspondence table. Pre-course: Statistical Probability.
16. **TY03001. Veterinary Toxicology. (2 credits: 1.5-0.5-4). Content:** How poisons enter the animal's body and their impact on the body, through which to understand how to prevent poisoning

in animals and give appropriate measures when poisoning . Besides, knowledge about kinetic process, poisoning mechanism and influencing factors are also mentioned. Finally, the groups of toxins commonly encountered in animal husbandry are presented in detail so that students can easily apply them in their careers after graduation. Pre-course: Veterinary Pharmacology

- 17. TY02009. Mycology and mycoses (2 credits: 1.5-0.5-6). Content:** This module includes general mycology; Principles of prevention and treatment of diseases caused by fungi; Specialized mycology – certain diseases caused by fungi and their toxins.
- 18. TY02007. Veterinary Embryology. (2 credits: 1.5-0.5-4). Content:** The basic concepts; Fertilization; The cleavage and creation of three embryonic leaves; Continuing embryonic and fetal stages; Embryology of organs.
- 19. CN02601. Animal Nutrition. (3 credits: 2.5-0.5-9). Content:** Nutrition water, protein, vitamins, minerals and carbohydrates; methods for assessing nutritional value of feedstuffs (feed analysis, digestibility testing, N and C balance); energy balance and some methods of determining and estimating the energy value of foods. Nutritional needs of domestic animals; Standards and portions of food: Concept of eating standards and serving sizes; Standards and rations for livestock and poultry. Table of nutritional needs of domestic animals. Pre-course: Animal Biochemistry.
- 20. TY03040. Zoonosis. (3 credits: 2.5-0.5-9). Content:** This module has 6 chapters including: Introduction to diseases transmitted between animals and humans. One health and one health approach. A viral disease that is transmitted between humans and animals. Rickettsia is a zoonotic disease that is transmitted between animals and humans. The disease is transmitted between animals and humans by parasites. Application of one health in the prevention of diseases transmitted between animals and humans.
- 21. TY03028. Wild animal diseases. (2 credits: 1-1-4). Content:** (1) One health approach to wildlife disease management and the role of wildlife in disease management; (2) Care, nurture and manage wildlife; (3) Wildlife conservation; (4) Common diseases in wildlife of the reptile; bird and mammal. Pre-course: Veterinary Pathology 2.
- 22. TY03021. Veterinary Pharmaceuticals. (2 credits: 1-0.5-6). Content :** The course includes basic knowledge about preparation methods to change the shape, physical, chemical and medicinal properties of a drug from its original state. The beginning of the main active ingredient becomes a state that can meet the requirements of production, business, use, management, and improve the effectiveness of disease prevention and treatment and improve the health of livestock.
- 23. TY03037. Animal Welfare. (2 credits: 2-0-4). Content:** Animal welfare concepts; Animal welfare in livestock production; Animal welfare with pets; Animal welfare for other animal subjects; The role of animal welfare in society; Veterinary medicine with animal welfare; Animal welfare in teaching and research; Animal welfare activities. Pre-study course: No
- 24. TY03024. Nutritional disorder. (2 credits: 1.5-0.5-4). Content:** This course aims to equip Veterinary students with basic knowledge about the digestive characteristics of animals, and at the same time delve deeper into the pathological characteristics, causes, symptoms and methods. Prevention and treatment of diseases caused by nutritional disorders in livestock. Pre-study course: No

- 25. TY03023. Veterinary Practical Surgery. (3 credits: 1.5-1.5-6). Content:** The Veterinary practical surgery module provides learners with the knowledge of animal immobilization, anesthesia, anesthesia for animal diseases, preparation of animal diseases, prevention of blood loss in surgery, knowledge, surgical skills used in surgery. Pre-study course: No
- 26. TY03022. Veterinary Acupuncture. (2 credits: 1.5-0.5-4). Content:** The module includes the following contents (1); Theory of traditional oriental medicine; (2) Mechanism of action of acupuncture according to modern medicine (3); Acupuncture points on each animal subject; (4) Treatment methods include acupuncture, acupuncture, electro-acupuncture, hydro-acupuncture; (5) Single-point treatment of diseases on livestock subjects and (6) Practice on typical cases, especially on small animals. Pre-course: Domestic Animal Anatomy 1
- 27. TY03017. Applied Immunology. (2 credits: 1.5-0.5-4). Content:** Applied immunology in disease prevention; Applied immunology in specific treatment; Applied immunology in diagnosis. Pre-course: Veterinary Microbiology, Veterinary Immunology. Pre-study course: No
- 28. CN03503. Poultry Production. (3 credits: 2-1-6). Content:** Overview of domestic and international poultry production. Basic biological characteristics of poultry; Breeding and breeding work; Nutritional and feed needs; Productivity; Artificial incubation of eggs; Poultry cages, equipment and tools; Techniques for raising chickens; Duck farming techniques.
- 29. TY03025. Veterinary Radiology. (2 credits: 1.5-0.5-4). Content:** Basic knowledge of diagnostic imaging. Using imaging methods to detect pathological lesions in the organs of cattle, thereby helping to diagnose diseases quickly and accurately. Pre-course: Veterinary Diagnosis.
- 30. CN03501. Pig Production (Pig Production). (3 credits: 2.0-1.0-6). Content:** The module consists of an introduction to give an overview of the development of pig production in Vietnam and around the world, and 8 theoretical chapters: Origin and biological characteristics of pigs; Breeds and management of pig breeds; Nutritional needs and feed of pigs; Pig farm; Breeding techniques of boars; Techniques for raising reproductive sows; Piglet breeding techniques; Technology of raising pigs for meat.
- 31. CN03502. Cattle and Buffalo Productions. (3 credits: 2-1-6). Content:** Overview of domestic and international cattle raising; Breeding and breeding of cattle; Nutrition and feed of cattle; Cattle barn; Techniques of raising reproductive cattle, calves, dairy cattle and plowing cattle.
- 32. TS03601. Fish Pathology. (3 credits: 2-1-9). Content:** This module consists of 5 theoretical chapters: Basic concepts of aquatic pathology and pathology; Methods of managing aquatic animal health; Medicines and principles of drug use in aquaculture; Methods of diagnosis, prevention and treatment of some diseases that often occur in some important cultured species. The module consists of 5 exercises with the content: Methods of observation, assessment and prognosis of the disease; Methods of sampling and anatomy of aquatic animals; Methods of clinical diagnosis of some common diseases; Methods of sampling, extraction of DNA, RNA and diagnosis of bacterial and viral diseases; Methods of using drugs and chemicals in the treatment of diseases.
- 33. NH03082. Honeybee Pathology. (2 credits: 1.5-0.5-6). Content:** This module covers: honey bee biology, bee viruses, bacteria, fungi, microspores, mites, insects and other animals harmful to honey bees, non-communicable diseases (poisoning with pesticides) plant protection)

