**Ministry of Education**

Zero Draft Document On Competencies And

Courses Identification For Exit Examination

Program: Natural Resources Management

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Identified Competency Focus Areas and Core Courses for National Exit Examination:

Program: Bachelor of Science in **Veterinary Medicine (DVM)**

Competencies & Courses Suggested For Exit Examination For Bsc In

Animal Sciences Graduates To Be Held In 2015 E.C

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Animal Sciences Graduates To Be Held In 2015 E.C

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1. **Introduction**

All veterinarians in every nation are responsible for the delivery of National Veterinary Services that is, services provided under the legislative framework and the supports of the governmental authority of a country to implement animal health to assure the health and wellbeing of animals, people and ecosystems (OIE, 2013).

Veterinary education is a cornerstone to assure that the graduating veterinarian (“Day 1 veterinary graduate”) not only has received a level of education and training that ensures sound overall competencies, but also has the required knowledge, skills, attitudes and aptitudes to understand and be able to perform entry-level national veterinary service tasks that relate to the promotion of animal and public health (OIE, 2012).

During the past one and half decades, there has been a significant expansion of the Ethiopian Higher Education system, harmonization of undergraduate curricula, introduction of modular teaching, continuous assessment, peer learning, and the establishment and operation of quality assurance mechanisms to enhance and assure the quality of higher education (Eyob *et al.*, 2022).

The Higher Education Proclamation Proc. No. 1152/2019 provided that "… the teaching-learning process shall be continuously updated in its design, delivery methods, and instruments of assessment". In light of this, Universities in Ethiopia have taken various measures to improve the quality and relevance of higher education to the market demand and the country's development, including the introduction of criterion-referenced and continuous assessments. One way to improve student learning in a way it links with the labor market and economic growth is the introduction of exit exams throughout higher education institutions. In this case, the redesigning of the assessment based on key learning competencies requires the introduction of nationwide quality indicators for placement and exit tests administered in the Ethiopian Higher Education system (Eyob *et al.*, 2022).

The exam serves to provide the departments, colleges, and universities with detailed up-to-date feedback, which helps develop the program and its courses. Once the students take the exam, the results will be analyzed, examined, and discussed extensively to identify points of strengths as well as weaknesses and pinpoint any areas for development in the academic programs or even the introduction of new programs and courses. Thus, exit exam will help to enhance the quality and standards of veterinary education with both technical (knowledge and skill) and ethical competence. Therefore, this document is prepared with the following main exit exam objectives:

**1.1 Objectives:**

The main objectives of exit exam include:

* + To identify domains where the students excel and those which need improvement and better assessment.
  + To ensure whether the graduates have achieved at least a common standard of knowledge and practical competencies.
  + To improve the public trust and confidence in the Healthcare and Judicial activities of professionals.
  + To make a reliable, transparent, and valid measure of candidates' qualifications for jobs.
  + To use as a tool for quality assurance to benchmark and to correct any potential problem or deficiency in the curricula or methods of instruction.

1. **Expected Profiles of Graduates**

A veterinary graduate must have the basic scientific knowledge, skills and behavioral values to practice veterinary medicine independently at the time of graduation with Day 1 competencies. These include:

**Knowledge**: Graduates are expected:

* To have the knowledge of normal and abnormal biological structures and functions of domestic (Anatomy)
* Knowledge on the epidemiology, prevention and control of major national and international animal diseases
* Pharmacological and toxicological principles and veterinary biologicals
* Promoting and maintaining human health through the application of veterinary public health principles in the provision of safe, sound and wholesome foodstuffs of animal origin, and the control of zoonoses
* Knowledge on livestock economics, entrepreneurship and business management
* Understand the principles and application of one health philosophy

**Skills:**

* Handle, diagnose, treat, control and prevent the common disease conditions of domestic animal species
* Collect and interpret clinical and research information advise and teaching on animal health and production, welfare and ethics
* Select and collect specimens for laboratory tests and interpret the results
* Present ideas and evidences orally and writing
* Perform clinical, surgical and theriogenological procedures
* Design and conduct scientific research independently

**Attitude:**

* A person of higher creativity, social consciousness, and professional ethics with a sense of responsibility to work towards national goals and development
* Conduct productive professional activities in accordance with ethical and legal codes for the well-being of animals and the benefit the society

1. **Competencies and Learning Outcomes**

**3.1** **Specific Competencies**

The graduates of Doctor of Veterinary Medicine (DVM) will be able to:

