



UNIVERSITY of
RWANDA

UNIVERSITY OF RWANDA

COLLEGE OF VETERINARY MEDICINE AND ANIMAL SCIENCES

SCHOOL OF VETERINARY MEDICINE AND LIFE SCIENCES

DEPARTMENT OF VETERINARY CLINICAL SCIENCES

PROGRAMME HANDBOOK

Program of Bachelor of Veterinary Medicine

Award: Bachelor of Veterinary Medicine

Programme Code: BH8VET

NQF Level: 8

Academic Year: 2026 / 2027

Campus: Nyagatare

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Table of Contents

1	WELCOME AND INTRODUCTION	4
1.1	WELCOME MESSAGE	4
1.2	PURPOSE AND STATUS OF THIS HANDBOOK	4
2	PROGRAMME AT A GLANCE.....	5
3	PROGRAMME GOALS AND LEARNING OUTCOMES	5
3.1	PROGRAMME RATIONALE	5
3.2	LEARNING OUTCOMES	6
4	ENTRY REQUIREMENTS AND ADMISSION.....	6
4.1	STANDARD ENTRY REQUIREMENTS	6
4.2	APPLICATION, SELECTION AND REGISTRATION PROCESS	7
4.3	PROGRAM FEES & PAYMENTS	7
5	PROGRAMME STRUCTURE: MODULES, UNITS AND CREDITS	7
5.1	CREDIT FRAMEWORK	7
5.2	CURRICULUM BY YEAR AND SEMESTER.....	8
5.3	ELECTIVE AND SPECIALISATION OPTIONS	11
5.4	PROGRAMME STRUCTURE SUMMARY	11
6	MODULE DESCRIPTIONS	12
6.1	CT80111: CITIZENSHIP AND TRANSFORMATIVE EDUCATION	12
6.2	CL80111: ENGLISH FOR GENERAL PURPOSES	13
6.3	AP80181: INFORMATION TECHNOLOGY AND COMMUNICATION SKILLS	14
6.4	VM80181: ANIMAL ETHOLOGY AND WELFARE.....	15
6.5	VM80182: DEVELOPMENTAL AND GROSS ANATOMY I	16
6.6	VM80183: CELL AND MOLECULAR BIOLOGY	17
6.7	AP80281: ENTREPRENEURSHIP AND INNOVATION	18
6.8	VM80281: VETERINARY PHYSIOLOGY I	19
6.9	VM80282: BASIC AGRICULTURE AND FOOD SYSTEMS	20
6.10	VM80283: VETERINARY HISTOLOGY	21
6.11	VM80284: GENETICS AND ANIMAL BREEDING	22
6.12	CL80311: ENGLISH FOR SPECIFIC PURPOSES	23
6.13	VM80381: DEVELOPMENTAL AND GROSS ANATOMY II	24
6.14	VM80382: VETERINARY PHYSIOLOGY II	25
6.15	VM80383: VETERINARY BIOCHEMISTRY	26
6.16	VM80384: GENERAL ANIMAL NUTRITION	27
6.17	AP80381: INTERMEDIATE ENTREPRENEURSHIP AND INNOVATION.....	28
6.18	VM80481: VETERINARY MICROBIOLOGY	29
6.19	VM80482: VETERINARY IMMUNOLOGY	30
6.20	VM80483: VETERINARY PARASITOLOGY	31
6.21	VM80484: GENERAL PATHOLOGY	32
6.22	CL80511: ENGLISH FOR ACADEMIC PURPOSES.....	33
6.23	VM80581: INDUSTRIAL ATTACHMENT I	34
6.24	VM80582: INTRODUCTION TO VETERINARY MEDICINE.....	35
6.25	VM80583: VETERINARY PHARMACOLOGY AND TOXICOLOGY I.....	36
6.26	VM80584: SYSTEMIC PATHOLOGY I.....	37
6.27	VM80585: ANIMAL PRODUCTION AND HUSBANDRY.....	38
6.28	VM80681: EPIDEMIOLOGY AND VETERINARY PREVENTIVE MEDICINE.....	39
6.29	VM80682: VETERINARY SURGERY I: PRINCIPLES OF SURGERY	40
6.30	VM80683: VETERINARY PHARMACOLOGY AND TOXICOLOGY II.....	41
6.31	VM80684: SYSTEMIC PATHOLOGY II.....	42
6.32	VM80685: PRODUCTION ANIMAL MEDICINE I	43
6.33	VM80781: INDUSTRIAL ATTACHMENT II	44
6.34	VM80782: COMPANION ANIMAL MEDICINE.....	45
6.35	VM80783: THERIOGENOLOGY I	46
6.36	VM80784: VETERINARY SURGERY II.....	47
6.37	VM80785: PRODUCTION ANIMAL MEDICINE II	48
6.38	VM80881: VETERINARY PUBLIC HEALTH, FOOD SAFETY AND ONE HEALTH.....	49
6.39	VM80882: THERIOGENOLOGY II	50
6.40	VM80883: VETERINARY CLINICAL PATHOLOGY	51
6.41	VM80884: RESEARCH METHODS AND BIOSTATISTICS.....	52

6.42	VM80885: VETERINARY CLINICS I.....	53
6.43	VM80981: VETERINARY SURGERY III.....	54
6.44	VM80982: VETERINARY CLINICS II.....	55
6.45	VM80983: WILDLIFE HEALTH AND MANAGEMENT	56
6.46	VM80984: VETERINARY ETHICS AND JURISPRUDENCE.....	57
6.47	VM80985: VETERINARY ENTREPRENEURSHIP, INNOVATION AND BUSINESS MANAGEMENT	58
6.48	VM81081: INDUSTRIAL ATTACHMENT III	59
6.49	VM81081: VM81082: RESEARCH PROJECT	60
7	ACADEMIC CALENDAR AND ATTENDANCE REQUIREMENTS.....	61
7.1.	ACADEMIC CALENDAR — ACADEMIC YEAR: 2026/2027.....	61
7.2.	ATTENDANCE REQUIREMENTS	61
8	ASSESSMENT.....	61
8.1	ASSESSMENT STRATEGY	61
8.2	GRADING SCALE	61
8.3	FEEDBACK TO STUDENTS.....	61
8.4	ACADEMIC INTEGRITY.....	62
9	PROGRESSION, GRADUATION AND COMPLETION REQUIREMENTS.....	62
9.1	PROGRESSION FROM ONE YEAR TO THE NEXT	62
9.2	GRADUATION AND COMPLETION REQUIREMENTS	62
9.3	AWARD OF THE QUALIFICATION AND GRADUATION CEREMONY.....	62
10	APPROVAL AND KEY CONTACT	62

1 Welcome and Introduction

1.1 Welcome message

Warm welcome to the Bachelor of Veterinary Medicine (BVM) programme. The BVM programme is designed to equip you with the knowledge, attitudes, professional attributes, critical thinking abilities, and clinical skills needed to become competent and ethical veterinary professionals. Through this programme, you will be prepared to contribute effectively to animal health and welfare, public health, food safety, and sustainable development at the national, regional, and international levels. Our curriculum aligns with World Organization for Animal Health (WOAH) Day-1 Competencies and the East African Community Mutual Recognition Agreement standards. We are committed to providing you with an excellent learning experience, supported by dedicated academic staff, modern teaching and learning facilities, a conducive learning environment, and strong partnerships with relevant stakeholders and industry. The SVMLS encourages you to fully engage in your studies, take advantage of opportunities available to you and develop the professional knowledge, skills, values, and attitudes necessary for a successful career in veterinary medicine.

We wish you a rewarding and successful academic journey.

Dr. Jean Bosco NTIVUGURUZA

Dean, School of Veterinary Medicine and Life Sciences (SVMLS)

College of Veterinary Medicine and Animal Sciences (CVAS)

University of Rwanda

1.2 Purpose and status of this handbook

This handbook describes the Bachelor of Veterinary Medicine (BVM) programme as approved by the University of Rwanda Senate and the Rwanda Higher Education Council (HEC). It should be read together with the University of Rwanda Academic Regulations for undergraduate programmes, and the Academic Calendar for the year of study. Where any statement in this handbook conflicts with the University regulations, the University regulations take precedence. The University reserves the right to amend the content of this handbook. Any amendment will be approved through the standard quality assurance channels published on the UR website.

2 Programme at a Glance

Programme title	Bachelor of Veterinary Medicine
Exit Award/qualification	Bachelor of Veterinary Medicine (BVM)
Intermediate Award/qualification	Not Applicable
Programme code	BH8VET
College	College of Veterinary Medicine & Animal Sciences (CVAS)
School	School of Veterinary Medicine and Life Sciences (SVMLS)
Department	Department of Veterinary Clinical Sciences
Campus(es) of delivery	Nyagatare campus
NQF / qualification level	8
Total credits required	655 credits
Standard duration	5 years full-time
Maximum registration period	7 years
Mode of delivery	Blended
Language of instruction	English
Intake(s) per year	September only
Professional accreditation	Rwanda Higher Education Council

3 Programme Goals and Learning Outcomes

3.1 Programme rationale

The Bachelor of Veterinary Medicine programme is designed to address Rwanda's need for competent veterinary professionals capable of protecting animal health, public health, food safety, and sustainable livestock production. Livestock contributes significantly to livelihoods, food security, nutrition, and the national economy. However, animal diseases, zoonotic infections, antimicrobial resistance, emerging diseases, and inadequate animal health services continue to pose important challenges. The programme therefore provides comprehensive theoretical, laboratory, clinical, and field-based training in disease prevention, diagnosis, treatment, surgery, herd health, veterinary public health, research, and community engagement.

It is aligned with the **Sustainable Development Goals (SDGs)**, particularly SDG 2 (Zero Hunger), SDG 3 (Good Health and Well-being), SDG 4 (Quality Education), and SDG 12 (Responsible Consumption and Production). Furthermore, the programme supports **Rwanda's National Strategy for Transformation (NST2)** priorities on human capital development, agricultural transformation, food security, and innovation. Consistent with the priorities of **WHO and WOAHA**, the programme adopts a **One Health approach**, preparing graduates to prevent and control zoonotic and emerging diseases, combat antimicrobial resistance, promote animal welfare, and strengthen national and global health security.

3.2 learning outcomes

On successful completion of this programme, graduates will be able to:

Code	Programme Learning Outcome
PLO1	Apply knowledge of comparative anatomy, and physiology for increased production through use of reproductive technologies in different animal species and preventive measures against reproductive diseases.
PLO2	Perform appropriate diagnostic, therapeutic, preventive, control, laboratory, and surgical procedures to manage animal diseases and health conditions safely, humanely, and professionally in veterinary clinical and production settings.
PLO3	Integrate public health principles and the One Health approach into food safety, biosecurity and zoonotic disease prevention/control to protect animals, human and environmental health.
PLO4	Demonstrate professional and ethical conduct in veterinary practice in accordance with applicable national, regional, and international regulatory professional standards.
PLO5	Communicate animal health, husbandry, and preventive-care information clearly and empathetically to clients, professional colleagues and communities.
PLO6	Conduct veterinary research using appropriate study designs, investigation methods, and scientific dissemination approaches in written, oral, and other relevant formats.
PLO7	Design veterinary businesses (livestock farming, clinics, pharmacy, etc.) and community outreach programmes using technical, entrepreneurial leadership and ICT-supported tools to contribute to national and regional development.

4 Entry Requirements and Admission

4.1 Standard entry requirements

Entry requirements in this program are available on <https://ur.ac.rw/spip.php?page=admissions> and concern the following:

- Academic qualification
- Subject prerequisites
- Minimum grade
- Language proficiency
- Other requirements: obtaining at least grade B (70 -100%) in Biology and C (60-70%) in Chemistry)
- For international applicants, other documentation may be required, such as equivalency requirements, visa and residence permit requirements

4.2 Application, selection and registration process

Application, selection and registration in the program follow the university-approved process available on <https://ur.ac.rw/spip.php?page=admissions> and concern the following:

Step	Activity	Responsible
1	Application submitted through UR online admission portal	Applicant
2	Eligibility screening against published criteria	Registrar office
3	Academic selection/interview/entrance test	Registrar office and colleges selection panel
4	Admission decision communicated	Registrar office
5	Registration and enrolment	Admitted student

4.3 Program Fees & Payments

At this link <https://ur.ac.rw/spip.php?page=university-fees-structure>, you can find all updated official information about fees at the University of Rwanda. Information applies to Academic Administrative fees and Tuition fees for Undergraduate and Postgraduate programmes.

5 Programme Structure: Modules, Units and Credits

5.1 Credit framework

One credit represents 10 notional learning hours, comprising contact hours, guided independent study and assessment. The total credit load for this programme is 655 credits.

Credits per semester (normal load)	60
Credits per academic year	Year 1: 140 Year 2: 145 Year 3: 135 Year 4: 125 Year 5: 110
Total programme credits	655 credits
Minimum credits for the award	655 credits
Notional hours per credit	10 credits

5.2 Curriculum by year and semester

5.2.1 Year 1

Module code	Module/unit title	Credits	Type	Semester	Prerequisite
CT80111	Citizenship and Transformative Education	10	Core	1	-
CL80111	English for General Purposes	10	Core	1 & 2	-
AP80181	Information Technology and Communication Skills	10	Core	1	-
VM80181	Animal Ethology and Welfare	10	Core	1	-
VM80182	Developmental and Gross Anatomy I	20	Core	1	-
VM80183	Cell and Molecular Biology	15	Core	1	VM80181, VM80182
AP80281	Entrepreneurship and Innovation	10	Core	2	-
VM80281	Veterinary Physiology I	15	Core	2	VM80182,
VM80282	Basic agriculture and food systems	10	Core	2	VM80181
VM80283	Veterinary Histology	20	Core	2	VM80182, VM80183,
VM80284	Genetics and Animal Breeding	10	Core	2	VM80182, VM80183

5.2.2 Year 2

Module code	Module/unit title	Credits	Type	Semester	Prerequisite
CL 80311	English for Specific Purposes	10	Core	3 & 4	CL80111
VM80381	Developmental and Gross Anatomy II	20	Core	3	VM80181
VM80382	Veterinary Physiology II	10	Core	3	VM80281
VM80383	Veterinary Biochemistry	20	Core	3	-
VM80384	General Animal Nutrition	15	Core	3	VM80281, VM80282
AP80381	Intermediate Entrepreneurship and Innovation	10	Core	4	AP80281
VM80481	Veterinary Microbiology	20	Core	4	VM80183
VM80482	Veterinary Immunology	10	Core	4	VM80281, VM80382, VM80481
VM80483	Veterinary Parasitology	20	Core	4	VM80382, VM80381, VM80382, VM80383,
VM80484	General Pathology	10	Core	4	VM80281, VM80382, VM80481