- 34. TY03018. Dog and cat diseases. (2 credits: 1.5-0.5-4). Content:** This module includes: Main biological characteristics of dogs and cats. Some breeds of dogs and cats are raised in Vietnam. Medical examination for dogs and cats. Common infectious diseases. Common parasitic diseases. Common internal diseases. Common obstetric diseases. Common surgical diseases and some common surgeries.
- 35. CN03302. Animal Feed. (2 credits: 1.5-0.5-4; 60). Content:** Food classification; Energy-rich food; Protein-rich foods; Raw food; Principles of using additives in animal feed; Formulate rations for livestock and poultry.
- 36. TY03020. Veterinary Clinical Pharmacology. (2 credits: 1.5-0.5-4). Content:** Introduction to basic principles for drug selection, use and management in veterinary clinical practice including applied pharmacokinetics, pharmacokinetic parameters, adverse reactions, veterinary drug information and control. control of antibiotic resistance in veterinary medicine. Besides, knowledge on antibiotic management in pet treatment and farm production was introduced. Pre-course: Veterinary Toxicology
- 37. TY03056. Veterinary Parasite Immunology. (2 credits: 1.5-0.5-4). Content:** Veterinary Parasite Immunology provides knowledge and skills to learners about the immune mechanism of parasitic diseases in livestock. The course is equipped with skills in diagnosing parasitic diseases with the application of immune mechanisms. Students can apply immunological skills to prevent and treat parasitic diseases in livestock. Pre-study course: No
- 38. KQ03107. Basic Marketing 1. (2 credits: 2-0-4). Content:** Overview of marketing; Customer behavior and target market; Product strategy; Pricing strategy; Distribution strategy; Mixed promotion strategy.
- 39. TY03014. Veterinary Hygiene 1. (2 credits: 1.5-0.5-6). Content:** This module includes the following main contents: Scientific principles of air, water and soil sanitation used in animal husbandry. Principles of hygiene in building barns for livestock.
- 40. TY03055. One Health in Veterinary Medicine. (2 credits: 1.5-0.5-4). Content:** This module includes the following main contents: An overview of one health; ecological health, global health, environmental health; One Health Core Competencies: Management and Planning, Information and Communication; Culture and beliefs; Leader; Cooperation and coordination; Values and ethics; Thinking system; Policy, Regulation and advocacy; Applying core competencies to solve One Health problems beyond practice: Management; Response to epidemic diseases of livestock, especially diseases transmitted between animals and humans.
- 41. MT02011. Environmental Management. (2 credits: 2-0-4). Content:** The basics of environmental management; Scientific basis of environmental management; State management system on environmental protection; Tools in environmental management; Management of urban environment and industrial zones; Rural environmental management. Pre-study course: No
- 42. TY03015. Veterinary Hygiene 2. (2 credits: 1.5-0.5-6). Content:** This course includes the following main topics: hygiene of food and nutrition, hygiene of transportation of animals and animal products, hygiene of animal disease prevention and control, hygiene of management and treatment of livestock waste.

- 43. TY03048. Veterinary Professional Skill Practice 1. (4 credits: 0-4-8). Content:** Students are organized to go on field trips to rural areas, farms and households raising cattle and poultry. Participate in and directly vaccinate livestock; Practice and learn methods of diagnosis, dissection, treatment and other Veterinary procedures at the facility; Find out the situation of livestock and veterinary medicine at the facility. Pre-study course: No
- 44. TY03043. Diagnosis and Internal Medicine Internship. (4 credits: 0.5-3.5-4). Content:** This module includes: helping learners practice skills in applying relevant theoretical knowledge and practical techniques learned in the subjects: Veterinary Diagnosis-TY03049 (cattle immobilization method; sequence when examining an animal disease; general examination; methods of clinical examination, specimen collection, tests for examination and diagnosis of diseases in body systems) and subject of Veterinary Internal Medicine-TY03002 (methods of giving drugs into the body of animals through routes such as oral, intramuscular, subcutaneous, intravenous, peritoneal sinus injections; infusion; douching of the uterus, vagina on animals) into the patient's body. clinical practice of disease examination, diagnosis and treatment for cattle.
- 45. TY03045. Animal Surgery and Theriogenology Internship (6 credits: 0-6-12). Content:** Extracurricular course on issues related to reproductive diseases, surgery of cattle and diseases of dogs and cats. New knowledge in the diagnosis and treatment of reproductive and surgical diseases. Techniques to test and evaluate the fertility of livestock, measures to enhance reproductive performance of cattle. Diagnosis and treatment of surgical, reproductive, and cat diseases at out-of-school facilities. Pre-course: Veterinary Surgery, Animal Reproduction 1
- 46. TY03061. Veterinary Professional Skill Practice 2. (4 credits: 0-4-8). Content:** Conduct treatment for livestock learners need to know the methods of approaching, immobilizing animals, how to prescribe, record animal medical records, how to use veterinary equipment and schedule vaccinations. ; Examination of livestock is necessary to make the first diagnosis of animal disease; Animal treatments such as injection, infusion...; Surgical manipulation of specific diseases for cattle. Pre-study course: No
- 47. TY03044. Veterinary infectious diseases Internship. (4 credits: 0-4-8). Content:** The role of agencies and organizations in the field of veterinary medicine; Diagnosis of common infectious diseases in cattle and poultry; Introduction of experience in the prevention and treatment of infectious diseases in livestock and poultry. Pre-course: Veterinary Infectious Diseases 1.
- 48. TY03046. Veterinary Parasitology Internship. (3 credits: 0-3-6). Content:** Extracurricular practice on assessing the situation of parasitic diseases in local cattle. Analysis of the risk of infection with parasitic diseases in livestock, infectious parasitic diseases and solutions for disease prevention. Practice techniques to diagnose parasitic diseases in livestock and apply disease treatment regimens. Pre-course: Veterinary Parasitology 1
- 49. TY03047. Vet Inspection - Food safety Internship. (3 credits: 0-3-6). Content:** Law and state management system on veterinary medicine (animal quarantine, slaughter control and veterinary hygiene inspection); some new issues in food hygiene and safety (residue analysis methods, one health initiative, and animal welfare issues with product quality); Visiting internships at