* Understand the epidemiology of diseases in animals
* Identify and describe transboundary animal diseases (TADs)
* Identify and describe Zoontic diseases and food hygiene
* Detect and know emerging and re-emerging diseases
* Understand and practice disease prevention and control strategies/procedures
* Explain & understand the concepts and principles of animal welfare, Veterinary Legislation & Ethics, and general certification procedures.
* Diagnose, treat, prevent and control animal diseases, veterinary public health concerns and the ecosystems with the concept of one health approach.
  1. **Advanced Competencies**

The graduates of Veterinary Medicine will be able to:

* Know the organization of Veterinary Services
* Understand the international trade framework and application of risk analysis
* Conduct problem solving research and disseminate knowledge and research outputs to various stakeholders
* Provide public and consultancy services on animal health and production

1. **Courses to be Included in the Exam**

The following courses will be included in the national exit exam.

* Veterinary Ethics and Jurisprudence
* Animal Behavior & Welfare
* Introduction to Molecular Biology
* Veterinary Parasitology
* Veterinary Bacteriology and Mycology
* Veterinary Immunology
* Veterinary Virology
* Veterinary General Pathology
* Veterinary Systemic Pathology
* Veterinary Clinical Pathology I and II
* Veterinary Clinical diagnosis
* Veterinary General Medicine
* Farm Animal Medicine
* Small Animal Medicine
* Vet. Pharmacology and Therapeutics
* Veterinary Toxicology
* Vet. General Surgery and Anesthesiology
* Veterinary Operative Surgery
* Veterinary Diagnostics imaging
* Theriogenology I nd II
* Veterinary Public Health I and II
* Clinical Practice I - IV
* Veterinary Epidemiology
* Animal Health Economics and International Trade
* Veterinary Preventive Medicine
* Biostatistics and Research Methodology in Veterinary Medicine
* Animal Health Extension

1. **Linkage of competencies with Specific objectives and Courses**

Based on the OIE Day 1 competencies recommendations of veterinary graduates, the courses included in the national exit exam are linked with the specific learning objectives or learning outcomes (Table 1).

Table 1:Linkage of competencies with Specific objectives/learning outcomes and courses