5.2.3 Year 3

Module code	Module/unit title	Credits	Type	Semester	Prerequisite
CL80511	English for academic Purposes	10	Core	5 & 6	CL80311
VM80581	Industrial attachment I	10	Core	5	Modules Y1-Y2
VM80582	Introduction to Veterinary Medicine	10	Core	5	VM80381, VM80382, VM80383, VM80482, VM80483
VM80583	Veterinary Pharmacology and Toxicology I	15	Core	5	VM80381, VM80382, VM80383, VM80482, VM80484
VM80584	Systemic Pathology I	15	Core	5	VM80382, VM80381, VM80383, VM80481, VM80483
VM80585	Animal Production and Husbandry	15	Core	5	VM80382, VM80384, VM80481, VM80483
VM80681	Epidemiology and Veterinary Preventive Medicine	10	Core	6	VM80384, VM80481, VM80482, VM80483, VM80582
VM80682	Veterinary Surgery I	10	Core	6	VM80181, VM80281, VM80381, VM80382, VM80583
VM80683	Veterinary Pharmacology & Toxicology II	15	Core	6	VM80181, VM80281, VM80381, VM80382, VM80583, VM80583
VM80684	Systemic Pathology II	15	Core	6	VM80382, VM80381, VM80382, VM80482, VM80483, VM80583
VM80685	Production Animal Medicine I	10	Core	6	VM80384, VM80482, VM80483, VM80681

5.2.4 Year 4

Module code	Module/unit title	Credits	Type	Semester	Prerequisite
VM80781	Industrial Attachment II	10	Core	7	Modules Y1-Y2-
VM80782	Companion Animal Medicine	10	Core	7	VM80181, VM80182, VM80282, VM80382, VM80383, VM80481, VM80581, VM80681, VM80682
VM80783	Theriogenology I	10	Core	7	VM80182, VM80381, VM80682
VM80784	Veterinary Surgery II	20	Core	7	VM80682
VM80785	Production Animal Medicine II	10	Core	7	VM80382, VM80381, VM80382, VM80384, VM80482, VM80483, VM80681, VM80685
VM80881	Veterinary Public Health, Food Safety & One Health	15	Core	8	VM80382, VM80482, VM80484, VM80584, VM80684
VM80882	Theriogenology II	10	Core	8	VM80783
VM80883	Veterinary Clinical Pathology	10	Core	8	VM80183, VM80383, VM80584, VM80684
VM80884	Research Methods and Biostatistics	10	Core	8	VM80681
VM80885	Veterinary Clinics I	20	Core	8	Modules Y1-Y4

5.2.5 Year 5

Module code	Module/unit title	Credits	Type	Semester	Prerequisite
VM80981	Veterinary Surgery III	10	Core	9	VM80682 VM80784
VM80982	Veterinary Clinics II	20	Core	9	VM80885
VM80983	Wildlife Health and Management	10	Core	9	VM80181, VM80182, VM80681
VM80984	Veterinary Ethics and Jurisprudence	10	Core	9	VM80981, VM80982, VM80783
VM80985	Veterinary Entrepreneurship, Innovation and Business Management	10	Core	9	AP80281 AP80381
VM81081	Industrial Attachment III	30	Core	10	Modules Y4 (semester 1)- Y5
VM81082	Research Project	20	Core	10	Modules Y1-Y5

5.3 Elective and specialisation options

Specialisation/track	Module code	Module title	Credits
Not applicable	-	-	-

5.4 Programme structure summary

Component	Number of modules	Credits	% of programme
Core / compulsory modules	45	585	89.31%
Supportive modules	-	-	-
Elective / specialisation modules	-	-	-
Research project/dissertation/thesis	1	20	3.05%
Industrial attachment/practicum	3	50	7.64%
Total	49	655	100%

6.1 CT80111: Citizenship and Transformative Education

Module code and name	CT80111: Citizenship and Transformative Education
School	Centre for Conflict Management (CCM)
Department	-
Programme	-
Number of credits	10 credits
Year of study and semester	Year 1, Semester 1
Prerequisites:	None

6.1.1 Module introduction and aim

This module provides students with foundational knowledge and practical skills in civic education, integrity, human rights, and peace education. It is designed for first-year students at the University of Rwanda and aims to equip them with the values, attitudes, and competencies necessary to become responsible, ethical, patriotic, and active citizens who contribute positively to national development and social cohesion.

6.1.2 Module Indicative content

The module is organized into four units: (1) civic education, (2) integrity systems, (3) human rights & citizenship education and (4) peace education. The topics covered are:

UNIT 1: CIVIC EDUCATION: citizenship, state building, national identity, overview of the history of Rwanda in connection with citizenship, state building and national identity

UNIT 2: INTEGRITY SYSTEMS: integrity and related concepts. mechanisms of promoting integrity, integrity systems in Rwanda

UNIT 3: HUMAN RIGHTS AND CITIZENSHIP EDUCATION: generalities on human rights, integrity systems and citizenship; theories and characteristics of human rights; history and classification of human rights; mechanisms for the promotion and protection of human rights; human rights in the context of Rwanda; gender and human rights

UNIT 4: PEACE EDUCATION; peace, conflict and related concepts; key areas of peace education; conflict analysis (with emphasis on conflict mapping and tracking model); approaches to peacebuilding; local mechanisms for peace (with emphasis on peace education and welfare programmes contributing to peace promotion in the Rwandan context)

6.1.3 Teaching and Learning Methods

The module promotes active learning through discussion, reflection, and practical activities. It uses lectures, group work, case studies, films, and other participatory methods. Students apply their experiences and knowledge to citizenship and transformative education. Guest speakers and community activities provide practical learning experiences. UR e-learning platform will support all these strategies in the blended-learning mode.

6.2 CL80111: English for General Purposes

Module code and name	CL80111: English for General Purposes
School	Centre for Language Enhancement
Department	-
Programme	-
Number of credits	10 credits
Year of study and semester	Year 1, Semester 1 & 2
Prerequisites:	Elementary Proficiency Level

6.2.1 Module introduction and aim

This module is designed to develop students' proficiency in English by strengthening their listening, speaking, reading, and writing skills for academic, professional, and everyday communication. It provides a foundation for effective language use and supports students in engaging successfully with university studies and future careers. The module adopts an Integrated Skills Approach, encouraging active participation, research, critical thinking, and meaningful communication across a variety of contexts, thereby enhancing students' overall communicative competence in English.

6.2.2 Module Indicative content

This module will be taught through the Integrated Skills Approach, i.e., a combination of language skills in one lesson.

6.2.3 Unit 1: Culture and Society

Focuses on communication for travel, tourism, entertainment, and everyday social situations, with emphasis on pronunciation and basic language structures.

6.2.4 Unit 2: Environment and Sustainability

Develops listening and note-taking skills through topics related to the environment, weather, and climate.

6.2.5 Unit 3: Health and Welfare

Develops oral communication, presentation, and debate skills, using health and social issues as discussion topics.

6.2.6 Unit 4: Education, Technology and Career Development

Strengthens reading, writing, vocabulary, and formal communication skills for academic, professional, and career-related contexts.

6.2.7 Teaching and Learning Methods

The module uses diverse teaching and learning strategies, including group work, debates, blended learning, role-play, and self-directed study. Students receive prepared handouts, readings, audio-visual materials, and regular assessments to support learning. Peer learning and mentorship help students with language difficulties improve their skills. Weekly consultation sessions provide additional academic and language support. UR e-learning platform will support all these strategies in the blended-learning mode.

6.3 AP80181: Information Technology and Communication Skills

Module code and name	AP80181: Information Technology and Communication Skills
School	School of Animal Sciences and Biotechnology
Department	Department Animal Production
Programme	<i>Bachelor of Science in Animal Science</i>
Number of credits	10 credits
Year of study and semester	Year 1, Semester 1
Prerequisites:	-

6.3.1 Module introduction and aim

This module introduces students to essential ICT skills for academic and professional use. Students learn to operate standard computer applications, use the internet and digital databases for research, apply data processing tools, and communicate effectively using digital platforms. The module supports digital literacy across all areas of the BVM programme and prepares students to use technology as a professional tool.

6.3.2 Module Indicative content

Unit 1: ICT Literacy and Theories of Communication: Introduces basic ICT, digital communication, internet use, online research, AI, information security, and digital ethics.

Unit 2: Library and Reading Skills: Develops skills in using library resources, finding and evaluating information, academic reading, and literature searching.

Unit 3: Scientific Writing, Reporting and Oral Presentation Skills: Develops academic writing, research, referencing, data presentation, oral communication, and effective use of digital and e-learning platforms.

6.3.3 Teaching and Learning Methods

The course will be delivered with the view of giving more emphasis on clear concepts and solid theoretical and practical knowledge of computer systems and applications in specific areas. This is achieved by giving several real time examples in lectures and giving enough lab exercises as well as some video tutorials for the students to do and practice in the laboratory. Forum, both individual and group discussion is applied in their learning process with UR eLearning platform. Online resources are given to them as supplement to handouts.

6.4 VM80181: Animal Ethology and Welfare

Module code and name	VM80181: Animal Ethology and Welfare
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	10 credits
Year of study and semester	Year 1, Semester 1
Prerequisites:	-

6.4.1 Module introduction and aim

This module introduces students to the scientific principles of animal behaviour, welfare, and ethics, providing a foundation for humane, responsible, and evidence-based veterinary practice. It examines the behavioural patterns and biological needs of farm and companion animals and explores animal welfare assessment, protection, and management in diverse contexts, including housing, handling, transport, competition, exhibition, and slaughter. The module also covers animal welfare legislation, ethical perspectives on human–animal interactions, and the application of welfare principles in research and veterinary practice, enabling students to promote animal health, welfare, and responsible animal management.

6.4.2 Module Indicative content

This module is composed of four units. Each unit will cover a wide range of thought-provoking subject matter addressing both theoretical and practical issues related to animal ethology and welfare.

Unit 1: Animal Behaviour and Welfare

This unit covers the principles of animal behaviour, including communication, social behaviour, learning, motivation, reproduction, biological rhythms, and behavioural disorders. It examines the behaviour and welfare of major animal species, including livestock, poultry, companion animals, and wildlife, using welfare assessment approaches such as the Five Domains Model. The unit also covers animal welfare ethics, animal rights, relevant legislation, and their application in veterinary practice.

Unit 2: Animal Handling

This unit covers the principles of safe, humane, and stress-reducing animal handling and restraint, with emphasis on personal safety, animal welfare, and zoonotic disease prevention. It develops knowledge and skills in physical and chemical restraint and species-specific handling techniques for livestock, companion animals, horses, and wildlife during routine and emergency veterinary procedures. The unit also addresses ethical, legal, and professional responsibilities in animal handling, including communication, teamwork, and practical welfare-centred care.

6.4.3 Teaching and Learning Methods

The module promotes discussion, reflection, and understanding of animal behaviour and welfare. Teaching uses lectures, discussions, case studies, videos, exercises, and group work. Learning is interactive and based on students' knowledge and experiences. Readings, Internet resources, manuals, books, and handouts support learning. UR e-learning platform will support all these strategies in the blended-learning mode.

6.5 VM80182: Developmental and Gross Anatomy I

Module code and name	VM80182: Developmental and Gross Anatomy I
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	20 credits
Year of study and semester	Year 1, Semester 1
Prerequisites:	-

6.5.1 Module introduction and aim

This module provides a comprehensive foundation in Veterinary Anatomy, focusing on the embryological development and gross anatomical structures of domestic animals. Students study the external and internal anatomy of major body systems, including the musculoskeletal, nervous, cardiovascular, and digestive systems in ruminants and other relevant species. Emphasis is placed on the topographic relationships between anatomical structures and their relevance to clinical examination and veterinary practice. The module equips students with the fundamental knowledge and skills required to understand advanced veterinary disciplines such as Physiology, Histology, Pathology, Surgery, and Clinical Medicine.

6.5.2 Module Indicative content

The module covers the fundamental principles and structures of animal anatomy, embryology, bones, joints, and muscles focusing on the following:

Unit 1: Early Embryology (3 credits)

This unit covers the early stages of embryonic development, including gametogenesis, fertilization, cleavage, blastulation, gastrulation, neurulation, and organogenesis.

Unit 2: Splanchnology (8 credits)

This unit introduces veterinary anatomy and covers the structure and organization of the integumentary, digestive, respiratory, urinary, reproductive, and endocrine systems.

Unit 3: Bones and Joints (4 credits)

This unit covers the skeletal system, including anatomical terminology, body movements, classification and description of bones, and the classification and description of body joints.

Unit 4: Muscles (Myology) (5 credits)

This unit introduces the muscular system and covers the muscles of the head, neck, trunk, thorax, abdomen, back, thoracic limb, and pelvic limb.

6.5.3 Teaching and Learning Methods

The module uses interactive lectures, tutorials, group work, field visits, and discussions to support active learning. Blended learning provides flexible access to lectures, videos, assessments, and course materials. Students use anatomy labs, specimens, dissections, and comparative studies to develop practical skills. Self-study, readings, library resources, books, journals, and e-learning materials support independent learning. Students receive handouts and learning materials through the UR e-learning platform.

6.6 VM80183: Cell and Molecular Biology

Module code and name	VM80183: Cell and Molecular Biology
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	15 credits
Year of study and semester	Year 1, Semester I
Prerequisites:	VM80181, VM80182

6.6.1 Module introduction and aim

This module provides students with a strong foundation in cell and molecular biology, which underpins the study and practice of veterinary medicine. It explores the structure and function of cells, tissues, and organ systems, emphasizing how cellular processes are integrated to maintain life. Students learn about DNA and RNA structure, replication, gene expression, regulation, and cell division, as well as the principles of protein synthesis. The module also introduces molecular techniques and diagnostic applications used in veterinary science, providing the biological basis for understanding genetics, disease mechanisms, biotechnology, and modern veterinary diagnostics.

6.6.2 Module Indicative content

Unit 1: Cell Biology

This unit introduces the fundamental principles of cell biology, including the structure and components of cells, atoms and molecules, and the organization and functions of major cell organelles. It examines the roles of the nucleus, endoplasmic reticulum, Golgi apparatus, lysosomes, mitochondria, plastids, and vacuoles in maintaining cellular structure and function.

Unit 2: Molecular Biology

This unit introduces the fundamental principles of molecular biology, focusing on DNA structure, replication, damage and repair, transcription, translation, and regulation of gene expression in prokaryotes and eukaryotes. It also covers applied molecular biology, including gene cloning, protein engineering, recombinant protein production and purification, qPCR, and next-generation DNA sequencing.

6.6.3 Teaching and Learning Methods

The module uses lectures, discussions, and online forums to introduce key concepts and encourage active learning. Practical laboratory work, seminars, field visits, and assignments reinforce students' understanding of the topics. Students use the UR E-learning platform and electronic journals for independent study, reference materials, and peer interaction. Lecturers provide guidance and feedback, while students complete and submit assignments on time.

6.7 AP80281: Entrepreneurship and Innovation

Module code and name	AP80281: Entrepreneurship and Innovation
School	School of Animal Sciences and Biotechnology
Department	Department of Animal Production
Programme	Bachelor of Science in Animal Production
Number of credits	10 credits
Year of study and semester	Year 1, Semester 2
Prerequisites:	-

6.7.1 Module introduction and aim

This module introduces students to the principles of entrepreneurship, innovation, and business management, with emphasis on veterinary and agri-business enterprises. It is designed to equip students with the knowledge, skills, and attitudes required to identify opportunities, develop innovative solutions, and establish viable and sustainable ventures. Students explore the entrepreneurial mindset, business planning, venture creation, and the economic environment influencing enterprise development in Rwanda and elsewhere. The module lays a foundation for recognizing and transforming opportunities into commercially feasible businesses, while fostering self-reliance, job creation, and sustainable livelihoods in the animal health and agricultural sectors.