slaughterhouses and processing animal products; veterinary hygiene and quarantine testing laboratories. Pre-course: Animal testing

50. TY04997. Graduation Thesis. (10 credits). Content: After completing the above compulsory courses, each student must do a graduation internship in the following form: conduct research projects or graduate internships at a production facility with the guidance of teachers, have report through the subject and defend before the evaluation board of the graduation internship report.

Hanoi, 15 of June 2022.

VICE PRESIDENT

DEAN OF FACULTY

(Signed)

(Signed)

Pham Van Cuong

Bui Tran Anh Dao

APPENDIX 1. FACILITIES

Order	Room types	Quantity	Area (m ²)
1	Hall	1	70
2	Office and lecture's room	11	418
3	Studying room	10	496
4	Practice room	16	768
5	Laboratory	9	680
6	Reading room	1	48

APPENDIX 2. TEXT BOOKS AND LEARNING MATERIALS

Course code	Course name	Textbook/lecture	Author	Publishing house	Year of publication
SH01001	General biology	Basic biology	Phan Trong Cung (Editor)	Hanoi University and Professional Education	1990
TH01011	Higher mathematics	Advanced Maths Curriculum	Le Duc Vinh, Nguyen Thi Minh Tam	Hanoi University of Agriculture	2014
MT01004	Analytic chemistry				
MI01020	Philosophy of Marxism and Leninism				
MT01002	Organic chemistry	Organic Chemistry Textbook	Doan Thi Thuy Ai, Nguyen Thi Hien, Vu Thi Huyen, Le Thi Mai Linh,	Vietnam National University of Agricultural Publishing House	2021

Course code	Course name	Textbook/lecture	Author	Publishing house	Year of publication
			Nguyen Thi Hong Hanh		
TY02005	General Microbiology	GT General Microbiology	Nguyen Nhu Thanh	Publishing House	2004
TH01009	Basics of informatics				
TH01007	Probability and statistics				
ML01021	Political economics of marxism and leninism:	Marxist-Leninist political economy textbook		National Political Publishing House	2016
CN02301	General biochemistry	General Biochemistry	Ngo Xuan Manh, Dang Thai Hai, Nguyen Van Kiem, Lai Thi Ngoc Ha	Agriculture	2010
ML01009	General Laws	Probability statistics	Le Duc Vinh	Agricultural University Publishing House	2014
ML01022	Scientific Socialism				
ML 010052	Ho Chi Minh Ideology				
ML01023	History of the Communist Party				
CN02101	Zoonology	Zoology	Phan Trong Cung (Editor)	Hanoi University and High School	1979

Course code	Course name	Textbook/lecture	Author	Publishing house	Year of publication
TY01002	Terminology	Latin Lectures	Nguyen Dinh Nhung, Nguyen Ba Tiep		2017
SN01032	English 1				
CN02302	Animal biochemistry	Animal biochemistry	Le Khac Than	Countryside	1974
TY02014	Veterinary immunology	GT Veterinary Immunology	Nguyen Ba Hien	Publishing House	2011
CN02303	Animal physiology 1	Cattle physiology	Tran Cu, Cu Xuan Dan, Le Thi Minh	Countryside	1975
TY0201	Domestic animal anatomy 1				
TY0203	Histology 1	Lectures on Histology I	Viet, DD, Tam, TTD, Son, HM, Diep, NV, Trang, PHT		2012
TY0202	Domestic animal anatomy 2				
TY02004	Histology 2				
CN02305	Animal physiology 1	Cattle physiology	Nguyen Xuan Tinh, Tiet Hong Ngan, Nguyen Ba Mui, Le Mong Loan	Agriculture	1996
SN01033	English 2				