|  |  |  |  |
| --- | --- | --- | --- |
| **SN** | **Competencies** | **Specific Learning Objective/Learning outcomes** | **Courses** |
| **Specific competencies** | | | |
| 1 | Epidemiology | * + - know and understand the general principles of descriptive epidemiology, its application to disease control and the ability to access and use appropriate information sources;     - Understand and participate appropriately in an epidemiological inquiry in case of occurrence of a reportable disease, including collection, handling, and transport of appropriate specimens or samples. | Veterinary Epidemiology  Vet Parasitology  Vet Bacteriology & Mycology  Vet Immunology  Vet Virology |
| 2 | Transboundary Animal Diseases  (TADs) | – identify the clinical signs, clinical course, transmission potential (including vectors), and pathogen associated with TAD;  – describe the current global distribution of TADs or know where to find up-to-date distribution information;  – use or explain the collection and handling of samples and the rationale for the use of appropriate diagnostic and therapeutic tools to prevent and combat TADs and pathogens;  – understand regulatory implications of TADs and pathogens (e.g. the Official Veterinarian who should be contacted if an epizootic pathogen is identified or suspected) and know where to find relevant up-to-date information. | Vet Parasitology  Vet Bacteriology & Mycology  Vet Immunology  Vet Virology  Vet General Pathology  Vet Systemic Pathology  Vet Clinical Pathology I & II  Vet Clinical diagnosis  Vet General Medicine  Farm Animal Medicine  Small Animal Medicine  Vet. General Surgery and Anesthesiology  Vet Operative Surgery  Vet Diagnostics imaging  Theriogenology I nd II  Clinical Practice I- IV |
| 3 | Zoonoses | – identify the clinical signs, clinical course, transmission potential, and pathogen associated with common zoonotic and food borne diseases;  – use or explain the use of current diagnostic and therapeutic tools for common zoonotic and food borne diseases;  – understand the implications of common zoonotic and food borne diseases for human health;  – understand regulatory implications of common zoonotic and food borne diseases and pathogens. | Vet Public Health I & II  Vet Parasitology  Vet Bacteriology & Mycology  Vet Immunology  Vet Virology  Vet Clinical diagnosis  Vet General Medicine  Farm Animal Medicine  Small Animal Medicine |
| 4 | Emerging and Re-emerging Diseases | – define “emerging disease” and “re-emerging disease” and provide contemporary examples;  – detect suspicious signs and report them to the relevant veterinary authority;  – understand the reasons/hypotheses to explain the emergence and /re-emergence of diseases;  – know where to find up-to-date and reliable information regarding emerging and re-emerging diseases. | Animal Health Economics & Int. Trade  Veterinary Preventive Medicine  Clinical Practice I - IV  Vet Parasitology  Vet Bacteriology & Mycology  Vet Immunology  Intr. to Molecular Biology  Vet Virology  Vet General Pathology |
| 5 | Disease Prevention and Control | – describe established programs for the prevention and control of common zoonotic or contagious diseases or emerging/re-emerging diseases, to include animal identification and traceability and oversight by the relevant veterinary authority;  – understand and participate in the implementation of contingency plans to control transboundary diseases, including humanely killing animals;  – understand and participate in regular or emergency vaccination campaigns, as well as in regular test-and-cull/treat programs;  – explain the concept of “early detection system”,  – know which diseases of animals require compulsory notification by the veterinarian to the prescribed national authority in order to mitigate disease transmission; | Intr. to Molecular Biology  Veterinary Preventive Medicine  Clinical Practice I - IV  Vet Parasitology  Vet Bacteriology & Mycology  Vet Immunology  Vet Virology  Vet General Pathology  Vet Systemic Pathology  Vet Clinical Pathology I & II  Vet Clinical diagnosis  Vet General Medicine  Farm Animal Medicine  Small Animal Medicine  Vet. General Surgery and Anesthesiology  Vet Operative Surgery  Vet Diagnostics imaging  Theriogenology I nd II |
| 6 | Food Hygiene | – understand and explain on-farm food safety practices;  – participate in slaughter inspection: this includes ante mortem, post mortem and humane slaughter;  – understand and explain the integration between animal health controls and veterinary public health: the role of veterinarians in conjunction with physicians, public health practitioners, and risk analysts to ensure safe. | Vet Public Health I & II  Vet Parasitology  Vet Bacteriology & Mycology  Vet Virology |
| 7 | Veterinary Products | – use common veterinary products in the appropriate manner, including appropriate record keeping;  – explain and utilize the concept of drug withdrawal time as a means to prevent drug residues;  – understand common mechanisms leading to development of antimicrobial resistance in common pathogens;  – know the appropriate use of drugs and biologicals to ensure the safety of the food chain and the environment. | Vet. Pharmacology & Therapeutics  Vet Toxicology |
| 8 | Animal Welfare | – explain animal welfare and the related responsibilities of owners, handlers, veterinarians and others responsible for the care of animals;  – identify animal welfare problems and participate in corrective actions;  – know where to find up-to-date national and international animal welfare regulations /standards | Veterinary Ethics & Jurisprudence  Animal Behavior & Welfare |
| 9 | Veterinary Legislation and Ethics | – have a general knowledge of the fundamentals of national veterinary legislation and of specific rules and regulations governing the veterinary profession at the local, provincial, national, and regional level;  – know where to find up-to-date and reliable information regarding veterinary legislation and the rules and regulations governing the veterinary profession;  – understand and apply high standards of veterinary medical ethics; | Veterinary Ethics & Jurisprudence  Animal Behavior & Welfare |
| 10 | General Certification procedures | – examine and monitor an animal or a group of animals with a view to certifying freedom from specified diseases or conditions according to established procedures;  – fill out, sign and provide health certificates according to the national rules. | Vet Parasitology  Vet Bacteriology & Mycology, Vet Virology  Intr. to Molecular Biology  Vet General Pathology  Vet Preventive Medicine  Animal Health Economics & Int. Trade |
| 11 | Communication Skills | – communicate technical information in a way that the general public can understand;  – communicate effectively with fellow health professionals to exchange scientific and technical information and practical experience. | Clinical Practice I - IV  Animal Health Extension |
| **Advanced competencies** | | | |
| 1 | Organization of Veterinary Services | – the delivery of National Veterinary Services as a global public good;  – how veterinary services are organized within the country/region;  – the function and authority of the National Veterinary Services;  – the interaction of National Veterinary Service agencies with veterinary services in other countries and international partners;  – the relationship between private and public sector veterinarians in delivery of National Veterinary Services;  – the essential need to evaluate the quality of veterinary services as provided for in the OIE PVS Pathway;  – understanding the definitions of Veterinary Authority and Veterinary Statutory Body | Animal Health Extension  Veterinary Ethics & Jurisprudence |
| 2 | Inspection and Certification Procedures | – the processes used to assess the health status of animals and safety of animal products for the purpose of transport / export;  – the process of ante and post mortem risk-based inspection of animals, and of the inspection of animal products;  – The drafting of health certificates. | Vet Public Health I & II  Vet Parasitology  Vet Bacteriology & Mycology  Vet Virology |
| 3 | Application of Risk Analysis | – how risk analysis can be applied to assessment of risk of animal disease and residues of veterinary drugs, including importation of animals and animal products and other related veterinary services activities;  – how risk analysis can be used to ensure veterinary services adequately protect animal and human health;  – the following risk analysis concepts:  - hazard identification  - risk assessment  - risk management  - risk communication | Veterinary Epidemiology  Vet Preventive Medicine  Animal Health Economics & Int. Trade |
| 4 | Research | * To advance veterinary knowledge in the areas relevant to delivery of National Veterinary Services (e.g., zoonoses, transboundary diseases, (re-)emerging diseases, epidemiology, animal welfare, veterinary drugs and biologicals) so that future generations are better equipped to assure the health of animals, the public, and the ecosystem. | Veterinary Epidemiology  Biostatistics and Research Methodology in Veterinary Medicine |
| 5 | International Trade Framework | – current international regulations, that govern the safe trade of animals and animal products;  – the potential implications of transboundary diseases, including zoonoses, on international trade, (risk of loss of international trade of the affected animals and their products),;  – Export and import control mechanisms and certification processes related to protection of the health of animals, the public, and the ecosystem. | Animal Health Economics & Int. Trade  Veterinary Epidemiology |