6.7.2 Module Indicative content

The module will cover the following content:

- a) Characteristics of a Successful Entrepreneur
- b) Entrepreneur in the context of doing Business
- c) Identification of business opportunities and ideas
- d) Creativity, Innovation and Entrepreneurs
- e) Social entrepreneurship development
- f) Design thinking for Customer Delight
- g) Communicate Effectively
- h) Managing Risks and Learning from Failures
- i) Process of entrepreneurship and innovation
- j) Sales Skills to Become an Effective Entrepreneur

6.7.3 Teaching and Learning Methods

The achievement of learning outcomes will be supported through a variety of teaching, learning, and assessment strategies, including face-to-face and online learning, live cases, case studies, classroom exercises, role plays, and end-of-lesson quizzes. Students will also engage in individual and group assignments to reinforce their understanding and application of concepts and theories. Public lectures and other interactive learning activities will provide additional opportunities for knowledge development and practical engagement. An end-of-course examination and a capstone project will be used to assess students' achievement of the intended learning outcomes.

6.8 VM80281: Veterinary Physiology I

Module code and name	VM80281: Veterinary Physiology I
School	School of Veterinary Medicine and Life Sciences (SVMLS)
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine (BVM)
Number of credits	15 credits
Year of study and semester	Year 1, Semester 2
Prerequisites:	VM80181, VM80182

6.8.1 Module introduction and aim

This module introduces students to the normal physiological functions of major organ systems in domestic animals and the mechanisms that maintain homeostasis. It focuses on the physiological processes of the reproductive, nervous, muscular, endocrine, cardiovascular, gastrointestinal, renal, and blood systems, emphasizing how these systems interact to regulate and sustain life. Through the study of normal body functions and regulatory mechanisms, students develop a strong foundation for understanding animal health and interpreting physiological disturbances associated with disease. The module therefore provides essential knowledge required for subsequent studies in pathology, pharmacology, reproduction, and clinical veterinary medicine.

6.8.2 Module Indicative content

The module will cover the following units:

Unit 1: Homeostasis

This unit introduces the principles of homeostasis, with emphasis on pH, buffer systems, and the maintenance of acid–base balance in the body. It covers the bicarbonate/carbon dioxide buffer system, the causes and effects of acidosis and alkalosis, and the assessment of acid–base status.

Unit 2: Reproductive System

This unit covers the physiological processes of the male and female reproductive systems, including their roles in reproduction. It also examines fetal physiology, parturition, lactation, and neonatal physiology, providing an understanding of the physiological changes and processes associated with reproduction, birth, milk production, and early life.

Unit 3: Nervous, Muscular and Endocrine Systems

This unit examines the physiology of the nervous, muscular, and endocrine systems and their roles in regulating body functions. The nervous system covers nerve impulses, synaptic transmission, neurotransmitters, neural control of muscle, autonomic function, and regeneration. The muscular system addresses muscle types, contraction, energy supply, and fitness. The endocrine system covers the hypothalamus, pituitary, adrenal glands, thyroid function, pancreatic hormones, and diabetes mellitus.

6.8.3 Teaching and Learning Methods

The module uses interactive lectures, videos, tutorials, group work, case studies, and self-study activities. Blended learning mode supports flexible access to theories, practices, videos, assessments, and learning materials. Students use the UR e-learning platform, textbooks, journals, handouts, and other resources for independent learning. Practical learning includes dissection sessions, physiology laboratory visits, narrated descriptions, reports, and related activities.

6.9 VM80282: Basic Agriculture and Food Systems

Module code and name	VM80282: Basic Agriculture and Food Systems
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	10 credits
Year of study and semester	Year 1, Semester 2
Prerequisites:	-

6.9.1 Module introduction and aim

This module introduces students to the structure and functioning of agricultural and food systems, with emphasis on crop science, livestock production, food science, post-harvest technologies, and farm and community practices. Students explore the food value chain from crop cultivation and animal production to processing, storage, and distribution, while examining the integration of crop and livestock systems and their contribution to food security and rural development. The module provides a broad understanding of food systems in Rwanda and the wider East African context, equipping students with the foundational knowledge required for veterinary practice, animal production, food safety, and sustainable agricultural development.

6.9.2 Module Indicative Content

Unit 1: Crop Science

This component introduces soil concepts, formation, components, physical, chemical and biological properties, and basic soil classification. It covers crop production processes, plant nutrition, fertilization, fertilizer-use efficiency, and major cropping systems. It also introduces forestry and agroforestry, including tree management, products, services, and environmental and socioeconomic benefits.

Unit 2: Food Sciences and Post-Harvest Technologies

This component introduces food science and technology, including key concepts, functions of food, food groups, nutrients, their sources and functions, and food value. It covers food processing and preservation methods, as well as post-harvest technologies for fruits, vegetables, cereals, pulses, and oilseeds.

Unit 3: Farm and Community Practices

This component introduces livestock production, its history, principles, roles, and environmental impacts. It covers livestock species and breeds, animal production management, and extensive, semi-intensive, and intensive production systems. It also addresses beekeeping, poultry, fish farming, sericulture, and the production of meat, milk, eggs, fish, honey, wool, and leather.

6.9.3 Teaching and Learning Methods

The course uses lectures, tutorials, farm work, field visits, laboratory experiments, group activities, and online resources to support active learning. Students engage in problem-solving, assignments, experiments, and investigations to apply concepts and develop practical skills. Individual and group reports, peer assessment, and classroom discussions provide opportunities for practice, collaboration, and formative feedback.

6.10 VM80283: Veterinary Histology

Module code and name	VM80283: Veterinary Histology
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	20 credits
Year of study and semester	Year 1, Semester 2
Prerequisites:	VM80181, VM80182, VM80183, VM80281

6.10.1 Module introduction and aim

This module introduces students to histology, the study of the microscopic structure of cells, tissues, and organs in animals. Students develop practical skills in microscopy and histological techniques while examining the structure and functions of the four basic tissue types: epithelial, connective, muscle, and nervous tissues. The module explores how these tissues are organized into organs and organ systems and provides a foundation for understanding normal tissue architecture and function. It serves as an essential link between cell biology and pathology, enabling students to recognize microscopic changes associated with disease and other functional or structural alterations.

6.10.2 Module Indicative content

Unit 1: General Histology

This unit introduces the basic principles of histology, including cell structure and division, extracellular matrix, and classification, structure, functions, and locations of epithelial, connective, muscular, and nervous tissues. It also covers embryonic and adult connective tissues, cartilage, bone, blood cells, nerve tissue, and muscle tissue.

Unit 2: Special Histology of Systems and Organs

This unit focuses on the histological structure of major body systems and organs, including the circulatory, immune, lymphatic, endocrine, digestive, respiratory, urinary, reproductive, integumentary, sensory, and nervous systems. It also develops histological laboratory skills in microscopy, tissue preparation, staining, immunohistochemistry, electron microscopy, and interpretation of histological data.

6.10.3 Teaching and Learning Methods

The module uses formal and interactive lectures, tutorials, discussions, and the UR E-learning platform to develop understanding of key concepts. Practical laboratory work, seminars, field visits, assignments, and electronic resources reinforce theoretical knowledge and practical skills. Students engage in self-directed learning through textbooks, lecture notes, online resources, and drawing and labelling histological samples. Lecturers provide guidance and feedback, while students participate in discussions, complete assignments, and submit their work on time.

6.11 VM80284: Genetics and Animal Breeding

Module code and name	VM80284: Genetics and Animal Breeding
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	10 credits
Year of study and semester	Year 1, Semester 2
Prerequisites:	VM80181, VM80183

6.11.1 Module introduction and aim

This module introduces students to the principles of genetics and animal breeding and their application in livestock improvement. It provides knowledge of how genes and traits are inherited and transmitted across generations, covering the laws of inheritance, quantitative and population genetics, and the genetic basis of economically important traits such as production, reproduction, and disease resistance. Students also explore selection methods, mating systems, breeding programmes, and modern biotechnologies used in animal improvement. The module equips students with the knowledge and skills required to apply genetic principles in breeding decisions and sustainable livestock development.

6.11.2 Module Indicative content

Unit 1: Genetics

This unit provides an integrated understanding of Mendelian genetics and inheritance, genetic variation, and sex determination in animals. It covers the inheritance of qualitative and quantitative traits, including polygenic traits, and examines gene action such as dominance, epistasis, additive gene action, genetic linkage, crossing over, and gene–environment interactions. The unit also introduces population genetics, focusing on gene and genotype frequencies and the Hardy–Weinberg law.

Unit 2: Animal Breeding

This unit introduces animal breeds, principles of animal breeding, and major breeding methods, with emphasis on selection and mating systems. It covers selection methods, genetic parameters, heritability, repeatability, genetic prediction, response to selection, factors affecting genetic change, and selection for multiple traits. Mating systems include inbreeding, outbreeding, hybrid vigour, and crossbreeding strategies based on animal performance and pedigree relationships. The unit also covers biotechnologies for animal improvement, including artificial insemination and embryo transfer, as well as the management and conservation of animal genetic resources.

6.11.3 Teaching and Learning Methods

The course uses lectures, tutorials, group work, field visits, problem-solving exercises, and guided self-study. Interactive activities and peer assessment promote student participation, application of concepts, and formative feedback. Blended and online learning, including short videos and PC-based exercises, support flexible and independent learning. UR e-learning provides teaching materials and access to relevant food science journals and other online resources.

6.12 CL80311: English for Specific Purposes

Module code and name	CL80311: English for Specific Purposes
School	Center for Language enhancement
Department	-
Programme	-
Number of credits	10 credits
Year of study and semester	Year 2, Semester 3 & 4
Prerequisites:	CL80111

6.12.1 Module introduction and aim

This module develops students' English language proficiency within the context of agriculture, animal sciences, and veterinary medicine. Building on foundational language skills, it strengthens students' ability to read and analyse scientific literature, write academic and technical reports, present scientific information effectively, and communicate professionally in academic and workplace settings. The module adopts an Integrated Skills Approach that promotes active learning, research, critical thinking, and effective communication across listening, speaking, reading, and writing. It prepares students to meet the language demands of advanced studies, clinical practice, research, and professional careers in the agricultural and veterinary sectors.

6.12.2 Module Indicative content

Unit 1: Technology in Agriculture and Animal Husbandry

Develops oral communication, interview, and effective note-taking skills in agriculture and animal husbandry.

Unit 2: Environment and Sustainability in Agriculture and Animal Production

Develop professional correspondence skills, including letters, memos, CVs, personal statements, and emails.

Unit 3: Climate Change and Agriculture

Develops essay and report writing skills for academic and professional purposes.

Unit 4: Agriculture and Animal Husbandry Terminologies

Develop skills in reading, summarizing, and paraphrasing technical agricultural and animal science texts.

Unit 5: Livestock and Global Change

Develops meeting skills, including participation, chairing, minutes writing, and expressing opinions appropriately.

6.12.3 Teaching and Learning Methods

The module uses participatory approaches, including group work, discussions, role play, presentations, and digital resources. Students develop reading, writing, listening, speaking, summarizing, and technical communication skills. Practical activities include reports, essays, presentations, case studies, meetings, and professional communication tasks. Peer learning, audio-visual materials, and consultation support students with language-learning difficulties.

6.13 VM80381: Developmental and Gross Anatomy II

Module code and name	VM80381: Developmental and Gross Anatomy II
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Medicine
Programme	Bachelor of Veterinary Medicine
Number of credits	20 credits
Year of study and semester	Year 2, Semester 3
Prerequisites:	VM80182

6.13.1 Module introduction and aim

This module provides advanced knowledge of the development, structure, and organization of body systems in domestic animals. Students study the anatomy of the thoracic, abdominal, and pelvic cavities, reproductive organs, sensory organs, endocrine glands, and avian anatomical structures, with emphasis on their developmental and topographical relationships. Through systematic anatomical study and dissection, the module enhances students' understanding of the spatial arrangement and functional significance of organs and systems. It provides essential knowledge and practical skills that support subsequent learning in physiology, histology, surgery, reproduction, obstetrics, and clinical veterinary medicine.

6.13.2 Module Indicative content

Unit 1: Organogenesis

Covers the development of major organ systems, including the nervous, digestive, respiratory, muscular, limb, cardiovascular, and urogenital systems.

Unit 2: Anatomy of the Nervous System and Sense Organs

Covers the central, peripheral, voluntary and autonomic nervous systems and the anatomy of major sense organs.

Unit 3: Anatomy of the Cardiovascular System

Covers the anatomy of the heart, blood vessels, lymphatic vessels, and lymphoid tissues.

Unit 4: Avian Anatomy

Covers external features and the general anatomy of the skeletal, respiratory, digestive, and reproductive systems of domestic fowl, ducks, and turkeys.

6.13.3 Teaching and Learning Methods

The module uses interactive lectures, tutorials, group work, field visits, and blended learning. Students engage in discussions, problem-solving, videos, online activities, and self-directed study. Practical learning includes dissection, laboratory visits, specimen observation, and comparative anatomy. UR E-learning, textbooks, journals, and prepared handouts support independent learning and assessment.

6.14 VM80382: Veterinary Physiology II

Module code and name	VM80382: Veterinary Physiology II
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	10 credits
Year of study and semester	Year 2, Semester 3
Prerequisites:	VM80182, VM80281, VM80381

6.14.1 Module introduction and aim

This module provides students with an advanced understanding of physiological and metabolic processes in domestic animals, emphasizing the relationship between the molecular structure and biological function of metabolites, cells, tissues, and organ systems. It examines key anabolic and catabolic pathways, physiological regulation, and species-specific adaptations that underpin normal body function. Students study the physiology of major organ systems, including the respiratory, endocrine, reproductive, and integumentary systems, and apply this knowledge to interpret physiological variations and alterations associated with disease. The module develops critical scientific reasoning and provides a foundation for understanding pathophysiology, clinical diagnosis, and veterinary practice.

6.14.2 Module Indicative content

Unit 1: Digestive Physiology

Covers the regulation and motility of the digestive tract, ruminant digestive physiology, chemical messengers, salivary and gastric secretions, liver and biliary functions, pancreatic exocrine secretion, electrolyte absorption, and the digestion and absorption of carbohydrates, proteins, lipids, and nucleic acids.

Unit 2: Circulatory, Respiratory and Urinary Physiology

Covers circulatory physiology, including blood volume and distribution, laws of circulation, cardiac output, peripheral resistance, the heart and blood vessels, cardiac muscle properties, cardiac conduction and cycle, cardiovascular pressures, electrical activity, and ECG. It also covers respiratory physiology, including pulmonary ventilation, respiratory mechanisms, gas exchange and transport, and urinary physiology, including nephron osmolarity, ADH, filtration, reabsorption, secretion, excretion, glomerular filtration, tubular reabsorption, ammonia/ammonium excretion, and acid–base regulation through aldosterone and H⁺ secretion.

