

Tracks in the veterinary curriculum at the Faculty of Veterinary Medicine, Utrecht University, The Netherlands, to introduce disciplines of other domains to improve the skills and effectiveness of veterinarians.

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1. Introduction

Increased awareness of the need to improve the skills of veterinarians (and subsequently job perspectives), asked for reformulation of the curriculum of the MSc program Veterinary Medicine of the Faculty Veterinary Medicine (FVM) at Utrecht University. In the master program students have the opportunity to choose, apart from more in depth clinical tracks, for an 39 weeks program on different non-clinical skills or subjects. At present already 39 weeks courses (tracks), focused on One Health, Animal Welfare Management, Veterinary public governance or research are offered. These tracks consist of a course based education period of 20 weeks and an internship of 19 weeks. The course based education period is divided in a compulsory core program (10 weeks) and an elective program (10 weeks). Courses within the University Utrecht or other Universities embracing the multidisciplinary side of the subjects can be chosen. This mix of students stimulates discussions, opens eyes for other disciplines and increases the skills of all participating students.

2. Program schedule MSc Veterinary Medicine

The MSc Veterinary Medicine at Utrecht University, The Netherlands, is based on a choice for animal differentiation and an in depth specialization track.

MSc Companion Animals	Clinical
	Governance
	One Health
	Animal Welfare
MSc Horses	Clinical
	Governance
	One Health
	Animal Welfare
MSc Farm animals and VPH	Clinical
	Governance
	One Health
	Animal Welfare

Basic part		LH / vph	com	horse
1	Management and	4	4	4
2	Laboratory animals	1	1	1
3	Hygiene and diagnostics	3	3	3
4 A	Basis rotation Large animal health/veterinary public health		10	10
4 B	Basis rotation horse	5	5	
4 C	Basis rotation Companion animals	7		7
5	Differentiated rotation including theoretical part	53	50	50
6	External education	8	8	8
Track Part				
1	Theoretical core program	10	10	10
2	Theoretical elective program	10	10	10
3	Research	12	12	12
3	Second internship	7	7	5
Total		120	120	120

3. As an example: Track One Health education goals and career perspectives

Topics addressed in the MSc Veterinary Medicine track One Health are risk assessment, risk management and risk communication. The core program are interdisciplinary courses within the University Utrecht to emphasize the multi-disciplinary side of One Health like: Introduction to Epidemiology, Study design, Microbiology and infectious diseases (including antimicrobial resistance and molecular epidemiology), Risk Assessment and risk management of infectious agents, Exposure assessment in toxicology and One Health and environment.

Veterinary students are studying the multiple topics together with (bio)medical, psychology, pharmacy students. Veterinarians who have completed the track within one of the animal specific tracks are equipped with knowledge and skills which make them pre-eminently fit to function in the sector of veterinary medicine where the interplay between animals, their owners, society, the environment and the economy is leading. This can be done on a **policy level** working in civil service, as a **researcher** doing veterinary or human related research or as a **practitioner** in Companion Animals, Equine or Farm Animals. Potential employers beside the veterinary practices can be on a national level: municipal and provincial health services and boards, ministries, animal protection organizations, public health research organizations e.g. RIVM, WUR, UU or at an international level e.g. World Health Organization, FAO, OIE, EFSA, ECDC.

4. Conclusions

Career perspectives for "Professionals" are changing in the information era. The veterinary medicine Professional has to be able to cope with the new demands of animal owners and society. Therefore veterinary medicine curricula have to be adapted in order to develop the skills and competencies of future veterinarians. Skills like communication, looking beyond professions and out of the box thinking combined with competencies as working in multi disciplinary teams and flexibility can only be educated in multidisciplinary education environments. The Utrecht Veterinary Medicine curriculum has been changed in this direction by teaching veterinary subjects in courses filled with students from different studies and allowing veterinary students to follow courses outside the veterinary curriculum. Students and educators have, in evaluations, expressed their enthusiasm for these developments.

Institute for Risk Assessment Sciences



Definition of One Health as used by the Faculty of Veterinary Medicine, Utrecht University.

One Health deals with the health and well-being of humans and animals, on a national and international level through the prevention of infectious and non-infectious diseases related to the cohabitation of animals and humans and taking into account environmental, social, ecological and economical (in particular cost benefit) aspects. It is defined as the integrative effort of multiple disciplines working locally, nationally, and globally to attain optimal health for people, animals, and the environment.

One Health has a distinctly different emphasis in comparison to One Medicine. One Medicine aims at diagnosing and treating disease with the animal as model for humans and vice versa.

Definition of Animal Welfare Management as used by the Faculty of Veterinary Medicine, Utrecht University.

Animal Welfare Management makes the veterinarian pre-eminently fit to function in the rapidly developing part of the veterinary profession that is situated at the interplay between animals, their owners, society, the environment, the economy, and politics, which is crucial to deliver sustainable solutions. Our Animal Welfare Management strategies are based on the faculty's concept of Animal Welfare, approaching welfare from a biological and pathobiological perspective (the continuum of health and disease) relative to ethical norms and values, such as recognising an intrinsic value in animals. Animal Welfare is considered to be determined by the animal's ability to adapt to its environment to achieve a state that it perceives as positive. Adaptive capacities therefore require that both positive and negative emotions are adequately processed. In other words, welfare is not dependent on the absence of negative and the presence of positive states, but on the animal's ability to adapt to them.