

Teaching and Examination Regulations (TER)

Faculty of Science

Masterprogramme in Biomedical Technology and Physics

Academic year: 2019-2020

A: Faculty section

B1: Programme specific section – general provisions
B2: Programme specific section – content of programme

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Section A: Faculty Section

1. General provisions

Article 1.1 Applicability of the Regulations

1. These Regulations apply to anyone enrolled for the programme, irrespective of the	Advice OLC,
academic year in which the student was first enrolled for the programme. These	approval FGV
Regulations apply to the teaching and examinations for the following Master's degree	(9.38 ub b)
programmes:	
 Artificial Intelligence 	
 Bioinformatics and System Biology 	
 Biomedical Sciences 	
 Biomolecular Sciences 	
 Business Analytics 	
 Computer Science 	
 Drug Discovery and Safety 	
Earth Sciences	
■ Ecology	
 Environment and Resource Management 	
■ Global Health (research)	
 Health Sciences 	
 Hydrology 	
 Information Sciences 	
 Management, Policy Analysis and Entrepreneurship in the Health and Life 	
Sciences	
Mathematics	
 Medical Natural Sciences 	
Neurosciences (research)	
 Parallel and Distributed Computer Systems 	
 Science Business and Innovation 	
 Stochastics and Financial Mathematics 	
2. These Regulations enter into force with effect from 1 September 2019.	Advice OLC,
	approval FGV
	(9.38 ub b)
3. An amendment to the Teaching and Examination Regulations is only permitted to	Advice OLC,
concern an academic year already in progress if this does not demonstrably damage the	approval FGV
interests of students.	(9.38 sub b)
interests of students.	

Article 1.2 Definitions

The following definitions are used in these Regulations (in alphabetical order):

a. academic year: the period beginning on 1 September and ending on 31 August of the following

calendar year;

b. CvB: the Executive Board of Vrije Universiteit Amsterdam.

c. Double degree programme joint programme in the context of cooperation between Vrije Universiteit

Amsterdam and the educational institution within and outside the EU, as to gain a double university degree; of the VU and the educational institution concerned; though not being the same as a 'joint degree programme' according to the art. 7.3c

WHW';

d. EC (European Credit): an EC credit with a workload of 28 hours of study;

e. educational component: a unit of study of the programme within the meaning of the WHW;

f. examination: the final examination of the Master's programme;

g. exemption Exemption from an examination/ practical/ fieldwork based on an earlier

successfully completed examination, or knowledge / skills of a similar content,

level and scope gained outside higher education;

h. FGV: Faculty joint assembly – assembly of the faculty student council and faculty staff



council;

i. interim examination: an assessment of the student's knowledge, understanding and skills relating to a

course component. The assessment is expressed in terms of a final mark. An interim examination may consist of one or more partial examinations. A resit

always covers the same material as the original interim examination;

j. joint degree: a degree awarded by an institution together with one or more institutions in the

Netherlands or abroad, after the student has completed a study programme (a degree programme, a major or a specific curriculum within a degree programme)

for which the collaborating institutions are jointly responsible;

k. OLC: programme committee; l. period: a part of a semester;

m. practical exercise: the participation in a practical training or other educational learning activity,

aimed at acquiring certain (academic) skills. Examples of practical exercises are:

o researching and writing a thesis or dissertation

carrying out a research assignmenttaking part in fieldwork or an excursion

o taking part in another educational learning activity aimed at acquiring

specific skills, or

o participating in and completing a work placement;

n. premaster student those who enroll in a premaster programme;

o. Programme: the totality and cohesion of the course components, teaching activities/methods,

contact hours, testing and examination methods and recommended literature;

p. SAP/SLM: the student information system (Student Lifecycle Management);

q. semester: the first (September - January) or second half (February - August) of an

academic year;

r. study guide: the guide for the study programme that provides further details of the courses,

provisions and other information specific to that programme. The Study Guide is

available electronically at: https://www.vu.nl/studiegids

s. subject see 'educational component';

t. substituting course/educational see under d (double degree programme). A course obtained at the

component educational institute, within the context of cooperation, that is mentioned in the

diploma supplement as such; not being an 'exemption'.

u. thesis/internship work placement a component comprising research into the literature and/or contributing to

scientific research, always resulting in a written report;

v. university: Vrije Universiteit Amsterdam;

w. WHW: the Dutch Higher Education and Research Act (Wet op het Hoger Onderwijs en

Wetenschappelijk Onderzoek);

x. workload: the workload of the unit of study to which an interim examination applies,

expressed in terms of credits = EC credits (ECTS = European Credit and Transfer Accumulation System). The workload for 1 year (1,680 hours) is 60 EC credits.