6.14.3 Teaching and Learning Methods

The course uses lectures, tutorials, group work, case studies, videos, and self-study assignments. Interactive lectures and group activities promote application of principles, problem-solving, observation, and analysis. Blended and online learning provide flexible access to theories, practices, videos, assessments, and teaching materials. UR e-learning, handouts, veterinary anatomy books, and journals support independent learning and self-study. Students engage in online assessments, discussions, readings, and other self-directed learning activities. Practical learning includes dissection sessions, physiology laboratory visits, narrated descriptions, and report writing.

6.15 VM80383: Veterinary Biochemistry

Module code and name	VM80383: Veterinary Biochemistry
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	20 credits
Year of study and semester	Year 2, Semester 3
Prerequisites:	VM80183, VM80281

6.15.1 Module introduction and aim

This module introduces students to the biochemical principles underlying normal physiological and metabolic functions in domestic animals. It covers the structure, properties, and biological roles of water, buffers, carbohydrates, lipids, proteins, nucleic acids, vitamins, and minerals, as well as enzyme function, kinetics, regulation, and coenzymes. Students examine major metabolic pathways involved in energy production and biosynthesis, and their integration in maintaining animal health. The module also highlights the biochemical basis of clinically important metabolic disorders encountered in veterinary practice, enabling students to apply biochemical knowledge to the understanding, diagnosis, and management of disease.

6.15.2 Module Indicative content

Unit 1: Structural Biochemistry

Covers water and buffer solutions, carbohydrates, lipids and membranes, nucleotides and nucleic acids, vitamins and minerals, amino acids, peptides and proteins, and enzymes, with emphasis on their structure, classification, functions, sources, deficiency, kinetics, and regulation.

Unit 2: Metabolic Biochemistry

Covers the principles of metabolism, carbohydrate metabolism, energy metabolism and cellular respiration, lipid metabolism, nitrogen metabolism, and the biochemistry of hormones, including metabolic pathways, digestion and absorption, biosynthesis, degradation, mechanisms of action, and regulation.

6.15.3 Teaching and Learning Methods

A course handbook will be provided in advance to support students' preparation and understanding of the course content. Teaching will combine formal lectures, internet-based materials, tutorials, group discussions, presentations, and study visits. Students will participate in self-directed learning through case studies, mini research projects, and assignments. Seminars and workshops will reinforce knowledge and develop key and subject-specific skills. Students will use UR e-learning platform to access teaching materials and participate in online learning activities. Quality Biochemistry and related journals will be available through library and online resources to support learning. Students will be encouraged to use electronic resources for independent study and further exploration of course topics. All relevant teaching and learning materials will be uploaded and made accessible through UR E-learning.

6.16 VM80384: General Animal Nutrition

Module code and name	VM80384: General Animal Nutrition
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	15 credits
Year of study and semester	Year 2, Semester 3
Prerequisites:	Completed year 1, VM80282, VM80382, VM80383

6.16.1 Module introduction and aim

This module introduces students to the principles of animal nutrition, feed resources, and feeding systems used in domestic animals. It covers the anatomy and physiology of the digestive systems of ruminants, monogastric, poultry, and companion animals, and examines the digestion, absorption, and metabolism of nutrients. Students study the nutritional requirements of major livestock species, the characteristics and quality of feed resources, pasture and rangeland management, and practical approaches to ration formulation. The module equips students with the knowledge and skills needed to develop balanced feeding programmes and improve animal productivity, health, and welfare under Rwandan and East African production systems.

6.16.2 Module Indicative content

The module will cover the following content:

Unit 1: Rangeland and Pasture Management

Covers the definition and characteristics of rangelands and pastures, natural pasture improvement, artificial pasture establishment and maintenance, rangeland resources, vegetation dynamics, range condition and trends, resource management and monitoring, grazing management, production systems, and rangeland improvement.

Unit 2: Principles of Animal Nutrition

Covers the principles of animal nutrition, gastrointestinal anatomy and digestive processes, carbohydrate, lipid, protein and amino acid digestion and metabolism, vitamins and minerals, water, feed additives, and measurement of feed and nutrient utilization in food-producing animals.

Unit 3: Applied Animal Nutrition

Covers concepts and roles of animal nutrition, nutrient and feed analysis, feed and nutrient utilization, gastrointestinal anatomy and motility, rumen development and microorganisms, digestion and nutrient utilization, feedstuff classification and conservation, feeding strategies and ration formulation, feed intake, anti-nutritional factors, feed ingredients, compound feed manufacturing, metabolic disorders, and pet nutrition.

6.16.3 Teaching and Learning Methods

The course will use face-to-face teaching, individual and group work, library and home-based extensive reading, debates, and student presentations. Students will also engage with sample questions and receive guidance during class sessions or office consultations when invited.

6.17 AP80381: Intermediate Entrepreneurship and Innovation

Module code and name	AP80381: Intermediate Entrepreneurship and Innovation
School	School of Animal Sciences and Biotechnology
Department	Department of Animal Production
Programme	Bachelor of Science in Animal Production
Number of credits	10 credits
Year of study and semester	Year 2, Semester 4
Prerequisites:	AP80281

6.17.1 Module introduction and aim

This module equips students with advanced knowledge, skills, and attitudes required to develop and manage successful business ventures. Students learn to apply tools such as the Lean Canvas and other innovation frameworks to assess the feasibility, desirability, and viability of business ideas within veterinary and agri-business contexts. The module explores business planning, value chain analysis, funding opportunities, and enterprise development strategies. It enhances students' ability to identify commercial opportunities, develop sustainable business models, and design innovative veterinary and agricultural enterprises that contribute to economic growth and livelihood improvement.

6.17.2 Module Indicative content

1. **Idea/Problem Identification**
Identify problems and develop viable business ideas.
2. **Customer Development**
Identify customers, understand needs, and test market demand.
3. **Business Model**
Develop a sustainable model for delivering and capturing value.
4. **Validation**
Test assumptions and confirm business ideas with evidence.
5. **Money**
Understand funding, budgeting, costs, revenue, and financial management.
6. **Team Building and Leadership**
Build effective teams and develop leadership skills.
7. **Marketing and Sales**
Develop strategies to promote products and attract customers.
8. **Support**
Identify and access resources, networks, mentors, and business support.
9. **Pitching and Presentation**
Present business ideas clearly and persuasively to stakeholders.

6.17.3 Teaching and Learning Methods

This module will be taught using face to face lectures, platforms and case studies. Classroom exercises will also be applied to help the students to understand the concepts and theories. Also, individual and group assignments will be given to the students to boost their creative and innovative ideas.

6.18 VM80481: Veterinary Microbiology

Module code and name	VM80481: Veterinary Microbiology
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine (BVM)
Number of credits	20 credits
Year of study and semester	Year 2, Semester 4
Prerequisites:	VM80183, VM80281, VM80382, VM80382

6.18.1 Module introduction and aim

This module introduces students to the fundamental principles of veterinary microbiology and the role of microorganisms in animal health. It provides a comprehensive understanding of morphology, physiology, metabolism, cultivation, identification, and pathogenicity of bacteria, viruses, fungi, and other clinically important microorganisms. Students explore host–microbe interactions, mechanisms of microbial disease, and the significance of microorganisms in veterinary medicine and public health. The module also develops practical laboratory skills in microbial isolation, culture, and diagnosis, providing a foundation for subsequent studies in infectious diseases, immunology, epidemiology, and antimicrobial therapy.

6.18.2 Module Indicative content

Provides theoretical and practical knowledge in veterinary microbiology, supporting microbial disease diagnosis, management, laboratory testing, public health, and ecological applications.

Unit 1: Bacteriology

Covers the identification, classification, and characterization of bacteria, including their morphology, ecology, genetics, biochemistry, and other relevant aspects of bacterial species.

Unit 2: Virology

Covers viral structure, replication, classification, DNA and RNA viruses, pathogenesis, prevention and control, and important animal viral diseases in Rwanda and the region.

Unit 3: Mycology

Covers fungal structure, reproduction, classification, differences from bacteria, saprophytism, major fungal groups, dimorphic fungi, dermatophytes, systemic fungal infections, and fungi associated with HIV.

6.18.3 Teaching and Learning Methods

The course uses lectures, tutorials, group work, laboratory activities, and interactive problem-solving exercises. Handouts, problem sheets, plenary exercises, and peer assessment support active and formative learning. PC-based classes, guided self-study, and group work strengthen practical and independent learning. Blended learning mode, including short video clips, supports flexible and self-directed learning. UR e-learning and online microbiology journals provide access to teaching materials and additional learning resources.

6.19 VM80482: Veterinary Immunology

Module code and name	VM80482: Veterinary Immunology
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	10 credits
Year of study and semester	Year 2, Semester 4
Prerequisites:	VM80281, VM80183, VM80481, VM80381, VM80382, VM80283, VM80284, VM80383

6.19.1 Module introduction and aim

This module provides students with a comprehensive understanding of the vertebrate immune system and its role in maintaining health and protecting animals against infectious diseases. It covers the structure and function of immune organs, the mechanisms of innate and adaptive immunity, antigen–antibody interactions, and immune responses to pathogens. Students also examine the immunological basis of vaccination and the mechanisms underlying immune-mediated disorders, including hypersensitivity reactions, immunodeficiencies, and autoimmune diseases. Through the study of both general and clinical immunology, the module equips students with the knowledge required to understand disease resistance, diagnosis, prevention, and immunological interventions in veterinary practice.

6.19.2 Module Indicative content

Unit 1: General Immunology

Covers the principles of immunity, antigen properties, immunoglobulins, antigen-antibody reactions, diagnostic tests, complement, lymphoid organs and immune cells, cytokines, immunoregulation, humoral and cell-mediated immunity, tolerance, and transfer factors.

Unit 2: Veterinary Clinical Immunology

Covers hypersensitivity reactions, autoimmunity and animal models, primary and secondary immunodeficiencies, immune regulation and tolerance disorders, transplant and tumor immunology, and hematologic immune disorders.

6.19.3 Teaching and Learning Methods

The course includes lectures, guided tutorials, laboratory practicals (gross and microscopic), case discussions, and self-directed study. Students will engage in problem-solving, lesion description, and diagnosis from real or virtual case materials. The UR E-learning platform will support lecture content and assessments. Students will be requested to use UR e-learning platform to access and read syllabuses, key notes or handouts and extra reference materials. In addition, students should access the discussion forum and ask any questions she or he may have, and answer questions asked by her or his peers. They will also be facilitated to access good quality journals including journals and related discipline online. Students should do all assignments and submit them on time.

6.20 VM80483: Veterinary Parasitology

Module code and name	VM80483: Veterinary Parasitology
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	20 credits
Year of study and semester	Year 2, Semester 4
Prerequisites:	VM80182, VM80382, VM80381, VM80382, VM80383, VM80481, VM80483

6.20.1 Module introduction and aim

This module provides a comprehensive study of parasites and vectors of veterinary importance, including helminths, protozoa, and arthropod parasites. Students examine the biology, taxonomy, life cycles, pathogenicity, immunology, epidemiology, and public health significance of parasitic diseases affecting animals. The module emphasizes the diagnosis, treatment, prevention, and control of parasitic infections. Through laboratory and field-based learning, students develop practical skills in parasite identification and parasitological diagnostic techniques, while gaining the knowledge required to investigate parasite-host interactions and conduct basic research in veterinary parasitology.

6.20.2 Module Indicative content

Unit 1: Veterinary Entomology

Covers the biology, classification, identification, veterinary importance, epidemiology, pathogenic effects, and control of insects and arachnids, with practical skills in arthropod identification, preservation, skin scraping, and field surveillance.

Unit 2: Veterinary Helminthology

Covers the classification, morphology, life cycles, host–parasite interactions, pathogenesis, epidemiology, diagnosis, treatment, and control of veterinary helminths, with practical faecal examination and parasite identification techniques.

Unit 3: Veterinary Protozoology

Covers the biology, classification, life cycles, pathogenicity, epidemiology, diagnosis, treatment, prevention, and economic importance of protozoan parasites, including practical sampling, blood smear preparation, staining, faecal examination, and parasite identification.

6.20.3 Teaching and Learning Methods

The module uses lectures, tutorials, illustrations, discussions, group work, presentations, and written assignments. Laboratory practical sessions and field study trips provide opportunities for practical and experiential learning. Blended and online learning methods support flexible learning beyond direct face-to-face contact. Short video clips provide structured explanations to support independent student learning. Students are trained and encouraged to use the UR e-learning platform. Online parasitology journals and Moodle provide access to additional resources and course materials.

6.21 VM80484: General Pathology

Module code and name	VM80484: General Pathology
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	10 credits
Year of study and semester	Year 2, Semester 4
Prerequisites:	VM80183, VM80481, VM80482

6.21.1 Module introduction and aim

This module provides students with a comprehensive understanding of immunology and general pathology as the foundation for studying disease processes in animals. It examines the structure and function of the immune system, immune responses, and immunopathological disorders, alongside the fundamental mechanisms by which disease alters normal cellular, tissue, and organ function. Students explore cellular injury, inflammation, circulatory disturbances, abnormal growth, neoplasia, and tissue repair, developing the ability to interpret pathological changes in clinical and necropsy settings. The module equips students with the knowledge and analytical skills required to understand disease pathogenesis and apply pathological principles in veterinary diagnosis and disease management.

6.21.2 Module Indicative content

Unit 1: Non-inflammatory and Inflammatory Disorders

Covers cellular adaptation, injury and death, circulatory disturbances, vascular disorders, acute and chronic inflammation, inflammatory mechanisms, tissue healing and repair, regeneration, fibrosis, angiogenesis, and nutritional or metabolic pathological changes in domestic animals.

Unit 2: Oncology

Covers principles, classification, nomenclature, and characteristics of neoplasia, including carcinogenesis, neoplastic transformation, tumour progression, invasion, metastasis, tumour microenvironment, host immune responses, common tumours in domestic animals, and immunopathological mechanisms.

6.21.3 Teaching and Learning Methods

The course includes lectures, guided tutorials, laboratory practicals (gross and microscopic), case discussions, and self-directed study. Students will engage in problem-solving, lesion description, and diagnosis from real or virtual case materials. The UR E-learning platform will support lecture content and assessments. Students will be requested to use UR e-learning platform in order to access and read syllabuses, key notes or handouts and extra reference materials. In addition, students should access the discussion forum and ask any questions she or he may have, and answer questions asked by her or his peers. They will also be facilitated to access good quality journals including journals and related discipline online. Students should do all assignments and submit them on time.

6.22 CL80511: English for Academic Purposes

Module code and name	CL80511: English for Academic Purposes
School	Centre for Language Enhancement
Department	-
Programme	-
Number of credits	10 credits
Year of study and semester	Year 3, Semester 5 & 6
Prerequisites:	CL80311

6.22.1 Module introduction and aim

This module develops advanced academic English skills required for success in veterinary medicine and related scientific disciplines. Students strengthen their productive and receptive language competencies through critical reading of scientific literature, academic listening, scholarly writing, and professional oral communication. The module focuses on developing research proposals, writing scientific reports and manuscripts, presenting at conferences, and communicating scientific information effectively. It also promotes independent learning, critical thinking, and academic integrity, enabling students to produce academically acceptable work and communicate confidently in academic, research, and professional veterinary contexts.

6.22.2 Module Indicative content

Unit 1: Academic English and Rhetorical Functions

Covers the features, vocabulary, collocations, and common structures of academic English, including tenses, hedging, voice, and nominalization. It develops descriptive and critical rhetorical functions such as defining, describing, classifying, comparing, arguing, evaluating, expressing certainty, providing support, taking a stance, drawing conclusions, and making recommendations.