Course code	Course name	Textbook/lecture	Author	Publishing house	Year of publication
TY02019	Veterinary microbiology	GT Veterinary Microbiology	Nguyen Nhu Thanh	Publishing House	2001
TY02020	Veterinary pathology 1	Veterinary pathology 1	Nguyen Huu Nam, Nguyen Thi Lan, Bui Tran Anh Dao	Agricultural University	2014
TY02006	Veterinary pharmacology	Molecular pharmacology and applications in veterinary medicine	Pham Khac Hieu	Publishing House of Vietnam National University of Agricultural	2019
TY02011	Veterinary pathology 2	Veterinary pathology 2	Nguyen Huu Nam, Nguyen Thi Lan, Bui Tran Anh Dao	Vietnam National University of Agricultural	2016
TY02012	Veterinary medicinal herbs	Techniques for preparing medicines from medicinal herbs	Pham Thi Minh Hue and Vu Thi Thu Giang	Publisher of Hanoi University of Pharmacy	2017
TY03049	Veterinary diagnosis	Lecture on Diagnosis of Veterinary Diseases	Dam Van Right		2022
TY03008	Veterinary Surgery				
TY03053	Veterinary theriogenology 1				
TY03002	Veterinary internal medicine 1	Cattle Internal Diseases	Pham Ngoc Thach, Ho Van	Agricultural publisher	2022

Course code	Course name	Textbook/lecture	Author	Publishing house	Year of publication
			Nam, Chu Duc Thang		
TY03003	Veterinary internal medicine 2	Cattle Internal Diseases	Pham Ngoc Thach, Ho Van Nam, Chu Duc Thang	Agricultural publisher	2022
TY03060	Veterinary epidemiology	GT Veterinary Epidemiology	Nguyen Nhu Thanh	Publishing House	2015
TY03011	Veterinary parasitology 1	Veterinary Parasitology	Nguyen Van Tho, Bui Khanh Linh		
TY03051	Veterinary infectious diseases 1	GT Veterinary Infectious Diseases 1	Nguyen Ba Hien, Huynh Thi My Le	Publishing House	2012
SN03055	English for Veterinary Medicine				
TY03006	Veterinary infectious diseases 2	GT Veterinary Infectious Diseases 1	Nguyen Ba Hien, Huynh Thi My Le	Publishing House	2012
TY03007	Veterinary Law	BG Veterinary Law	Truong Ha Thai		2016
TY03010	Veterinary theriogenology 2				
TY03054	Veterinary parasitology 2				
TY03013	Veterinary inspection	Animal Testing Syllabus	Nguyen Thi Binh Tam & Duong	Natural Science and Technology Publishing House	2010

Course code	Course name	Textbook/lecture	Author	Publishing house	Year of publication
			Van Nhiem		
TY03016	Animal-originated food safety				
CN02701	Experimental Design	Experimental Design Syllabus	Do Duc Luc, Nguyen Dinh Hien and Ha Xuan Bo	Agricultural University Publishing House.	2017
TY03001	Veterinary Toxicology	Veterinary Toxicology	Le Thi Ngoc Diep, Bui Thi Tho	Agricultural publisher	2006
TY02009	Veterinary mycology	Textbook of Veterinary Mycology	Nguyen Ba Hien, Dang Huu Anh, Vu Thi Ngoc, Cao Thi Bich Phuong	Publishing House of Vietnam National University of Agricultural	2021
TY02007	Embryology				
CN02601	Animal Nutrition	Nutrition and fodder	Vu Duy Giang, Nguyen T. Luong Hong, Ton That Son	Agriculture	1997
TY03040	Zoonosis	Textbook of infectious diseases between animals and humans	Trinh Dinh Thau and Pham	Agricultural University Publishing House	2017

Course code	Course name	Textbook/lecture	Author	Publishing house	Year of publication
			Hong Ngan		
TY03028	Wild animal diseases				
TY03021	Veterinary drug production and inspection	New drug research and development textbook	Nguyen Hai Nam	Department of Pharmaceutical Chemistry, Hanoi University of Pharmacy	2015
TY03037	Animal Welfare	Lecture on Animal Welfare	Duong Van Nhiem	Faculty of Veterinary Medicine, Vietnam National University of Agricultural	2022
TY03024	Nutrition disorder	Diseases caused by nutritional disorders in cattle and poultry	Pham Ngoc Thach, Pham Thi Lan Huong, Nguyen Thi Bay	Publishing House of Vietnam National University of Agricultural	2019
TY03023	Veterinary Practical surgery				
TY03022	Veterinary acupuncture	Lectures on Veterinary Acupuncture	Pham Thi Xuan Van		
TY03017	Applied Immunology	GT Applied Immunology	Nguyen Ba Hien	Publishing House of Vietnam National University of Agricultural	2011
CN03503	Poultry Production	Poultry breeding course	Nguyen Thi Mai, Hoang Thanh, Bui	Publishing House of Vietnam National University of Agricultural	2009

Course code	Course name	Textbook/lecture	Author	Publishing house	Year of publication
			Huu Doan		
TY 03025	Veterinary radiology	Image analysation	Pham Ngoc Thach		2019
CN03501	Pig production	Swine breeding course	Dr. Vu Dinh Ton	Publishing House of Vietnam National University of Agricultural	2009
CN03502	Cattle and buffalo productions	Course on Cattle Breeding	Nguyen Xuan Trach, Mai Thi Thom, Le Van Ban	Publishing House of Vietnam National University of Agricultural	2006
TY03019	Aqua diseases				
NH03082	Api Disease				
TY 03018	Dog and cat diseases	Diseases of dogs and cats	Nguyen Van Thanh, Vu Nhu Quan, Nguyen Hoai Nam	Publishing House of Vietnam National University of Agricultural	2012
CN03302	Animal feed	Nutrition and fodder	Vu Duy Giang, Nguyen T. Luong Hong, Ton That Son	Publishing House of Vietnam National University of Agricultural	1997
TY03020	Clinical pharmacology	Molecular pharmacology and applications in veterinary medicine	Pham Khac Hieu	Publishing House of Vietnam National University of Agricultural	2019

