

## INTRODUCTION

The pharmacy curriculum in the Netherlands is offered as a 6-year program, equally divided over a 3-year bachelor plus 3-year master in Science. Both programs are offered as competency-based curricula in which disciplinary fields have been integrated around disease or context-oriented themes.

The changing professional landscape of pharmacist as well as innovations in pharmaceutical sciences demand for continuous renewal of the Utrecht pharmacy curriculum.

## AIM/S

- Renewal of the pharmacy curriculum and its subsequent introduction over a time course of three years
- implementation of a renewed educational program that addresses both classical as well as innovative pharmaceutical research AND pharmaceutical professional competencies

Acknowledgments: Teachers, support staff and students of the Dept. of Pharmaceutical Sciences, Utrecht University.

## METHOD

The Utrecht University pharmacy curriculum was reviewed and redesigned over the time course of 2015-2016, which was also the time frame of the introduction of a Domain-specific Frame of Reference for the Netherlands<sup>1</sup>. The bachelor program was aligned via pharmaceutical disciplines which were integrated in course modules and capped with a bachelor thesis end-work (Table 1). The master program was designed along pharmaceutical competencies in accordance with the CANMEDS model of healthcare professionals (Table 2 and Figure 1). Course modules were designed by interdisciplinary teams of teachers, who were furthermore supported in educational renewal by the Utrecht Centre for Educational Consultancy & Professional Development. The new curriculum was introduced in year 1 of the bachelor and master programme in pharmacy in September 2016. The fully renewed curriculum has been offered since the curriculum 2018-2019. New elective courses are designed and implemented continuously.

## RESULTS

The new pharmacy curriculum was introduced in both bachelor and master simultaneously, without affecting the enrollment of new students (~200 bachelor students and ~130 master students annually).

Both bachelor and master program allow students to take elective courses in pharmaceutical topics or topics outside pharmaceutical sciences.

Educational concepts like inquiry-based and experiential learning were introduced, along with a stronger focus on academic and professional skills. The accreditation organisation of the Netherlands and Flanders (NVAO) rated both programmes as 'Good' in its visitation of the pharmacy programs in The Netherlands in 2018/2019.

Table 1. Study program bachelor pharmacy

bachelor pharmacy – study program Year 1			
Introduction to Pharmacy	Drug Delivery	Drug Disposition	Drug Therapy
Drug Chemistry	Drug Action	Elective	Drug Research
Academic and Professional Competencies Year 1			
bachelor pharmacy – study program Year 2+3			
Infections and Immunity	Neurological Disorders	Hormonal disorders	Elective
Compounding	Biological drugs	Elective	Elective
Psychopharmacology	Autoimmunity	Skin diseases and Dermatica	Elective
Cardiovascular Diseases	Oncology	Elective	Thesis
Academic and Professional Competencies Year 2+3			

Examples of Electives: Nutrition; Future Medicines; The wiring Brain; Pain; intercultural communication; Advanced Pharmacokinetics; Lung diseases; Bioanalysis; Access to medicines, and many more....

Table 2. Study program master pharmacy

master pharmacy – study program Year 1			
Chronic medication	Drug Design	Evidence based medicine	Polypharmacy/ Internship
Individual pharmacotherapy	Pharmacy in practice	Pharmaceutical compounding	
Academic and Professional Competencies Year 1			
Master pharmacy – study program Year 2+3			
Therapeutic proteins	Elective	Master Research project	
Clinical pharmacy	Elective		
Oncology	Quality systems and Patient care	Clinical or industrial internship	Clinical Internship
Integrated patient care		Elective	
Academic and Professional Competencies Year 2+3			

Examples of Electives: Drug development, Nanomedicines, Immunopharmacology, Mechanism of toxicology, Digital Pharmaceutical care, Pharmaco-economics, Pharmaceutical humanities, and many more....



Fig 1. CanMEDS model for pharmacy.

## CONCLUSION

Utrecht University managed to implement a new curriculum which addresses novel aspects of pharmacy in a relatively short time frame. As next steps, the performance of students in the renewed program will be surveyed.

## REFERENCES

- 1 <https://www-knmp-nl.proxy.library.uu.nl/downloads/pharmacist-competency-frameworkandDSFR-Netherlands.pdf>