Unit 2: Plagiarism and Referencing

Covers types of plagiarism and strategies for avoiding plagiarism through summarizing, paraphrasing, quoting, and synthesizing. It also develops skills in using in-text citations and preparing reference lists.

Unit 3: Developing Language Skills for Academic Purposes

Develops academic listening, reading, speaking, and writing skills. It covers effective listening, listening strategies and note-taking, academic reading techniques including skimming, scanning and inference, critical thinking and reading, overcoming reading difficulties, vocabulary development, academic presentations, discussions and debates, and academic writing, including descriptive, comparison-contrast, cause-effect, argumentative, and extended essays.

6.22.3 Teaching and Learning Methods

The English for Academic Purposes module will be largely interactive and more practical to increase particularly students' critical reading, critical thinking, and critical writing. Various teamwork learning techniques such as class presentations, student defense of aired opinions individually or in teams. Various online applications such as google docs, library databases, Turnitin, Padlet, etc. will be used in practicals and assessments.

6.23 VM80581: Industrial Attachment I

Module code and name	VM80581: Industrial Attachment I
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Medicine
Programme	Bachelor of Veterinary Medicine
Number of credits	10 credits
Year of study and semester	Year 3, Semester 5
Prerequisites:	Module Y1-Y2

6.23.1 Module introduction and aim

This module provides students with structured on-campus and off-campus practical training in approved veterinary, livestock production, and agri-food institutions. It aims to strengthen the theoretical and laboratory knowledge acquired during the first two years of the programme through hands-on experience in pre-clinical skills and animal production practices. Students develop competencies in biomedical laboratory techniques, animal handling and restraint, sample collection, farm operations, and pasture and rangeland management while gaining exposure to the day-to-day responsibilities of veterinary professionals. The module promotes professional development, practical problem-solving, and workplace readiness through supervised field experience, reflection, and reporting.

6.23.2 Module Indicative content

Section 1: Laboratory and Diagnostic Skills

Covers good laboratory practices, biosafety and biosecurity, use of microscopes and stereoscopes, blood cell counting, PCV determination, haematology and biochemistry analysers, bacterial culture, serological tests, parasite detection and identification, and collection and handling of clinical samples from different animal species.

Section 2: Animal Handling and Routine Farm Operations

Covers physical and chemical restraint of different animal species, routine health checks, vaccination and deworming, ectoparasite management, isolation and handling of sick animals, daily husbandry, feeding and watering, farm record keeping, calf, kid and lamb rearing, and basic pasture and range management.

Section 3: Farm Practices, Biosecurity and Drug Administration

Develops competencies in rotational grazing, forage conservation, sanitation, quarantine, visitor control, footbaths, safe pesticide and drug handling, waste disposal, deworming and acaricide application, and correct drug administration routes using aseptic techniques while preventing iatrogenic injuries.

6.23.3 Teaching and Learning Methods

Students will undertake practical activities in university laboratories, farms, or host institutions under supervision, developing and documenting relevant laboratories and diagnostic competencies. They will also participate in day-to-day activities assigned by the host institution, gaining practical experience in animal handling, husbandry, health, welfare, and routine farm operations. Then, they will apply acquired competencies in farm practices under supervision, maintain daily logbooks, receive mentorship and feedback, and are evaluated by institutional and academic supervisors.

6.24 VM80582: Introduction to Veterinary Medicine

Module code and name	VM80582: Introduction to Veterinary Medicine
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	10 credits
Year of study and semester	Year 3, Semester 5
Prerequisites:	Completed Year 1 &2 core modules: VM80382, VM80381, VM80382, VM80383, VM80482, VM80483

6.24.1 Module introduction and aim

This module introduces students to the principles and practice of clinical veterinary medicine. It familiarises students with the diverse career pathways available in veterinary medicine while developing essential clinical competencies. Students learn the systematic approach to examining animals through structured history taking, physical examination, and interpretation of clinical signs in major domestic species. Emphasis is placed on understanding the relationship between aetiology, pathogenesis, and clinical presentation to support clinical reasoning and preliminary diagnostic planning. The module serves as a bridge between preclinical and clinical training, equipping students with the fundamental knowledge, skills, and professional attitudes required for veterinary practice.

6.24.2 Module Indicative content

Unit 1: General Medicine

Covers the veterinary profession, career opportunities, professional ethics, roles of veterinarians and veterinary teams, medical terminology, human–animal bond, holistic veterinary medicine, current veterinary issues, and veterinary facilities and equipment. Practical activities develop familiarity with facilities, equipment, medical records, professional communication, and basic clinical observation skills.

Unit 2: Semiology

Covers clinical reasoning, history taking, case recording, physical examination, vital signs, body condition, pain, fever, dehydration, and systematic examination of major body systems. It introduces diagnostic planning, differential diagnosis, imaging, and laboratory methods, with practical skills in examination, specimen collection, basic tests, rumen fluid evaluation, imaging demonstrations, and interpretation of clinical findings.

6.24.3 Teaching and Learning Methods

The module uses interactive lectures, tutorials, group work, presentations, and discussions to promote active learning. Students apply principles through observation, analysis, practical activities, and diagnostic exercises. Blended learning mode, including short videos and online assessments, support flexible learning. Students use UR E-learning for teaching materials, activities, and independent learning. Self-directed study, readings, research projects, and guest lectures enhance knowledge and professional understanding. Visits to veterinary facilities provide opportunities to observe veterinary practitioners and professional practices.

6.25 VM80583: Veterinary Pharmacology and Toxicology I

Module code and name	VM80583: Veterinary Pharmacology and Toxicology I
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	15 credits
Year of study and semester	Year 3, Semester 5
Prerequisites:	All core modules of Year 1&2: VM80181, VM80281, VM80381, VM80382, VM80484, VM80583, VM80583

6.25.1 Module introduction and aim

This module introduces students to the fundamental principles of pharmacology and their application in veterinary medicine. It provides a comprehensive understanding of pharmacokinetics, pharmacodynamics, and the rational use of drugs in animals. Students examine major classes of veterinary medicines, including antimicrobials, anthelmintics, acaricides, antineoplastic agents, and immunomodulators, with emphasis on their mechanisms of action, therapeutic uses, adverse effects, and drug resistance. The module also explores drug residues in food-producing animals and introduces ethnopharmacology, focusing on the use of medicinal plants and nutraceuticals in animal health. It equips students with the knowledge required for safe, effective, and responsible therapeutic decision-making in veterinary practice.

6.25.2 Module Indicative content

Unit 1: General Pharmacology

Covers drug formulation and routes of administration, pharmacokinetics, including absorption, distribution, metabolism and excretion, and pharmacodynamics, including drug action, receptors, agonists, antagonists, dose–response relationships, efficacy, and safety.

Unit 2: Veterinary Chemotherapy

Covers principles of chemotherapy and rational drug use, anti-infective, anthelmintic and antiprotozoal drugs, antimicrobial resistance, immunomodulators, antineoplastic agents, NSAIDs, analgesics, endocrine and reproductive drugs, drug residues, withdrawal periods, and regulatory considerations.

Unit 3: Ethnopharmacology

Covers principles and applications of ethnopharmacology, medicinal plants, herbal remedies, nutraceuticals, and alternative therapies, with emphasis on evaluating their efficacy, safety, and responsible use in veterinary medicine.

6.25.3 Teaching and Learning Methods

Lectures, pharmacology practicals (drug dispensing, dosage calculations), case-based prescription exercises, seminars, and Moodle e-learning activities.

6.26 VM80584: Systemic Pathology I

Module code and name	VM80584: Systemic Pathology I
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	15 credits
Year of study and semester	Year 3, Semester 5
Prerequisites:	VM80382, VM80381, VM80382, VM80383, VM80481, VM80483, VM80484

6.26.1 Module introduction and aim

This module provides students with a comprehensive understanding of diseases affecting specific organ systems in domestic animals. Building on the principles of general pathology, it examines the aetiology, pathogenesis, gross and microscopic lesions, and functional consequences of pathological conditions affecting major body systems. Emphasis is placed on correlating pathological changes with clinical signs and diagnostic findings to support accurate disease interpretation. Students develop the knowledge and skills required to recognize, describe, and interpret lesions of veterinary significance, thereby strengthening their competence in disease diagnosis, clinical decision-making, and the application of anatomic pathology in veterinary practice.

6.26.2 Module Indicative content

Unit 1: Pathology of the Digestive System

Covers diseases, pathological changes, and gross and microscopic lesions that affect the digestive system and associated organs, with practical interpretation of pathological changes and their clinical significance.

Unit 2: Pathology of the Lympho-Haemopoietic System

Covers hematological, inflammatory, and neoplastic diseases of blood, bone marrow, lymph nodes, spleen, and immune organs, with practical identification and interpretation of gross and microscopic lesions.

Unit 3: Pathology of the Urogenital System

Covers urinary and reproductive system diseases, including inflammatory, degenerative, developmental, and neoplastic conditions, with practical gross and microscopic examination of lesions.

Unit 4: Pathology of the Cardiovascular and Respiratory Systems

Covers major cardiovascular and respiratory diseases, integrating pathological findings with clinical presentation and diagnostic interpretation through practical examination of gross and histopathological lesions.

6.26.3 Teaching and Learning Methods

The module uses interactive lectures, tutorials, group work, field visits, presentations, and discussions. Handouts, videos, and practical activities support understanding. Blended learning via UR E-learning promotes flexible study. Laboratory visits, specimen observation, and inspections provide practical experience..

6.27 VM80585: Animal Production and Husbandry

Module code and name	VM80585: Animal Production and Husbandry
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	15 credits
Year of study and semester	Year 3, Semester 5
Prerequisites:	VM80283, VM80284, VM80382, VM80381, VM80382, VM80383, VM80384

6.27.1 Module introduction and aim

This module provides students with a comprehensive understanding of the management and production of major livestock enterprises in Rwanda and East Africa, including cattle, sheep, goats, poultry, pigs, rabbits, bees, and fish. Students develop knowledge and practical skills in breeding, feeding, housing, health management, reproduction, and marketing livestock and livestock products. The module emphasizes efficient and sustainable production systems that enhance animal welfare, productivity, and profitability in both smallholder and commercial farming settings. It equips students with the competencies required to manage livestock enterprises effectively and to contribute to improved animal production and food security.

6.27.2 Module Indicative content

Unit 1: Ruminant Production

Covers cattle, sheep, and goat production and management, including nutrition, housing, breeding, health, biosecurity, herd health, production records, and performance analysis.

Unit 2: Poultry Production

Covers broiler, layer, and indigenous chicken production, including housing, nutrition, breeding, health management, biosecurity, disease control, production records, and performance analysis.

Unit 3: Swine and Rabbit Production

Covers pig, rabbit, and other small-animal production, including housing, nutrition, breeding, health management, biosecurity, disease control, production records, and performance analysis.

Unit 4: Apiculture and Aquaculture Production

Covers bee husbandry, colony management, hive-product production, tilapia and catfish farming, biosecurity, disease prevention, sustainability, production records, and productivity assessment.

6.27.3 Teaching and Learning Methods

The module uses formal lectures, discussions, and peer learning through the UR e-Learning platform. Lecturers guide students to relevant electronic sources and provide feedback on their work. Practical activities, laboratory work, seminars, field visits, and assignments reinforce learning. Students use UR e-Learning to access syllabi, notes, handouts, references, and discussion forums. Students participate in discussions, complete assignments, and submit their work on time. Self-directed learning includes textbooks, lecture notes, and online resources to deepen understanding.

6.28 VM80681: Epidemiology and Veterinary Preventive Medicine

Module code and name	VM80681: Epidemiology and Veterinary Preventive Medicine
School	School of Veterinary Medicine and Life Sciences
Department	Department Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	10 credits
Year of study and semester	Year 3, Semester 6
Prerequisites:	VM80183, VM80281, VM80481, VM80482, VM80483, VM80484, VM80582

6.28.1 Module introduction and aim

This module provides students with knowledge and skills in epidemiology, veterinary preventive medicine, and disease prevention and control. It introduces key epidemiological concepts and methods used to study, monitor, and control animal diseases in domestic and wildlife populations. Students learn to measure disease occurrence, identify risk factors, design epidemiological studies, and apply preventive medicine strategies such as vaccination programmes, herd health management, and disease eradication campaigns. Upon completion, students will be able to analyze disease outbreaks, develop effective prevention and control measures, address zoonotic diseases, and demonstrate an integrated understanding of the veterinarian's role in animal and public health.

6.28.2 Module Indicative content

Unit 1: Epidemiology

Covers basic epidemiological concepts, disease determinants, epidemiological triad, measures of disease frequency and association, study designs, outbreak investigation, disease transmission, surveillance, zoonotic disease epidemiology, and One Health surveillance.

Unit 2: Disease Prevention and Control

Covers principles of disease prevention and control, biosecurity, biosafety, immunization, surveillance, disease control measures, environmental and vector management, herd health programmes, disease reporting, and outbreak investigation and response.

6.28.3 Teaching and Learning Methods

Students will be evaluated based on the continuous assessment tests (individual and group assignments, Quizzes, written continuous tests, and hands-zone practices) and final examinations at the end of the module.

6.29 VM80682: Veterinary Surgery I: Principles of Surgery

Module code and name	VM80682: Veterinary Surgery I: Principles of Surgery
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	10 credits
Year of study and semester	Year 3, Semester 6
Prerequisites:	VM80181, VM80381, VM80382, VM80481, VM80583

6.29.1 Module introduction and aim

This module introduces the fundamental principles and techniques of veterinary surgery through the study of aseptic techniques, anesthesiology, instrumentation, and suturing. Students develop knowledge and practical skills in patient evaluation, surgical preparation, anesthesia management, sterile surgical procedures, wound management, and post-operative care. The module emphasizes safe and methodical surgical practices, including the proper preparation of instruments, operators, and patients, as well as the physiological responses to surgical trauma. Upon completion, students will have the theoretical foundation and hands-on skills required for basic surgical procedures and for advanced clinical and surgical training in subsequent years.

6.29.2 Module Indicative content

Unit 1: Instrumentation and Suturing

Covers surgical instruments, equipment, and suture materials, including their identification, functions, handling, applications, wound closure, wound management, suture selection, suture patterns, and surgical knot-tying techniques.

Unit 2: Aseptic Techniques

Covers principles of asepsis, sterilization, disinfection, sanitization, cleaning, scrubbing, gowning, and draping, as well as preparation for surgery, microbiological control, infection prevention, hemostasis, and bleeding and trauma management.

Unit 3: Anesthesiology

Covers pre-operative assessment and surgical risk evaluation, local, regional, and general anesthesia, anesthetic administration and monitoring, fluid therapy, electrolyte balance, pain management, post-operative monitoring, and recovery care.

6.29.3 Teaching and Learning Methods

The module uses formal lectures, discussions, and peer learning through the UR E-Learning platform. Lecturers guide students to relevant electronic sources and provide feedback on their work. Practical laboratory work, seminars, field visits, and assignments reinforce understanding of histology concepts. Students use UR e-Learning to access the syllabus, notes, handouts, references, and discussion forums. Students participate in discussions, complete assignments, and submit their work on time. Self-directed learning includes textbooks, lecture notes, online resources, and drawing and labelling histological samples.