Course code	Course name	Textbook/lecture	Author	Publishing house	Year of publication
TY03056	Veterinary Parasitology Immunology				
AQ03107	Basic Marketing				
TY03014	One Health in Veterinary Medicine	Lecture on Veterinary Hygiene 1	Pham Hong Ngan, Lai Thi Cuc	Publishing House of Vietnam National University of Agricultural	2018
TY03055	One Health in Veterinary Medicine				
MT02011	Management of Environment				
TY03015	Veterinary hygiene 2 Veterinary hygiene 2				
TY03048	Veterinary Professional Skill Practice 1				
TY03043	Diagnosis and Internal Medicine Field Trip	Textbook of Veterinary Internal Medicine	Pham Ngoc Thach, Chu Duc Thang, Pham Thi Lan Huong, Dam Van Right	Publishing House of Vietnam National University of Agricultural	2022
TY03045	Surgery - Theriogenology Field Trip				
TY03061	Veterinary Professional Skill Practice 2				

Course code	Course name	Textbook/lecture	Author	Publishing house	Year of publication
TY03044	Practice of Veterinary infectious diseases	Textbook of Veterinary Infectious Diseases	Nguyen Ba Hien, Huynh Thi My Le, Le Van Lanh, Do Ngoc Thuy, Nguyen Van Giap, Dang Huu Anh, Truong Ha Thai, Chu Thi Thanh Huong	Publishing House of Vietnam National University of Agricultural	2020
TY03046	Parasitology Field Trip				
TY03047	Vet. Inspection - Food safety Field Trip	Animal Testing Syllabus	Nguyen Thi Binh Tam & Duong Van Nhiem	Natural Science and Technology Publishing House	2010
TY04998	Graduation Thesis	1. Experimental Design. 2. Writing a scientific paper. Agricultural Publishing House.	1.Do Duc Luc, Nguyen Dinh Hien and Ha Xuan Bo2. Dang Vu Binh, Do Duc Luc, Nguyen	Publishing House of Vietnam National University of Agricultural	2017/2017

Course code	Course name	Textbook/lecture	Author	Publishing house	Year of publication
			Hoang Thinh, Ha Xuan Bo and Doan Van Soan		

APPENDIX 3. LIST OF LECTURERS

Course code	Course name	Name of lecturer in charge	Year of birth	Title
SH01001	General biology	Nguyen Thi Nguyet	1967	Master
TH01011	Higher mathematics	Dao Thu Huyen		PhD
MT01004	Analytic chemistry			
ML01020	Philosophy of Marxism and Leninism			
MT01002	Organic chemistry	Nguyen Thi Hien		PhD
TY02005	General Microbiology	Vu Thi Ngoc	1986	Master
TH01009	Basics of informatics	Pham Quang Dung	1980	PhD
TH01007	Probability and statistics	Vu Thi Thu Giang		PhD
ML01021	Political economics of Marxism and Leninism:	Le Thi Kim Thanh		Master
CN02301	General biochemistry	Dang Thai Hai	1960	Assoc.Prof
ML01009	General Laws			
ML01022	Scientific Socialism			
ML 010052	Ho Chi Minh Ideology	Tran Le Thanh	1968	PhD
ML01023	History of the Communist Party	Tran Khanh Du	1979	Master
CN02101	Zoonology	Nguyen Thi Vinh	1984	PhD
TY01002	Terminology	Nguyen Ba Tiep	1970	PhD
SN01032	English 1			
CN02302	Animal biochemistry	Dang Thai Hai	1960	Assoc.Prof
TY02014	Veterinary immunology	Le Van Truong	1986	Master
CN02303	Animal physiology 1	Nguyen Ba Mui	1956	Assoc.Prof
TY02001	Domestic animal anatomy 1	Hoang Minh	1989	PhD
TY02003	Histology 1	Tran Thi Duc Tam	1976	PhD

Course code	Course name	Name of lecturer in charge	Year of birth	Title
TY02002	Domestic animal anatomy 2	Le Ngoc Ninh	1985	Master
TY02004	Histology 2	Hoang Minh Son	1979	PhD
CN02305	Animal physiology 1	Nguyen Ba Mui	1956	Assoc.Prof
SN01033	English 2			
TY02019	Veterinary microbiology	Tran Thi Huong Giang	1984	PhD
TY02020	Veterinary pathology 1	Nguyen Vu Son	1989	PhD
TY02006	Veterinary pharmacology	Nguyen Manh Tuong	1982	PhD
TY02011	Veterinary pathology 1	Bui Thi To Nga	1981	PhD
TY02012	Veterinary medicinal herbs	Nguyen Thi Thanh Ha	1983	PhD
TY03049	Veterinary diagnosis	Dam Van Phai	1979	PhD
TY03008	Veterinary Surgery	Do Thi Kim Lanh	1982	PhD
TY03053	Veterinary theriogenology 1	Ngo Thanh Trung	1980	Master
TY03002	Veterinary internal medicine 1	Pham Thi Lan Huong	1982	PhD
TY03003	Veterinary internal medicine 2	Pham Thi Lan Huong	1982	PhD
TY03060	Veterinary epidemiology	Chu Thi Thanh Huong	1982	PhD
TY03011	Veterinary parasitology 1	Nguyen Van Phuong	1983	Master
TY03051	Veterinary infectious diseases 1	Dang Huu Anh	1982	PhD
SN03055	English for Veterinary Medicine			
TY03006	Veterinary infectious diseases 2	Dang Huu Anh	1982	PhD
TY03007	Veterinary Law	Truong Ha Thai	1978	PhD
TY03010	Veterinary theriogenology 2	Nguyen Cong Toan	1982	Master
TY03054	Veterinary parasitology 2	Nguyen Thi Hong Chien	1983	PhD
TY03013	Veterinary inspection	Dong Van Hieu	1984	PhD
TY03016	Animal-originated food safety	Hoang Minh Duc	1986	PhD
CN02701	Experimental Design	Ha Xuan Bo	1981	PhD
TY03001	Veterinary Toxicology	Nguyen Manh Tuong	1982	PhD
TY02009	Veterinary mycology	Cao Thi Bich Phuong	1991	Master
TY02007	Embryology	Pham Hong Trang	1981	PhD
CN02601	Animal Nutrition	Ton That Son	1950	Assoc.Prof
TY03040	Zoonosis	Nguyen Thi Huong Giang	1983	PhD
TY03028	Wild animal diseases	Nguyen Ba Tiep	1970	PhD

