

# **Appendices Teaching and Examination Regulations Master's Degree Programmes 2010-2011**

## **Biomedical Sciences Medical Pharmaceutical Sciences**

### **Appendix A Teaching outcomes of the degree programme (art. 1.3)**

Graduates **Biomedical Sciences** (BMS) and **Medical Pharmaceutical Sciences** (MPS):

- 1 have detailed understanding of the scientific disciplines on the interface between molecular and cellular biology, integrative physiology and behaviour, and medical/pharmaceutical sciences, providing a tailored framework continuing into acquisition of in depth knowledge on:
  - (the assessment of) health maintenance and development of disease (for BMS graduates), or
  - applying drug intervention of diseases, covering the whole range of drug development disciplines from basic drug target discovery and molecular modeling of new entities and molecular targets, to pharmacoepidemiology and post marketing surveillance (for MPS graduates)
- 2 are capable of designing and conducting scientific research
- 3 are capable of independently investigating, and critically evaluating, scientific literature
- 4 are capable of identifying new developments in the relevant disciplines, and to become familiar with these developments
- 5 are organised and creative in the approach to scientific research and complex problems
- 6 can participate in, and contribute to, a multidisciplinary team
- 7 can effectively communicate acquired knowledge, insights and skills to others, both in writing and in oral presentation
- 8 are aware of the potential societal and ethical implications of scientific research, and are able to critically reflect on their actions in this context
- 9 are prepared for a professional career, either in science or in policy & management

### **Appendix B Specializations of the degree programme (art. 2.2)**

1. Within the degree programmes, the student chooses one of the following specializations:
  - a. P-profile ("PhD-profile") which provides training as a researcher;
  - b. M-profile ("policy & management -profile") which prepares for professions in a societal, political and/or commercial context.
2. Within the degree programme Medical Pharmaceutical Sciences students can follow the

specialization Toxicology and Drug Disposition which provides training as a researcher mainly in the field of adverse drug reactions.

## Appendix C Content of the degree programme (art. 2.3)

1. The degree programmes consist of either the P- or the M-profile:

### P-profile:

module	ECTS	entry requirements	assessment	practical
research project (RP)*	40 or ≥	-	technical and/or laboratory skills, written report, oral presentation	x
research project (RP)*	30 or ≥	-	technical and/or laboratory skills, written report, oral presentation	x
colloquium	5	RP	oral presentation	x
essay	5	-	written report	x
optional modules	20	see appendix D	see appendix D	see app. D
electives**	≤ 20	see appendix D	see appendix D	see app. D

### M-profile:

Module	ECTS	entry requirements	assessment	practical
research project (RP)*	40 or ≥	-	technical and/or laboratory skills, written report, oral presentation	x
optional modules	5	see appendix D	see appendix D	see app. D
colloquium	5	RP	oral presentation	x
policy & management internship	40	RP	performance, written report, reflection report	x
science in policy & management	20	-	assignment, exam	x
electives**	≤ 10	see appendix D	see appendix D	see app. D

2. In addition to the above scheme the following rules apply to all programmes:

- \* the first research project must be performed at the School of Life Sciences or the University Medical Center Groningen under supervision of one of the examiners.
- \*\* the student may choose to use 5 - 20 ECTS to extend a research project, attend extra optional modules (see appendix D), do a maximum of 10 ECTS on bachelor modules from one of the bachelor programmes of the school of life sciences, or perform an extra research assignment of 5, 10, 15 or 20 ECTS. During the mid-term assessment one may extend the research project with 5-10 ECTS only.
- research projects, colloquium and essay must deal with different research subjects, must be supervised by a different examiner, and be approved of by the Board of Examiners.

- the student chooses a mentor from the list of each Master programme to advise and discuss the contents of the individual degree programme before approval of the Board of Examiners
- all elements in the individual programme must be approved of by the Board of Examiners.

3. **Additional requirements for the master programme Medical Pharmaceutical Sciences:**

- the module Drug Development is compulsory. Students do this module as one of the electives.

4. **Additional requirements for the track Toxicology and Drug Disposition** (specialization within the master programme Medical Pharmaceutical Sciences):

- Students follow the P-profile scheme.
- The 20 ECTS modules are done as follows:

a. Compulsory modules (10 ECTS)

Module	ECTS	entry requirements <sup>1</sup>	Assessment	practical
molecular toxicology	5	fakin, metox	exam, assignment	x
advanced pharmacokinetics for MPS	5	fakin, metox	exam, assignment	x

b. A selection of 10 EC from the following list:

Module	ECTS	entry requirements <sup>1</sup>	assessment	practical
clinical toxicology	4	-	assignment	x
pharmacovigilance	3	-	assignment (oral presentation, report)	x
animal and human experimentation (or handling laboratory animals)	5 (4)	-	exam, assignment	x
proteomics/genomics	5	-	exam, assignment	x
reproductive toxicology	5	metox, far-epi	assignment	x

<sup>1</sup>. modules from the bachelor programme pharmacy/pharmaceutical sciences. A student who did not successfully follow these bachelor modules should include these modules within the electives of the master programme.

## Appendix D Optional modules (art. 2.4) and Appendix E Entry requirements and compulsory order of examinations (art. 3.2)

The following list presents optional modules. The column on the right indicates the master programmes for which the modules were developed in particular.