6.30 VM80683: Veterinary Pharmacology and Toxicology II

Module code and name	VM80683: Veterinary Pharmacology and Toxicology II
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	15 credits
Year of study and semester	Year 3, Semester 6
Prerequisites:	VM80283, VM80284, VM80381, VM80382, VM80383, VM80481, VM80484, VM80583

6.30.1 Module introduction and aim

This module develops students' theoretical and practical understanding of pharmacodynamics, rational therapeutics, and veterinary toxicology. Students study the mechanisms of drug action, drug–receptor interactions, and the therapeutic use of major drug classes, including chemotherapeutic, cardiovascular, respiratory, and central nervous system agents. The module also covers fundamental toxicological principles such as dose–response relationships, toxicokinetics, absorption, metabolism, excretion, and cellular toxicity. Students will learn to identify, diagnose, prevent, and manage common plant and chemical poisonings encountered in veterinary practice, preparing them for the safe and effective use of drugs in animal health care.

6.30.2 Module Indicative content

Unit 1: Pharmacodynamics

Covers drug actions and therapeutic effects, receptor types and chemical specificity, agonists and antagonists, drug–receptor binding, and dose–response relationships, including quantal and graded responses, therapeutic and protective indices, concentration–effect curves, and receptor binding of agonists.

Unit 2: General Principles of Veterinary Toxicology

Covers toxicokinetics and toxicodynamics, selected toxicants including insecticides, herbicides, fungicides, rodenticides, metals, biotoxins, poisonous plants, and industrial poisons, as well as general approaches to diagnosis and treatment of common intoxication cases.

6.30.3 Teaching and Learning Methods

The module will use lectures, group work through case studies, seminars and workshops, practical exercises, and field trips to support students' learning and application of knowledge.

6.31 VM80684: Systemic Pathology II

Module code and name	VM80684: Systemic Pathology II
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	15 credits
Year of study and semester	Year 3, Semester 6
Prerequisites:	VM80381, VM80382, VM80383, VM80481, VM80483, VM80584

6.31.1 Module introduction and aim

This module is built on Systemic Pathology I and provides students with advanced knowledge of lesions and pathological changes affecting tissues and organs in domestic animals. It focuses on the pathology of the digestive, hepatic, reproductive, haemic, and lymphoid systems, emphasizing important diseases and pathological conditions relevant to veterinary practice. Students develop skills in recognizing and interpreting gross and histopathological lesions, integrating pathological findings with clinical and laboratory data, and conducting and reporting post-mortem examinations. Upon completion, students will have the competencies required to diagnose disease processes and support effective disease investigation and management.

6.31.2 Module Indicative content

Unit 1: Cutaneous and Musculoskeletal Pathology

Covers inflammatory, infectious, and degenerative skin diseases; skeletal muscle pathology; and developmental, inflammatory, degenerative, and traumatic disorders of bones and joints, with integration of pathological findings into clinical diagnosis and prognosis.

Unit 2: Nervous and Endocrine Systems Pathology

Covers inflammatory, degenerative, toxic, and neoplastic disorders of the nervous system, pathology of major endocrine glands, immunopathology and immune-mediated diseases, and principles of pathological diagnosis and lesion interpretation.

Unit 3: Pathology of Specific Diseases

Covers the pathology of bacterial, viral, fungal, rickettsial, parasitic, nutritional, and metabolic diseases, as well as digestive, hepatic, pancreatic, reproductive, haemic, lymphoid, and neoplastic disorders. It also covers post-mortem examination, lesion description and documentation, and correlation of gross and histopathological findings with clinical and laboratory data.

6.31.3 Teaching and Learning Methods

Students engage in discussions, problem-solving, observation, and analysis to apply concepts. Handouts, short videos, and online resources support structured and independent learning. UR e-learning provides teaching materials, assessments, books, journals, and discussion resources. Practical activities include anatomy laboratory visits, specimen observation, descriptions, and reports. Self-directed study and readings reinforce theoretical knowledge and practical anatomy skills.

6.32 VM80685: Production Animal Medicine I

Module code and name	VM80685: Production Animal Medicine I
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	10 credits
Year of study and semester	Year 3, Semester 6
Prerequisites:	VM80181, VM80381, VM80382, VM80383, VM80481, VM80482, VM80483, VM80583, VM80584, VM80585

6.32.1 Module introduction and aim

This module provides students with the knowledge and clinical skills required for the diagnosis, treatment, prevention, and control of common diseases affecting cattle, sheep, and goats in the East African region. Students learn to obtain clinical histories, perform systematic physical and clinical examinations, formulate differential diagnoses, interpret laboratory findings, and select appropriate diagnostic and treatment approaches. The module covers infectious, parasitic, metabolic, and production-limiting disorders, with emphasis on improving animal health and productivity while considering economic feasibility for livestock owners. Students will also develop competencies in designing and implementing disease prevention and control programmes at farm and community levels.

6.32.2 Module Indicative content

Unit 1: Large Ruminant Medicine

Covers principles of large ruminant medicine and herd health management, common infectious and metabolic diseases of cattle, mastitis, clinical and laboratory diagnostic techniques, disease investigation, treatment protocols, responsible drug use, and preventive health management.

Unit 2: Small Ruminant Medicine (Caprine and Ovine)

Covers sheep and goat medicine and herd health management, common infectious, parasitic, and production-related diseases, lameness and musculoskeletal disorders, clinical and laboratory diagnosis, herd-level disease investigation, outbreak management, preventive health programmes, and practical clinical skills.

6.32.3 Teaching and Learning Methods

The module will use lectures, group work through case studies, seminars and workshops, practical exercises, and field trips to support students' learning and application of knowledge.

6.33 VM80781: Industrial Attachment II

Module code and name	VM80781: Industrial Attachment II
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	10 credits
Year of study and semester	Year 4, Semester 7
Prerequisites:	Module Y1-Y3

6.33.1 Module introduction and aim

This module provides students with practical professional experience through supervised off-campus training in pre- and para-clinical veterinary skills. Students apply knowledge acquired during Years 1–3 in pharmacy and toxicology, animal nutrition and feeding, livestock production, animal food processing, public health, food safety and quality control, disease prevention, and meat and animal-product inspection in abattoirs and slaughterhouses. The training strengthens practical competence, professional conduct, and reflective practice while broadening students' understanding of diverse veterinary workplaces and career pathways.

6.33.2 Module Indicative content

1. Veterinary Pharmacology and Toxicology Competencies

Covers identification and appropriate selection of major veterinary drug classes, accurate dosage calculation, correct routes of administration, withdrawal periods, drug storage and record-keeping, antimicrobial stewardship, drug resistance prevention, and monitoring of adverse drug reactions. It also develops competencies in recognizing common sources and clinical signs of poisoning, understanding toxic doses and exposure routes, applying basic first-aid and emergency measures, and participating in reporting and prevention of toxicological incidents.

2. Animal Nutrition, Production, and Husbandry Competencies

Covers identification of major feed types and ingredients, nutritional requirements of cattle, small ruminants, pigs, and poultry, basic feed formulation and ration balancing, and recognition of nutritional deficiencies and metabolic disorders. It also develops competencies in good feeding practices, water provision, housing hygiene, animal welfare, and understanding the relationships between nutrition, immunity, productivity, and disease prevention.

3. Food Safety and Public Health Competencies

Covers zoonotic disease prevention, food hygiene, basic HACCP principles, and inspection of meat and other animal products. It develops practical competencies in ante-mortem and post-mortem meat inspection, identification of pathological lesions, meat judgement, milk assessment, egg and honey quality control, sanitation standard operating procedures, and cold chain management.

6.33.3 Teaching and Learning Methods

The industrial attachment is conducted during the Year Four Semester One break under host and academic supervision. Students participate in daily activities assigned by the host supervisor and receive mentorship. The host supervisor evaluates performance, while the academic supervisor conducts a site visit for feedback, career guidance, and collaboration. Students maintain a logbook signed by all parties, with guidelines provided via the Department and UR e-learning platform.

6.34 VM80782: Companion Animal Medicine

Module code and name	VM80782: Companion Animal Medicine
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	10 credits
Year of study and semester	Year 4, Semester 7
Prerequisites:	VM80682, VM80181, VM80381, VM80382, VM80383, VM80481, VM80482, VM80483, VM80583, VM80584, VM80585, VM80684, VM80685

6.34.1 Module introduction and aim

This module focuses on the diagnosis, treatment, prevention, and control of diseases affecting companion animals, particularly dogs, cats, and horses, with emphasis on conditions commonly encountered in urban and peri-urban veterinary practice in Rwanda. It enables students to integrate clinical knowledge and practical skills in taking medical histories, conducting comprehensive clinical examinations, developing differential and confirmatory diagnoses, and formulating appropriate treatment and prognosis. The module also develops students' ability to assess the economic feasibility of diagnostic and treatment options, communicate effectively with clients, and provide appropriate advice on disease prevention, control, and animal health management.

6.34.2 Module Indicative content

Learning Unit 1: Canine and Feline Medicine

It covers introduction to canine and feline medicine, including breeds, history, uses, life stages, behaviour, and normal vital parameters. Develops consultation skills: restraint, history taking, clinical examination, diagnosis, treatment, prognosis, prevention, and costing. Diagnostic procedures include haematology, biochemistry, cytology, histopathology, radiography, ultrasonography, CT, and MRI. Also covers respiratory, cardiovascular, digestive, dermatological, neurological, endocrine, oncological, and infectious diseases, plus elective euthanasia and puppy/kitten preventive medicine (deworming, vaccination, neutering).

Learning Unit 2: Equine Medicine

Covers equine breeds, colours, history, uses, life stages, behaviour, normal vital parameters, and dentition. Develops consultation skills: restraint, history taking, clinical examination, diagnosis, treatment, prognosis, prevention, and costing. Diagnostic procedures include haematology, biochemistry, cytology, histopathology, radiography, ultrasonography, CT, and MRI. Also covers respiratory diagnostics (endoscopy, thoracic ultrasonography, sampling), diseases of major body systems, and equine euthanasia indications and procedures.

6.34.3 Teaching and Learning Methods

The module uses formal lectures, discussions, and peer learning through the UR E-Learning platform. Lecturers guide students to relevant electronic sources and provide feedback on their work. Practical laboratory work, seminars, field visits, and assignments reinforce understanding of course topics. Students access syllabi, notes, handouts, references, and discussion forums through UR e-learning. Self-directed learning includes textbooks, lecture notes, online resources, and drawing and labelling histological samples.

6.35 VM80783: Theriogenology I

Module code and name	VM80783: Theriogenology I
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	10 credits
Year of study and semester	Year 4, Semester 7
Prerequisites:	VM80182, VM80381, VM80382, VM80585, VM80682

6.35.1 Module introduction and aim

This module develops students' knowledge and practical skills in animal reproduction, gynecology, obstetrics, and theriogenology, with emphasis on cattle, small ruminants, and companion animals. It covers reproductive physiology, pregnancy diagnosis, reproductive examination, management of pregnant, parturient, and postpartum animals, and diagnosis and management of reproductive disorders. Students develop competencies in addressing reproductive failure, obstetrical emergencies, and urogenital conditions requiring intervention, as well as applying appropriate assisted reproductive technologies. The module emphasizes improving reproductive efficiency, animal welfare, and productivity in smallholder and commercial livestock systems.

6.35.2 Module Indicative content

Unit 1: Veterinary Gynecology

Covers female reproductive health, reproductive anatomy and physiology, hormonal regulation, fertilization and embryo development, management of estrous cycles, fertility enhancement, breeding management, artificial insemination, and assisted reproductive technologies, including sperm and oocyte cryopreservation, in vitro fertilization, and embryo transfer.

Unit 2: Veterinary Obstetrics

Covers pregnancy and parturition management, reproductive pathology, pregnancy diagnosis, monitoring and management of pregnant animals, pregnancy complications, neonatal care, premature births and neonatal illnesses, and ethical and legal considerations related to assisted reproductive technologies.

6.35.3 Teaching and Learning Methods

The module uses formal lectures, discussions, and peer learning through the UR e-learning platform. Lecturers guide students to relevant electronic sources and provide feedback on their work. Practical laboratory work, seminars, field visits, and assignments reinforce understanding of course topics. Students access syllabi, notes, handouts, references, and discussion forums through UR e-learning. Students participate in discussions, complete assignments, and submit their work on time. Self-directed learning includes textbooks, lecture notes, online resources, and drawing and labelling samples.

6.36 VM80784: Veterinary Surgery II

Module code and name	VM80784: Veterinary Surgery II
School	Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	20 credits
Year of study and semester	Year 4, Semester 7
Prerequisites:	VM80682

6.36.1 Module introduction and aim

This module develops students' knowledge and practical skills in diagnosing, stabilizing, and surgically managing abdominal and urogenital emergencies and other major surgical conditions in domestic animals. Students apply clinical and imaging methods to identify conditions requiring surgical intervention and develop competence in advanced soft tissue and common orthopaedic procedures. Through supervised hands-on training, students refine surgical techniques and anaesthetic management skills across cattle, horses, small animals, and other species encountered in veterinary practice. Emphasis is placed on safe, systematic, and competent surgical decision-making and perioperative patient care.

6.36.2 Module Indicative content

Unit 1: Radiology and Imaging

Covers the principles and applications of radiology, including the physical nature and uses of X-rays, plain and contrast radiography, fluoroscopy, computed tomography, digital radiography, magnetic resonance imaging, and ultrasonography.

Unit 2: Farm and Companion Animal Abdominal and Urogenital Surgery

Covers abdominal surgery in farm animals, including laparotomy, rumenotomy, rumenostomy, traumatic reticulitis, displaced abomasum, bloat, umbilical hernia, and fistula. It also covers companion animal abdominal and urogenital surgery, including laparotomy, gastric volvulus and distension, intestinal intussusception, umbilical hernia and fistula, ovariohysterectomy, caesarian section, castration, inguinal hernia, cystotomy, urolithiasis, cryptorchidism, and cystopexy.

Unit 3: Farm Animal Urogenital Surgery

Covers caesarian section, castration, spaying, vaginal and uterine prolapse, scrotal hernia, and surgical conditions of the teat and mammary glands in farm animals.

6.36.3 Teaching and Learning Methods

The module uses formal lectures, discussions, and peer learning through the UR e-learning platform. Lecturers guide students to relevant electronic sources and provide feedback on their work. Practical laboratory work, seminars, field visits, and assignments reinforce understanding of course topics. Students access syllabi, notes, handouts, references, and discussion forums through UR e-learning. Students participate in discussions, complete assignments, and submit their work on time. Self-directed learning includes textbooks, lecture notes, online resources, and drawing and labelling samples.