Course code	Course name	Name of lecturer in charge	Year of birth	Title
TY03021	Veterinary drug production and inspection	Nguyen Thi Thanh Ha	1983	PhD
TY03037	Animal Welfare	Duong Van Nhiem	1970	PhD
TY03024	Nutrition disorder	Dang Thi Thuy Nhung	1976	Assoc.Prof
TY03023	Veterinary Practical surgery	Nguyen Hoai Nam	1982	PhD
TY03022	Veterinary acupuncture	Trinh Dinh Thau	1959	Assoc.Prof
TY03017	Applied Immunology	Le Van Truong	1986	Master
CN03503	Poultry Production	Bui Huu Doan	1956	Assoc.Prof
TY 03025	Veterinary radiology	Pham Ngoc Thach	1956	Assoc.Prof
CN03501	Pig production	Vu Dinh Ton	1958	Assoc.Prof
CN03502	Cattle and buffalo productions	Nguyen Xuan Trach	1958	Professor
TY03019	Aqua diseases	Truong Dinh Hoai	1984	Assoc.Prof
NH03082	Api Disease	Pham Hong Thai	1966	Assoc.Prof
TY 03018	Dog and cat diseases	Nguyen Duc Truong	1983	Master
CN03302	Animal feed	Bui Quang Tuan	1959	Assoc.Prof
TY03020	Clinical pharmacology	Nguyen Thanh Trung	1985	PhD
TY03056	Veterinary Parasitology Immunology	Bui Khanh Linh	1971	PhD
KQ03107	Basic Marketing			
TY03014	One Health in Veterinary Medicine	Cam Thi Thu Ha	1988	Master
TY03055	One Health in Veterinary Medicine	Nguyen Thi Trang	1982	PhD
MT02011	Management of Environment			
TY03015	Veterinary hygiene 2	Vu Thi Thu Tra	1984	PhD
TY03048	Veterinary Professional Skill Practice 1	Tran Van Nen		PhD
TY03043	Diagnosis and Internal Medicine Field Trip	Dam Van Phai	1979	PhD
TY03045	Surgery - Theriogenology Field Trip	Su Thanh Long	1971	Assoc.Prof
TY03061	Veterinary Professional Skill Practice 2	Dinh Phuong Nam	1983	Master
TY03044	Practice of Veterinary infectious diseases	Mai Thi Ngan	1984	PhD
TY03046	Parasitology Field Trip	Nguyen Van Phuong	1983	Master
TY03047	Vet. Inspection - Food safety Field Trip	Nguyen Thi Trang	1982	PhD
TY04998	Graduation Thesis	Nguyen Hoai Nam	1982	PhD

APPENDIX 4
A MATRIX OF COURSES AND PROGRAM LEARNING OUTCOMES

Note: I – Introduction; P – Practice; R – Reinforce; M – Master

Knowledge block	Class code	Class name	Gener al knowl edge		Expertise								General Skills										Expertise skills										Autonomy and responsibility											
			PLO1		PL02			PL03			PL0 4		PLO5				PLO6			PLO7				PL O8		PLO9			PLO 10		PLO11				PLO 12		PLO 13		PLO14					
			1 · 1	1. 2	2 · 1	2 · 2	3 · 3	3 · 1	3 · 2	3 · 3	4 · 4	4 · 1	4 · 2	5 · 1	5 · 2	5 · 3	5 · 4	6 · 1	6 · 2	6 · 3	7 · 1	7 · 2	7 · 3	7 · 4	7 · 5	8 · 1	8 · 2	9 · 1	9 · 2	9 · 3	1 0 · 1	1 0 · 2	1 1 · 1	1 1 · 2	1 1 · 3	11 .4	1 2 · 1	1 2 · 2	1 3 · 1	1 3 · 2	1 4 · 1	1 4 · 2	1 4 · 3	14. 4
PRINCIPL E SUBJECTS (29 credits)	SH01001	Gene ral biolo gy	I														I		I																								I	
	TH01011	High er math emati cs	I										I					I																							I			
	MT01004	Anal ytic chem istry	I											I				I																										
	MI01020	Philo sophy of Marx ism and Lenin ism		I										I	I																													I
	MT01002	Orga nic	I											I				I																										

Knowledge block	Class code	Class name	Gener al knowl edge		Expertise								General Skills												Expertise skills												Autonomy and responsibility																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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Knowledge block	Class code	Class name	General knowledge		Expertise								General Skills										Expertise skills										Autonomy and responsibility																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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Knowledge block	Class code	Class name	Gener al knowl edge		Expertise								General Skills												Expertise skills												Autonomy and responsibility									
			PLO1		PL02			PL03			PL0 4		PLO5				PLO6			PLO7					PL O8		PLO9			PLO 10		PLO11				PLO 12		PLO 13		PLO14						
			1 : 1	1. 2	2 : 1	2 : 2	2 : 3	3 : 1	3 : 2	3 : 3	3 : 4	4 : 1	4 : 2	5 : 1	5 : 2	5 : 3	5 : 4	6 : 1	6 : 2	6 : 3	7 : 1	7 : 2	7 : 3	7 : 4	7 : 5	8 : 1	8 : 2	9 : 1	9 : 2	9 : 3	1 0 : 1	1 0 : 2	1 1 : 1	1 1 : 2	1 1 : 3	11 .4	1 2 : 1	1 2 : 2	1 3 : 1	1 3 : 2	1 4 : 1	1 4 : 2	1 4 : 3	14. 4		
TY02014	Veter inary immu nolog y							I																	I	P						P												I		
CN02303	Anim al physi ology 1			I			I			I															I										I											
TY02001	Dom estic anim al anato my 1						I	I						I											I	I																				
TY02003	Histo logy 1							I						I												I						I														
TY02004	Histo logy 2							P						P																		P			I	P					P					
CN02305	Anim al physi ology 1			P			P			P															P												P				P					
SN01033	Engli sh 2														P				P	P	P		R																						P	
TY02019	Veter inary micro					P																			P		I			P			P			P										