1. **Categorizing Courses into Themes**

Thematic Area 01**: National and international veterinary legislation (Animal Welfare and Veterinary Ethics)**

* Veterinary Ethics and Jurisprudence
* Animal Behavior & Welfare

Thematic Area 02**: Animal Pathogens and Host Defense**

* Veterinary Parasitology
* Veterinary Bacteriology and Mycology
* Veterinary Immunology
* Introduction to Molecular Biology
* Veterinary Virology

Thematic Area 03**: Veterinary Pathology**

* Veterinary General Pathology
* Veterinary Systemic Pathology
* Veterinary Clinical Pathology I and II

Thematic Area 04**: Transmissible Diseases (Veterinary General and Clinical Medicine)**

* Veterinary General Medicine
* Farm Animal Medicine
* Small Animal Medicine

Thematic Area 05**: Veterinary Pharmacology and Toxicology**

* Vet. Pharmacology and Therapeutics
* Veterinary Toxicology

Thematic Area 06**: Veterinary Surgery and Diagnostic Imaging**

* Vet. General Surgery and Anesthesiology
* Veterinary Operative Surgery
* Veterinary Diagnostics imaging

Thematic Area 07**: Theriogenology**

* Theriogenology I nd II

Thematic Area 08**: Veterinary Public Health**

* Veterinary Public Health I and II

Thematic Area 09**: Clinical and Diagnostic Sciences (Veterinary Clinical Practices)**

* Clinical Practice I - IV
* Veterinary Clinical diagnosis

Thematic Area 10**: Veterinary Epidemiology and Animal Health Economics**

* Veterinary Epidemiology
* Animal Health Economics and International Trade
* Veterinary Preventive Medicine
* Biostatistics and Research Methodology in Veterinary Medicine

1. **Conclusion**

Based on the Higher Education Proclamation Proc. No. 1152/2019 stating "… the teaching-learning process shall be continuously updated in its design, delivery methods, and instruments of assessment" and with OIE Day 1 competencies recommendations, Universities in Ethiopia shall take various measures to improve the quality and relevance of higher education to the market demand and the country's development. One way to improve student learning in a way it links with the labor market and economic growth is the introduction of exit exams throughout higher education institutions. Therefore, on the basis of key learning competencies, exit exams need to be administered in the Ethiopian Higher Education system.

The exam shall serves as a quality standard of veterinary graduates with both technical (knowledge and skill) and ethical competencies to certify and license graduates to work in the veterinary profession and to get registered in the national professional registry system, but not be considered as a graduation criterion.