6.37 VM80785: Production Animal Medicine II

Module code and name	VM80785: Production Animal Medicine II
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	10 credits
Year of study and semester	Year 4, Semester 7
Prerequisites:	VM80382, VM80381, VM80382, VM80384, VM80482, VM80483 & VM80681 & VM80685

6.37.1 Module introduction and aim

This module extends Production Animal Medicine I by developing students' knowledge and clinical skills in diagnosing, treating, preventing, and controlling major diseases affecting pigs, poultry, rabbits, and other production species. Students develop competence in taking clinical histories, performing physical and clinical examinations, formulating differential diagnoses, selecting appropriate confirmatory tests, and instituting effective and economically feasible treatment regimens. Emphasis is placed on herd- and flock-level health management, biosecurity, disease outbreak investigation, and preventive and control measures for infectious, parasitic, and metabolic diseases in intensive and extensive production systems in Rwanda and the region.

6.37.2 Module Indicative content

Unit 1: Swine Medicine

Covers principles of swine medicine, production systems, normal and abnormal anatomy and physiology, the importance of optimal health, disease diagnosis, differential and confirmatory diagnosis, and effective biosecurity planning. It also covers the etiology, pathogenesis, epidemiology, clinical manifestations, diagnosis, control, and management of common viral, bacterial, parasitic, deficiency, metabolic, and traumatic diseases of pigs.

Unit 2: Poultry Medicine

Covers principles of poultry medicine, production systems, normal and abnormal anatomy and physiology, optimal health, disease diagnosis, differential and confirmatory diagnosis, and effective biosecurity measures. It also covers the etiology, pathogenesis, epidemiology, clinical manifestations, diagnosis, control, and management of common viral, bacterial, fungal, parasitic, deficiency, metabolic, and traumatic diseases of birds.

Unit 3: Rabbit Medicine

Covers principles of rabbit medicine, production systems, normal and abnormal anatomy and physiology, disease diagnosis, differential and confirmatory diagnosis, and effective biosecurity measures. It also covers common rabbit diseases, including pasteurellosis, viral hemorrhagic disease, myxomatosis, gastrointestinal disorders, dental problems, parasitic diseases, respiratory infections, and uterine tumors.

6.37.3 Teaching and Learning Methods

The module will use lectures, group work through case studies, seminars and workshops, practical exercises, and field trips to support students' learning and application of knowledge.

6.38 VM80881: Veterinary Public Health, Food Safety and One Health

Module code and name	VM80881: Veterinary Public Health, Food Safety and One Health
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	15 credits
Year of study and semester	Year 4, Semester 8
Prerequisites:	VM80382, VM80482, VM80484, VM80584, VM80684

6.38.1 Module introduction and aim

This module equips students with knowledge and practical skills in veterinary public health, focusing on the protection of human health through safe production and consumption of foods of animal origin. It covers meat inspection, food hygiene, food poisoning, food preservation, inspection of food-handling premises, zoonotic disease surveillance, environmental contamination, and the application of HACCP and the One Health approach. The module prepares students to effectively contribute to food safety and disease prevention in abattoirs, food control laboratories, veterinary services, and public health institutions.

6.38.2 Module Indicative content

Unit 1: Food Hygiene and Safety

Covers principles of food safety and hygiene, food production, handling, processing, transportation, storage, and preparation; food processing premises and handler hygiene; food preservation, spoilage, food poisoning, and foodborne infections. Also covers food sampling, quality control, food safety laws and regulations, licensing, food-handler training, monitoring, inspection, veterinary certification, and milk/milk-product hygiene and quality assurance.

Unit 2: Veterinary Public Health and Meat Inspection

Covers meat inspection methodology, legal requirements, ante-mortem and post-mortem inspection, carcass and offal examination, lesion identification, differential diagnosis, and public health hazards, informing meat fitness decisions. Also covers disease prevention and control, environmental and occupational health, biosecurity, waste management, veterinary product regulation, safe use, residue avoidance, and quality control of poultry, fish, eggs, and honey.

Unit 3: Principles of One Health

Covers concepts, principles, history, and importance of One Health, emphasizing zoonotic diseases, antimicrobial resistance, global health security, biodiversity, ecosystem health, and climate change. Also addresses antimicrobial stewardship, disease surveillance, pandemic preparedness, conservation medicine, Rwanda's One Health policy, multisectoral collaboration, roles of WHO, WOA, FAO, UNEP, and policymaker engagement.

6.38.3 Teaching and Learning Methods

The course will use interactive lectures, tutorials, group work, practical exercises, field visits, and guided self-study. Blended learning will be supported through UR e-learning, videos, handouts, and electronic resources. Problem-solving, peer discussions, and feedback will promote participation, while journals and materials support independent learning.

6.39 VM80882: Theriogenology II

Module code and name	VM80882: Theriogenology II
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	10 credits
Year of study and semester	Year 4, Semester 8
Prerequisites:	VM80783

6.39.1 Module introduction and aim

This module builds on Theriogenology I by developing advanced knowledge and practical skills in reproductive management across domestic animal species, including livestock, equine, porcine, and companion animals. It covers reproductive physiology, oestrous synchronization, artificial insemination, embryo transfer, and other assisted reproductive technologies. Students develop competencies in diagnosing and managing infertility in individual animals and herds, while applying reproductive biotechnology and herd-level reproductive health strategies to improve fertility, productivity, and breeding efficiency.

6.39.2 Module Indicative content

Unit 1: Assisted Reproductive Technologies

This unit covers advanced reproductive technologies, including oestrous synchronization, pregnancy diagnosis, artificial insemination, and embryo transfer.

Unit 2: Infertility in Domestic Animals

This unit covers causes of reproductive disorders, the fertility chain, oestrus detection, and approaches to the prevention and control of infertility in domestic animals.

Unit 3: Herd Health Management

This unit covers breeding programmes, reproductive monitoring, nutrition management, herd health protocols, genetic selection, biosecurity, reproductive record keeping, and disease prevention and control.

6.39.3 Teaching and Learning Methods

Basic knowledge and understanding consist in lectures according to the scheduled program. The practical sessions are organized to reinforce theoretical lectures to increase knowledge and understanding. Assignments and self-reading exercises are given to encourage the students to read the study documents and to illustrate the application of the concept to explicit practical problems. Tutorial problems are solved in group work (each group consists of not more than 10 students), presented and discussed in class aiming at encouraging students to participate in the teaching and learning process.

6.40 VM80883: Veterinary Clinical Pathology

Module code and name	VM80883: Veterinary Clinical Pathology
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	10 credits
Year of study and semester	Year 4, Semester 8
Prerequisites:	VM80183, VM80383, VM80584, VM80684

6.40.1 Module introduction and aim

This module develops students' theoretical and practical competencies in veterinary clinical pathology and its application in disease diagnosis and patient management. Students learn appropriate collection, handling, processing, and interpretation of clinical samples, including blood, urine, faeces, skin, body fluids, and tissue biopsies. The module covers haematology, clinical biochemistry, microbiology, cytology, and urinalysis, enabling students to integrate laboratory findings with clinical information to support diagnosis, guide therapy, and monitor treatment response.

6.40.2 Module Indicative content

Unit 1: Hematology and Cytopathology

This unit covers hematology and cytopathology equipment, selection and submission of diagnostic materials, and sample collection techniques. It includes erythrocyte, leukocyte, and platelet evaluation, their production, functions, responses to disease, interpretation of hematograms, coagulation mechanisms, bleeding disorders, and cytopathology of solid tissues and body fluids, including synovial, cerebrospinal, and prostatic fluids.

Unit 2: Clinical Biochemistry

This unit covers clinical biochemistry of the kidney, liver, muscle, pancreas, and blood, including urinalysis, kidney and liver function tests, plasma and serum proteins and lipids, carbohydrates, water and electrolyte balance, and acid-base balance. It also includes practical biochemical analysis using colorimetric methods for parameters such as blood glucose, total proteins, and urea, together with practical urinalysis.

6.40.3 Teaching and Learning Methods

Formal lectures will provide background information and fundamental concepts for each learning unit. Discussions, peer learning, and forums on UR e-learning platform will promote active student participation. Practical laboratory work, seminars, field visits, and assignments will reinforce understanding of lecture content. Students will access syllabi, handouts, electronic resources, and relevant clinical pathology journals through UR e-learning. Lecturers will provide feedback while students complete assignments, participate in discussions, and submit work on time.

6.41 VM80884: Research Methods and Biostatistics

Module code and name	VM80884: Research Methods and Biostatistics
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	10 credits
Year of study and semester	Year 4, Semester 8
Prerequisites:	VM8068

6.41.1 Module introduction and aim

This module equips students with the knowledge and skills to design, conduct, analyze, and communicate veterinary research. It covers research problem formulation, hypothesis development, research design, sampling methods, data collection, and appropriate biostatistical techniques. Students learn to apply statistical methods to veterinary, livestock health, and production studies and use statistical software to analyze and interpret research data. The module develops students' ability to draw valid conclusions and make evidence-based recommendations, while providing essential preparation for the Research Project module in Year 5.

6.41.2 Module Indicative content

Learning Unit 1: Research Methods

This unit covers the principles and processes of research, including development of research problems, questions, objectives and hypotheses; research design and methodology; research planning, literature review, statistical and epidemiological data analysis, results presentation, discussion, and research report writing. It also covers development of research outputs, outcomes, goals and impacts, work plans and budgets, research dissemination, and ethical guidelines in research.

Learning Unit 2: Biostatistics

This unit introduces the concepts and applications of biostatistics, including data sources, measurement scales, data summarization and presentation, confidence intervals, populations and sampling techniques, sampling distributions, sample size calculation, and statistical hypothesis testing. It also covers basic experimental design and statistical methods including t-tests, Z-test, chi-square test, ANOVA, correlation, and simple, multiple, and logistic regression.

6.41.3 Teaching and Learning Methods

The course will use interactive lectures, tutorials, group work, workshops, practical computer sessions, and guided self-study. Students will apply concepts through statistical software, problem-solving exercises, peer discussions, and formative feedback. Blended and online learning will be supported through the UR E-Learning platform and short instructional videos. Handouts, electronic resources, and relevant food science journals will support independent learning and deeper understanding. Teaching materials will be uploaded to UR E-Learning to facilitate continuous access to course content.

6.42 VM80885: Veterinary Clinics I

Module code and name	VM80885: Veterinary Clinics I
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	20 credits
Year of study and semester	Year 4, Semester 8
Prerequisites:	Modules Y1-Y4

6.42.1 Module introduction and aim

This module provides supervised practical clinical training that enables students to apply theoretical knowledge to the diagnosis and management of animal diseases. Students develop competencies in physical examination, patient workup, clinical reasoning, sample collection, laboratory diagnosis, imaging, treatment planning, and surgical assistance across animal species. Through rotations in veterinary clinical services and exposure to field cases, students progressively assume responsibility for patient care, interpret clinical and laboratory findings, communicate with farmers, and provide appropriate treatment and advice. The module strengthens clinical competence, professional judgement, and practical skills in preparation for advanced clinical training

6.42.2 Module Indicative content

Unit 1: Clinical Rotation

This unit provides practical training in clinical examinations and routine farm outreach visits for cattle, goats, sheep, poultry, swine, and dogs. It emphasizes reproductive and nutritional evaluation, disease prevention, herd health programmes, vaccination, mastitis prevention and control, sample collection, diagnosis, and medical and surgical treatment, with practical exposure to traumatological, abdominal, and urogenital surgical conditions.

Unit 2: Farm Rotation

This unit focuses on improving livestock production and management through routine physical examination, administration of injections, and daily herd health evaluation. It covers prevention and control of TBDs, helminth infections, and trypanosomiasis where applicable, together with collection and handling of blood, fecal, skin, urine, biopsy, and other diagnostic samples.

Unit 3: Laboratory Rotation

This unit provides practical training in parasitological and microbiological diagnostic methods, including laboratory equipment use, sample collection and handling, blood and fecal smear preparation and staining, fecal examination, and identification of endoparasites. It also covers laboratory biosafety, culture media preparation, bacterial culture and identification, biochemical tests, microbial enumeration, waste decontamination, bacterial preservation, and Gram and polychrome methylene blue staining techniques.

6.42.3 Teaching and Learning Methods

The practical course is delivered in the form of educational field visits and laboratory work through hands-on practices. The students will be assigned to group works and seminars will be conducted every Friday of each week. The students will be requested to write the individual field/laboratory report at the end of each day.

6.43 VM80981: Veterinary Surgery III

Module code and name	VM80981: Veterinary Surgery III
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	10 credits
Year of study and semester	Year 5, Semester 9
Prerequisites:	VM80682, VM80784

6.43.1 Module introduction and aim

This module develops advanced veterinary surgical knowledge and practical skills for diagnosing and managing surgical conditions of the head, neck, thorax, and musculoskeletal system in domestic and companion animals. Students consolidate competencies in soft tissue and orthopaedic surgery, including procedures involving the eye, ear, mouth, oesophagus, trachea, thorax, bones, muscles, tendons, ligaments, and fascia. The module introduces laparotomy, advanced wound management, and minimally invasive techniques, while developing skills in perioperative care and management of complications. Students' progress toward confident and independent performance of common elective and emergency procedures under direct supervision.

6.43.2 Module Indicative content

Unit 1: Head, Neck and Thorax Surgery

This unit covers dehorning and surgical conditions of the ears, eyes and eyelids, mouth, tongue, palate, and salivary glands, including basic dentistry and stomatology. It also addresses surgical conditions of the larynx, oesophagus, and trachea, as well as thoracic conditions requiring surgical intervention, including pneumothorax, pyothorax, chylothorax, pleural effusion, hydrothorax, and haemothorax.

Unit 2: Orthopedic Surgery

This unit covers classification and healing of fractures, equipment and materials for fracture reduction and fixation, and diagnostic and treatment methods for fractures. It also addresses diagnostic procedures and treatment of conditions affecting joints, bursae, muscles, ligaments, and tendons.

6.43.3 Teaching and Learning Methods

Formal lectures will provide background information and fundamental concepts for each learning unit. Class discussions, peer learning, and UR E-Learning forums will promote active student participation. Practical laboratory work, seminars, field visits, and assignments will reinforce understanding of lecture content. Students will access syllabi, handouts, electronic resources, and reference materials through UR E-Learning. Students will participate in discussions, complete assignments, submit work on time, and receive feedback from lecturers. Self-directed learning will involve textbooks, lecture notes, online resources, and drawing and labelling histological samples.

6.44 VM80982: Veterinary Clinics II

Module code and name	VM80982: Veterinary Clinics II
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	20 credits
Year of study and semester	Year 5, Semester 9
Prerequisites:	VM80885

6.44.1 Module introduction and aim

Veterinary Clinics II is the capstone clinical training module of the BVM programme, integrating and advancing students' clinical, surgical, diagnostic, and professional competencies. Through supervised field and clinical cases, students apply classroom knowledge to the physical examination, diagnosis, sample collection and analysis, treatment, and management of animal diseases. Students rotate through major clinical services with increasing autonomy and responsibility, develop effective communication with farmers and clients, and integrate laboratory findings into clinical decision-making. The module prepares graduates for Day-1 professional practice as competent, confident, and independent veterinary practitioners.

6.44.2 Module Indicative content

Unit 1: Clinical Rotation

This unit covers clinical examination and routine farm outreach visits for cattle, goats, sheep, poultry, swine, and dogs, with emphasis on reproductive and nutritional evaluation, disease prevention, herd health, vaccination, mastitis control, sample collection, diagnosis, and medical and surgical treatment. Students will also gain practical experience in managing traumatological, abdominal, urogenital, head, neck, thoracic, and orthopedic surgical conditions.