Knowledge block	Class code	Class name	Gener al knowl edge		Expertise								General Skills										Expertise skills										Autonomy and responsibility															
			PLO1		PL02			PL03			PL0 4		PLO5				PLO6			PLO7					PL O8		PLO9			PLO 10			PLO11				PLO 12		PLO 13		PLO14							
			1 . 1	1. 2	2 . 1	2 . 2	2 . 3	3 . 1	3 . 2	3 . 3	3 . 4	4 . 1	4 . 2	5 . 1	5 . 2	5 . 3	5 . 4	6 . 1	6 . 2	6 . 3	7 . 1	7 . 2	7 . 3	7 . 4	7 . 5	8 . 1	8 . 2	9 . 1	9 . 2	9 . 3	10 . 1	10 . 2	11 . 1	11 . 2	11 . 3	11 . 4	12 . 1	12 . 2	13 . 1	13 . 2	14 . 1	14 . 2	14 . 3	14. 4				
		biolo gy																																														
	TY02020	Veter inary patho logy 1																																														
	TY02006	Veter inary phar maco logy																																														
	TY02011	Veter inary patho logy 1																																														
	TY02012	Veter inary medi cinal herbs																																														
	TY03049	Veter inary diagn osis																																														
	TY03008	Veter inary Surge ry																																														

Knowledge block	Class code	Class name	General knowledge		Expertise								General Skills															Expertise skills										Autonomy and responsibility								
			PLO1		PL02			PL03			PL04		PLO5				PLO6			PLO7					PL08		PLO9			PLO10		PLO11			PLO12		PLO13		PLO14							
			1 1	1. 2	2 1	2 2	2 3	3 1	3 2	3 3	3 4	4 1	4 2	5 1	5 2	5 3	5 4	6 1	6 2	6 3	7 1	7 2	7 3	7 4	7 5	8 1	8 2	9 1	9 2	9 3	10 1	10 2	11 1	11 2	11 3	11 4	12 1	12 2	13 1	13 2	14 1	14 2	14 3	14. 4		
SPECIALS ED COURSES (40 TC) OBLIGAT AORIES (29TC)	TY03053	Veterinary therio genology 1							R		R																																			
	TY03002	Veterinary internal medicine 1							R						P										P																					
	TY03003	Veterinary internal medicine 2							M						R										R																					
	TY03060	Veterinary epidemiology				R									R		M																													
	TY03011	Veterinary parasitology 1							P						P											R																				
	TY03051	Veterinary infectious							P						P												R																			

Knowledge block	Class code	Class name	General knowledge		Expertise								General Skills															Expertise skills												Autonomy and responsibility											
			PLO1		PLO2			PLO3				PLO4		PLO5					PLO6			PLO7					PLO8		PLO9			PLO10		PLO11				PLO12		PLO13		PLO14									
			1 : 1	1. 2	2 : 1	2 : 2	2 : 3	3 : 1	3 : 2	3 : 3	3 : 4	4 : 1	4 : 2	5 : 1	5 : 2	5 : 3	5 : 4	6 : 1	6 : 2	6 : 3	7 : 1	7 : 2	7 : 3	7 : 4	7 : 5	8 : 1	8 : 2	9 : 1	9 : 2	9 : 3	10 : 1	10 : 2	11 : 1	11 : 2	11 : 3	11 : 4	12 : 1	12 : 2	13 : 1	13 : 2	14 : 1	14 : 2	14 : 3	14. 4							
		diseases 1																																																	
	SN03055	English for Veterinary Medicine		M														R			R				M																				R						
	TY03006	Veterinary infectious diseases 2																																																	
	TY03007	Veterinary Law																																																	
	TY03010	Veterinary theriogenology 2																																																	
	TY03054	Veterinary parasitology 2																																																	
	TY03013	Veterinary inspection																																																	

Knowledge block	Class code	Class name	General knowledge		Expertise								General Skills												Expertise skills												Autonomy and responsibility							
			PLO1		PL02			PL03			PL04		PLO5				PLO6			PLO7					PL08		PLO9			PLO10		PLO11				PLO12		PLO13		PLO14				
			1 : 1	1. 2	2 : 1	2 : 2	2 : 3	3 : 1	3 : 2	3 : 3	3 : 4	4 : 1	4 : 2	5 : 1	5 : 2	5 : 3	5 : 4	6 : 1	6 : 2	6 : 3	7 : 1	7 : 2	7 : 3	7 : 4	7 : 5	8 : 1	8 : 2	9 : 1	9 : 2	9 : 3	10 : 1	10 : 2	11 : 1	11 : 2	11 : 3	11 : 4	12 : 1	12 : 2	13 : 1	13 : 2	14 : 1	14 : 2	14 : 3	14. 4
	TY03016	Animal-originated food safety			R									M																				M		M								
	CN02701	Experimental Design				I						I									P									P			P				P							
OPTIONAL GROUP (10TC)	TY03001	Veterinary Toxicology	P							P				P										R												P								
RESEARCHING GROUP	TY02009	Veterinary mycology					P							P														P						P	P									
	TY02007	Embryology						P	P					P										P						P					P									
	CN02601	Animal Nutrition						P			P															P		P								P								
	TY03040	Zoonosis				P	R			R																								R				R						
	TY03028	Wild animal				P	R				P																			R							R							