### General modules within the School of Life Sciences

module	ECTS	entry requirements	assessment	practical
advanced imaging techniques	5	-	written exam, oral presentation	x
advanced statistics	5	biostatistics	written exam	
animal and human experimentation: design, practice and ethics (or handling laboratory animals)	5 (or 4)	a supervisor approved planning of a master subject involving human or animal experimentation	theoretical exam, assignment	x
science in policy & management *	10, 20	-	assignment	x
orientation on international scientific careers	5	-	assignment	x
programming in C++ for biologists	5	-	assignment	x
radioisotopes in experimental biology	5	-	laboratory skills, written exam	x

\* This module is instructed in Dutch

### Modules organised for biomedical sciences

module	ECTS	entry requirements	assessment	practical
advanced metabolism & nutrition	5	metabolisme & voeding or integratieve neurobiologie	written exam, assignment	x
behavioural pharmacology	5	-	written exam, oral presentation	x
current themes in healthy ageing	5	-	written reports, oral presentation	x
current themes in inflammation and cancer	5	immunologie I	written exam, oral presentation	x
immunology: from bedside to and back	5	immunologie I+II	written exam, oral presentation, report	x
introduction to the behavioural and cognitive neurosciences	4	-	written reports	x
neurodegenerative diseases	5	integratieve neurobiologie	written exam, oral presentation	x
nutrigenomics research	5	metabolisme & voeding or integratieve neurobiologie or advanced metabolism & nutrition	written exam, assignment	x
stem cells & regenerative	5	regenerative	oral presentation, written	x

medicine  
 medicine or mol.  
 biologie & med.  
 biologie or  
 immunologie I

Modules organised for medical pharmaceutical sciences

module	ECTS	entry requirements	assessment	practical
advanced pharmacoeconomics	5	pharmacoeconomic s	report	x
advanced pharmacoepidemiology	5	PiP	assignments	x
advanced pharmacokinetics for MPS	5	fakin	written exam, assignment	x
analysis of naturally-occurring substances	6	-	reports, presentation	x
clinical toxicology	4	-	mandatory attendance, presentations	x
data handling	5	PiP	report	x
drug development	5	-	lectures, assignment	
evidence based medicine	5	PiP	report	x
innovative drug types	4(5)	fakin	written exam	
isolation and identification of natural products	6	-	reports	x
molecular pharmacology practical	6	farp	reports	x
molecular toxicology	5	fakin, metox	exam, assignment	x
pharmaceutical biology practical	6	-	reports	x
pharmaceutical biotechnology	6	-	reports	x
pharmaco-economics	5	-	exam, assignments	x
pharmacoepidemiology in practice (PiP)	5	-	presentation, report	x
pharmacovigilance	3	-	written exam, assignment	x
reproductive toxicology	5	metox, far-epi	assignment	x
selected topics in molecular pharmacology	3	receptorfarmacologi e	oral exam	

Modules organized for molecular biology and biotechnology

Module	ECTS	entry requirements	assessment	practical
DNA micro-array analysis	5	microbiology & genetics research or equivalent	report, presentation	x
biocatalysis and green chemistry	5	(bio)organic chemistry, molecules and reactivity, or equivalent	exam, assignments	x
protein crystallography 2	5	advanced protein crystallography	exam	x
topics in enzymology	5	-	exam	x

Modules organized for educatie & communicatie\*

Module	ECTS	entry requirements	assessment	practical
communiceren en presenteren	5	-	assignments	x
ontwerpen	10	-	assignments	x
wetenschap in beeld	5	-	assignments	x

\* These modules are instructed in Dutch

## Appendix F Admission to the degree programme and different specializations (art. 4.1.1 + art. 4.2)

### 1. Requirements for admission to the master degree in Biomedical Sciences

Holders of the following Bachelor's degrees from the University of Groningen are considered to have sufficient knowledge and skills and will be admitted to the Master's degree programme in Biomedical Sciences on that basis:

- a Bachelor's degree in Biology with major *Biomedische Wetenschappen*, or major *Moleculaire Levenswetenschappen* plus the minor '*Biomedische wetenschappen/Gedrag en Neurowetenschappen*'.
- a Bachelor's degree in Life Science & Technology with major *Biomedische Wetenschappen*, or major *Moleculaire Levenswetenschappen* plus the minor '*Biomedische wetenschappen/Gedrag en Neurowetenschappen*'.
- a Bachelor's degree in Pharmaceutical Sciences plus the minor '*Biomedische wetenschappen/Gedrag en Neurowetenschappen*'.

### 2. Requirements for admission to the master degree in Medical Pharmaceutical Sciences

Holders of the following Bachelor's degrees from the University of Groningen are considered to have sufficient knowledge and skills and will be admitted to the Master's degree programme in Medical Pharmaceutical Sciences on that basis:

- a Bachelor's degree in Pharmacy or Pharmaceutical Sciences
- a Bachelor's degree in Biology or Life Science & Technology with major *Biomedische Wetenschappen*, or *Moleculaire Levenswetenschappen*.

## Appendix G

### Application deadlines for admission (art. 4.5.1)

Deadline of Application	Non-EU students	EU students
Biomedical Sciences	April 15 <sup>th</sup> 2011	June 1st 2011
Medical Pharmaceutical Sciences	April 15 <sup>th</sup> 2011	June 1st 2011

### Decision deadlines (art. 4.5.3)

Deadline of Decision	Non-EU students	EU students
Biomedical Sciences	June 15 <sup>th</sup> 2011	July 1st 2011
Medical Pharmaceutical Sciences	June 15 <sup>th</sup> 2011	July 1st 2011