Unit 2: Farm Rotation

This unit focuses on livestock production management, routine physical examination, administration of injections, and daily herd health evaluation. It covers prevention and control of TBDs, helminth infections, and trypanosomiasis where applicable, as well as collection of blood, fecal, skin, urine, biopsy, and other diagnostic samples.

Unit 3: Laboratory Rotation

This unit provides practical training in parasitological and microbiological diagnostic methods, including laboratory equipment use, sample collection and handling, blood and fecal smear preparation, staining, hematological interpretation, fecal examination, and identification of endoparasites. It also covers laboratory biosafety, sterilization, culture media preparation, bacteriological and biochemical testing, microbial counting, waste decontamination, bacterial preservation, and Gram and polychrome methylene blue staining.

6.44.3 Teaching and Learning Methods

The practical course is delivered in the form of educational field visits and laboratory work through hands-on practices. The students will be assigned to group works and seminars will be conducted every Friday of each week. The students will be requested to write the individual field/laboratory report at the end of each day.

6.45 VM80983: Wildlife Health and Management

Module code and name	VM80983: Wildlife Health and Management
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	10 credits
Year of study and semester	Year 5, Semester 9
Prerequisites:	VM80681, VM80881,

6.45.1 Module introduction and aim

This interdisciplinary module integrates wildlife biodiversity, conservation, and wildlife medicine, with emphasis on wildlife health in Rwanda's conservation and agro-pastoral landscapes. Students develop knowledge and practical skills in wildlife ecology, disease epidemiology, conservation, and the wildlife–livestock–human interface using a One Health approach. The module covers wildlife disease prevention and control, capture, immobilization, transport, treatment, and rehabilitation, as well as the development and implementation of wildlife health and conservation programmes. It prepares students to contribute to wildlife protection, public health, sustainable resource management, and conservation policy and practice.

6.45.2 Module Indicative content

Unit 1: Wildlife Biodiversity and Conservation

This unit covers concepts, importance, and conservation of wildlife biodiversity, including ecology, population dynamics, habitat requirements, migration, species interactions, and population monitoring. It addresses threats like habitat loss, poaching, invasive species, pollution, and climate change, alongside conservation strategies such as protected areas, ex situ conservation, wildlife corridors, community-based conservation, and indigenous knowledge. It also covers national wildlife legislation and policies, trade, transboundary challenges, human-livestock-wildlife conflicts, community engagement, and veterinarians' role in conservation and conflict mitigation.

Unit 2: Wildlife Medicine

This unit covers wildlife health and medicine, conservation medicine, ecosystem health, and veterinarians' role at human-livestock-wildlife interfaces. It includes wildlife capture, handling, restraint, immobilization, transport, welfare, tagging, and post-release monitoring, plus comparative anatomy, physiology, disease ecology, epidemiology, clinical examination, disease recognition, wound management, diagnostics, sampling, and surveillance. It also addresses rehabilitation, captive management, zoonotic and emerging infectious diseases, One Health, research technologies (GIS, camera traps, drones, bio-logging, satellite collars), fieldwork, stakeholder engagement, and simulated outbreak investigations.

6.45.3 Teaching and Learning Methods

Formal lectures will provide background information and fundamental concepts for each learning unit. Discussions, peer learning, and UR E-Learning forums will promote participation and knowledge sharing. Practical laboratory work, seminars, field visits, and assignments will reinforce understanding. Students will access syllabi, handouts, and journals via UR E-Learning. Lecturers will give feedback, while students discuss, complete, and submit assignments on time.

6.46 VM80984: Veterinary Ethics and Jurisprudence

Module code and name	VM80984: Veterinary Ethics and Jurisprudence
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	10 credits
Year of study and semester	Year 5, Semester 9
Prerequisites:	VM80982

6.46.1 Module introduction and aim

This module equips students with the ethical, legal, and professional competencies required for veterinary practice. It covers veterinary jurisprudence, forensic veterinary medicine, professional ethics, animal welfare, and the national and international laws, regulations, and standards governing veterinary services. Students develop skills in ethical decision-making, professional conduct, and understanding the rights and responsibilities of veterinary professionals. The module also introduces veterinary extension and communication skills, enabling graduates to effectively engage with farmers, communities, and stakeholders while fulfilling their legal and professional obligations in veterinary and public health practice.

6.46.2 Module Indicative content

Unit 1: Veterinary Jurisprudence and Forensic Veterinary Medicine

This unit covers veterinary legislation governing the profession in Rwanda, including animal health, veterinary pharmacy, slaughter and meat inspection, aquaculture, fisheries, and beekeeping. It also addresses international veterinary legislation, animal welfare standards, risk analysis, biosecurity, professional ethics, public health and food safety laws, documentation and reporting, forensic veterinary medicine, postmortem techniques, toxicology, and veterinarians as expert witnesses.

Unit 2: Ethics and Rights in Veterinary Medicine

This unit covers ethical principles in veterinary practice, veterinarian-farmer and professional relationships, professional oaths and conduct, responsible use of medicines and microorganisms, ethical dilemmas, consumer protection, prescription writing, human rights, animal welfare, and the ethical use of laboratory animals in teaching and research.

Unit 3: Veterinary Extension

This unit introduces the concepts, principles, philosophy, importance, and relevance of veterinary extension education, including the history of agricultural extension in Rwanda. It covers veterinary extension approaches, methods and tools, planning and implementation of extension education programmes, and the roles of public and private veterinary services.

6.46.3 Teaching and Learning Methods

The following strategy will be applied: lectures, self-learning via group work with oral presentations, written assignments, tutorials, seminars, field trips, and illustrations. The module will also use blended learning methods, allowing study without direct face-to-face contact. Online teaching will be used, with short video clips offering structured explanations for independent learning. Students will access materials via UR E-Learning.

6.47 VM80985: Veterinary Entrepreneurship, Innovation and Business Management

Module code and name	VM80985: Veterinary Entrepreneurship, Innovation and Business Management
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	10 credits
Year of study and semester	Year 5, Semester 9
Prerequisites:	-

6.47.1 Module introduction and aim

This module integrates animal health and production economics, project management, entrepreneurship, and business planning within the veterinary profession. Students develop knowledge and practical skills in project design, implementation, monitoring, stakeholder engagement, risk management, procurement, communication, quality assurance, and financial management. The module also covers business plan development, marketing, financial modelling, innovation, and management of veterinary enterprises. Students learn to analyze economic factors affecting animal health and production systems and apply entrepreneurial principles to establish and manage sustainable veterinary businesses, clinics, and animal health services.

6.47.2 Module Indicative content

Unit 1: Project Management and Business Plan

This unit covers the project life cycle, including initiation, planning, implementation, monitoring and control, and closure, as well as project scope, scheduling, costs, quality, human resources, communication, risk, stakeholders, procurement, and change management. It also covers business planning in animal sciences and veterinary medicine, including product and service development, market analysis and strategy using SWOT, risk identification and mitigation, management and financial planning, and development of financeable business plans for enterprises such as livestock production, beekeeping, aquaculture, veterinary clinics, and pharmacies.

Unit 2: Animal Health and Production Economics

This unit introduces economic concepts and their application to animal production and health, including consumer behavior, market demand and elasticity, supply, resource use, production functions, and price determination under different market structures. It also covers animal health and production economics, budgeting, decision-making, cost-benefit and enterprise analysis, marketing channels, livestock and animal-product marketing, and principles of international trade and related policies.

6.47.3 Teaching and Learning Methods

The module will be delivered through lectures using PowerPoint presentations, practical sessions based on real-world examples from animal production and veterinary medicine and guided self-learning through group work and oral presentations. Students will also engage in assignments, tutorials, and seminar presentations, with feedback provided by lecturers and peers. Assessment and learning activities will include essays and multiple-choice questions to reinforce understanding and application of the course content.

6.48 VM81081: Industrial Attachment III

Module code and name	VM81081: Industrial Attachment III
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	30 credits
Year of study and semester	Year 5, Semester 10
Prerequisites:	Modules Y4 (semester 1)- Y5

6.48.1 Module introduction and aim

This module provides students with extended supervised professional experience through off-campus placement in diverse veterinary settings, including clinics, hospitals, farms, laboratories, abattoirs, and government veterinary services. It strengthens theoretical knowledge through hands-on clinical, diagnostic, preventive, and advisory practice, while exposing students to real-world professional challenges. Students progressively assume near-independent responsibilities and demonstrate **Day-1 professional competencies** required for veterinary practice and licensure. The module also enables students to assess their professional interests, develop practical confidence, and adapt to different veterinary career environments.

6.48.2 Module Indicative content

Clinical Practice, Diagnostics and Animal Health Management

Covers clinical examination, differential diagnosis, laboratory and imaging interpretation, case management, clinical records, disease prevention, epidemiology, surveillance, outbreak response, biosecurity, and herd health.

Companion and Production Animal Medicine, Reproduction and Surgery

Covers diagnosis and treatment of companion and production animals, reproductive examination, pregnancy diagnosis, artificial insemination, dystocia, neonatal care, surgery, anesthesia, pain management, wound care, and postoperative management.

Pharmacology, Therapeutics and Veterinary Public Health

Covers safe drug selection and administration, antimicrobial stewardship, toxicology, residue prevention, food safety, meat inspection, zoonotic disease control, HACCP, and One Health approaches to public health protection.

Wildlife Health, Animal Welfare, Ethics and Professional Practice

Covers wildlife disease recognition and surveillance, ecosystem health, animal welfare, veterinary legislation, ethical practice, professional conduct, legal compliance, and responsibilities at the human–animal–environment interface.

6.48.3 Teaching and Learning Methods

The industrial attachment is conducted at the end of Semester One of Year Five under host and academic supervision. Students participate in daily activities assigned by the host supervisor, who provides mentorship and evaluates performance. The academic supervisor conducts a site visit for feedback, career support, and collaboration. Students maintain a logbook signed by all parties, with guidelines from the Department and UR E-Learning.

6.49 VM81081: VM81082: Research Project

Module code and name	VM81082: Research Project
School	School of Veterinary Medicine and Life Sciences
Department	Department of Veterinary Clinical Sciences
Programme	Bachelor of Veterinary Medicine
Number of credits	20 credits
Year of study and semester	Year 5, Semester 10
Prerequisites:	Module Y1-Y5

6.49.1 Module introduction and aim

The Research project is the capstone independent study module of the BVM programme, enabling students to apply scientific principles and research methodology to address veterinary and animal health problems of national or regional significance. Under academic supervision, students develop a research proposal, conduct field or laboratory investigations, collect and analyse data, and make evidence-based decisions. The module develops practical research skills, scientific attitudes, and independent problem-solving abilities. Students are expected to produce and submit a quality research thesis and communicate their findings through an oral presentation for academic evaluation.

6.49.2 Module Indicative content

This course provides theoretical and practical knowledge and skills in research methods and biostatistics, covering research topics and supervisor selection, development of research proposals, identification of research problems and objectives, and appropriate research methodologies. It also covers the development, testing and validation of data collection tools, data collection practices, data entry and cleaning, data analysis tools and techniques, thesis writing, and effective communication and presentation of research findings.

6.49.3 Teaching and Learning Methods

The course will emphasize practical research work, self-application, supervision, and feedback, supported by selected lectures on research principles. Students will receive guidance from supervisors, senior researchers, librarians, and academic writing and data analysis support teams. Group discussions with peers and supervisors will support research problem identification, topic selection, objectives, and methodology development. Students will progressively develop and refine research proposals under supervisor guidance until they reach an acceptable standard. Field and laboratory activities will support collection of valid and reliable data with guidance from supervisors and laboratory technicians. Regular supervision meetings, progress reviews, and implementation of corrections from supervisors and thesis examiners will support successful completion.

7 Academic Calendar and Attendance requirements

7.1. Academic calendar — Academic Year: 2026/2027

UR Academic calendar is available at this link: <https://ur.ac.rw/?-Academic-Calendar-217->

The number of teaching weeks per semester is 15. Examination and assessment weeks per semester are 6.5.

7.2. Attendance requirements

Students are required to attend at least 85% of the scheduled sessions for each module. A student who falls below the minimum attendance without approved cause may be barred from the end-of-module assessment, in line with the University of Rwanda Academic Regulations. Absence must be reported to the Programme Leader in writing with supporting evidence.

8 Assessment

8.1 Assessment strategy

Assessment combines continuous assessment and end-of-semester examinations. The standard weighting is 50% continuous assessment and 50% final examination, unless a different weighting is approved for a module and stated in its description.

Assessment method	Purpose	Typical weighting
<i>Written examination</i>	<i>Summative: tests breadth of knowledge</i>	<i>50%</i>
<i>Coursework/assignment</i>	<i>Formative</i>	<i>10%</i>
<i>Continuous assessment test</i>	<i>Formative: checks progress</i>	<i>20%</i>
<i>Practical / laboratory report</i>	<i>Formative: applied skills</i>	<i>10%</i>
<i>Group project/presentation</i>	<i>Formative: teamwork and communication</i>	<i>10%</i>
<i>Dissertation/thesis</i>	<i>Formative: independent research</i>	<i>100% of the component</i>

8.2 Grading scale

Mark range (%)	Grade	Grade point	Descriptor
80-100	A	-	First class
70-79.99	B	-	Second Class-Upper Division
60-69.99	C	-	Second Class-Lower Division
50-59.99	D	-	Pass
0-49.99	F	-	Fail

Pass mark per module: 50%. Minimum weighted average for progression: 50%.

8.3 Feedback to students

Students receive written feedback on assessed work. Marks are released after confirmation by the relevant University organs at college level.

8.4 Academic integrity

All submitted work must be the student's own. Plagiarism, collusion, falsification of data and examination misconduct are academic offences under the UR Academic Regulations and are subject to disciplinary action. Submissions may be screened using similarity-detection software.

9 Progression, Graduation and Completion Requirements

9.1 Progression from one year to the next

To progress to the next year of study, a student must meet requirements set by the academic regulations available at <https://ur.ac.rw/spip.php?page=key-documents>. Where a student does not meet these conditions, the student may carry the modules in the following year, repeat the year, or discontinue in line with the UR Academic Regulations.

9.2 Graduation and completion requirements

A student is eligible to graduate from the Bachelor of Veterinary Medicine after satisfying all of the requirements as set by the University Academic Senate:

#	Requirement	Standard
1	Total credits accumulated	As per programme requirements
2	Modules passed	As per academic regulations
3	Financial and property clearance	All fees paid; library and laboratory items returned (As per academic regulations)
4	Approval	Results confirmed by the College Academic Committee and approved by the University Academic Senate

9.3 Award of the qualification and graduation ceremony

Awards are conferred upon the satisfaction of requirements set by the University of Rwanda and the Academic Senate of the University of Rwanda. Eligible students are presented at the annual graduation ceremony. The Office of the Registrar issues transcripts and certificates following Senate approval.

10 Approval and Key contact

Role	Name	Email
Dean, School of Veterinary Medicine and Life Sciences (SVMLS)	Dr. Jean Bosco NTIVUGURUZA	dean.svmls@ur.ac.rw
Director of Teaching and Learning Enhancement (DTLE)	Dr. Valentin MUJYAMBERE	dtle.cvas@ur.ac.rw
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