Knowledge block	Class code	Class name	General knowledge		Expertise								General Skills															Expertise skills											Autonomy and responsibility						
			PLO1		PL02			PL03			PL04		PLO5				PLO6			PLO7					PL08		PLO9			PLO10		PLO11				PLO12		PLO13		PLO14					
			1 : 1	1. 2	2 : 1	2 : 2	2 : 3	3 : 1	3 : 2	3 : 3	3 : 4	4 : 1	4 : 2	5 : 1	5 : 2	5 : 3	5 : 4	6 : 1	6 : 2	6 : 3	7 : 1	7 : 2	7 : 3	7 : 4	7 : 5	8 : 1	8 : 2	9 : 1	9 : 2	9 : 3	10 : 1	10 : 2	11 : 1	11 : 2	11 : 3	11 : 4	12 : 1	12 : 2	13 : 1	13 : 2	14 : 1	14 : 2	14 : 3	14. 4	
		diseases																																											
	TY03021	Veterinary drug production and inspection																																											
	TY03037	Animal Welfare																																											
	TY03024	Nutrition disorder																																											
	TY03023	Veterinary Practical surgery																																											
	TY03022	Veterinary acupuncture																																											

Knowledge block	Class code	Class name	Gener al knowl edge		Expertise								General Skills										Expertise skills										Autonomy and responsibility															
			PLO1		PL02			PL03			PL0 4		PLO5				PLO6			PLO7					PL O8		PLO9			PLO 10		PLO11				PLO 12		PLO 13		PLO14								
			1 : 1	1. 2	2 : 1	2 : 2	2 : 3	3 : 1	3 : 2	3 : 3	3 : 4	4 : 1	4 : 2	5 : 1	5 : 2	5 : 3	5 : 4	6 : 1	6 : 2	6 : 3	7 : 1	7 : 2	7 : 3	7 : 4	7 : 5	8 : 1	8 : 2	9 : 1	9 : 2	9 : 3	1 0 : 1	1 0 : 2	1 1 : 1	1 1 : 2	1 1 : 3	1 1 : 4	1 2 : 1	1 2 : 2	1 3 : 1	1 3 : 2	1 4 : 1	1 4 : 2	1 4 : 3	14. 4				
TY03017	Appli ed Immu nolog y								M																	R		M								R												
CN03503	Poult ry Produ ction						M			M					R												M															R						
TY 03025	Veter inary radiol ogy														R											M																	R					
CN03501	Pig produ ction							M			M																	M																R				
OPTIONA L GROUP	CN03502	Cattle and buffal o produ ctions						M			M																	M																	R			
	TY03019	Aqua disea ses																									M																		R			
PRACTIC AL GROUP	NH03082	Api Disea se																									M																		R			
	TY 03018	Dog and cat																																											M			

Knowledge block	Class code	Class name	Gener al knowl edge		Expertise								General Skills												Expertise skills												Autonomy and responsibility																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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Knowledge block	Class code	Class name	Gener al knowl edge		Expertise								General Skills												Expertise skills												Autonomy and responsibility																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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Knowledge block	Class code	Class name	General knowledge		Expertise								General Skills										Expertise skills										Autonomy and responsibility													
			PLO1		PL02			PL03			PL04		PLO5				PLO6			PLO7			PLO8		PLO9			PLO10		PLO11			PLO12		PLO13		PLO14									
			1 · 1	1. 2	2 · 1	2 · 2	2 · 3	3 · 1	3 · 2	3 · 3	3 · 4	4 · 1	4 · 2	5 · 1	5 · 2	5 · 3	5 · 4	6 · 1	6 · 2	6 · 3	7 · 1	7 · 2	7 · 3	7 · 4	7 · 5	8 · 1	8 · 2	9 · 1	9 · 2	9 · 3	10 · 1	10 · 2	11 · 1	11 · 2	11 · 3	11 · 4	12 · 1	12 · 2	13 · 1	13 · 2	14 · 1	14 · 2	14 · 3	14. 4		
		ogenology Field Trip																																												
	TY03061	Veterinary Professional Skill Practice 2																																												
	TY03044	Practice of Veterinary infectious diseases																																												
	TY03046	Parasitology Field Trip																																												
	TY03047	Vet. Inspection - Food safety Field Trip																																												

Knowledge block	Class code	Class name	Gener al knowl edge		Expertise								General Skills												Expertise skills												Autonomy and responsibility											
			PLO1		PL02			PL03			PL0 4		PLO5				PLO6			PLO7					PL O8		PLO9			PLO 10		PLO11				PLO 12		PLO 13		PLO14								
			1 · 1	1. 2	2 · 1	2 · 2	2 · 3	3 · 1	3 · 2	3 · 3	3 · 4	4 · 1	4 · 2	5 · 1	5 · 2	5 · 3	5 · 4	6 · 1	6 · 2	6 · 3	7 · 1	7 · 2	7 · 3	7 · 4	7 · 5	8 · 1	8 · 2	9 · 1	9 · 2	9 · 3	1 0 · 1	1 0 · 2	1 1 · 1	1 1 · 2	1 1 · 3	11 · 4	1 2 · 1	1 2 · 2	1 3 · 1	1 3 · 2	1 4 · 1	1 4 · 2	1 4 · 3	14. 4				
TY04998	Grad uatio n Thesi s							M	M	M						M								M	M				M		M	M									M	M	M					

APPENDIX 5: LEARNING ROADMAP