The other terms have the meanings ascribed to them by the WHW.

2. Study programme structure

Article 2.1 Structure of academic year and educational components

1. The study programme will be offered in a year divided into two semesters.	Ordinance CvB, see appendix 3
2. Every semester consists of three consecutive periods of eight, eight and four weeks.	Ordinance CvB, see appendix 3
3. An educational component comprises 6 EC or a multiple thereof.	Ordinance CvB,



	see appendix 3
4. By way of exception to paragraph 3, Section B may stipulate that a unit of study	Ordinance CvB,
comprises 3 EC or a multiple thereof. The Faculty Board requests permission from the	see appendix 3
Executive Board.	

Article 2.2 Refusal or termination of registration / (iudicium abeundi)

1.	Pursuant to the provisions of Article 7.42a of the Act, the Faculty Board or the	WHW
	Examination Board may, in exceptional circumstances, request the Executive Board to	
	terminate or refuse a student's registration on a programme. This may be the case if the	
	student's conduct or statements demonstrate his or her unsuitability to work in the	
	relevant field or discipline, or to take part in the programme's practical training	
	component.	
2.	If a student is suspected of being unsuitable as described in paragraph 1, the	WHW
	Examination Board or the Faculty Board will examine the case, and the student will be	
	informed of this immediately. The Examination Board or the Faculty Board will only	
	issue a recommendation after careful consideration of the interests involved and	
	following a hearing with the student concerned.	

3. Assessment and Examination

Article 3.1 Signing up for education and interim examinations

1. Every student must sign up to participate in the educational components of the programme, the examinations and resits. The procedure for signing up is described in an annex to the Student Charter.	ordinance CvB, see appendix 3
2. Signing up may only take place in the designated periods.	Ordinance CvB, see appendix 3
3. If a student does not pass the examination and the resit of a component, he/ she is oblige to take the whole component again. This rule does not apply to practical exercises and programmes that make use of component marks that retain their validity. For further regulations see Section B of the programme involved.	ed Advice OLC, approval FGV (7.13 x)

Article 3.2 Type of examination

exam	e student's request, the Examination Board may permit a different form of interim nation than that stipulated in the course catalogue. If applicable, more detailed ations on this are included in the Rules and Guidelines for the Examination Board.	Advice OLC, Approval FGV (7.13 l)
termin parts	educational component is no longer offered in the academic year following its nation, at least one opportunity will be provided to sit the interim examination(s) or thereof and a transitional arrangement will be included in the programme-specific in for the subsequent period.	Advice OLC, approval FGV (7.13 j)

Article 3.3 Oral interim examinations

1.	An oral assessment is public unless the Examinations Board on request determines otherwise.	Advice OLC; approval FGV (7.13 l and n)
2.	An oral examination will be taken in the presence of a second examiner.	Advice OLC, approval FGV (art. 9.38 par. b)

Article 3.4 Determining and announcing results

1. The examiner determines the result of a written interim examination as soon as possible,	Ordinance CvB,
but at the latest within fifteen working days. By way of departure from that stipulated in	see appendix 3
the first clause, the marking deadline for theses, internships / work placements and final	
assignments is no longer than twenty working days. The examiner will then immediately	
ensure that the marks are registered and also ensures that the student is immediately	
notified of the mark, taking due account of the applicable confidentiality standards.	



 a. The examiner determines the result (i.e. mark) of an oral examination as soon as possible, though within one working day, after the examination has finished and informs the student accordingly. The third clause of the first paragraph applies. b. The examiner determines the result of an interim examination no later than five working days before the next (interim) examination will be held. 	Advice OLC; approval FGV (7.13 o)
3. In the case of alternative forms of oral or written examinations, the Examination Board determines in advance how and by what deadline the student will be informed of the results.	Advice OLC; approval FGV (7.13 o)
4 A student can submit a request for reassessment to the examiner. A request for reassessment does not affect the time period for lodging an appeal.	Advice OLC; approval FGV (9.38 sub b)
5. Together with the result of an examination, the student's attention will also be drawn to their right to inspect the assessed work and have a post-examination discussion as stipulated in Art. 3.9, as well as his/her option to lodge a complaint before the Examination Board, and if necessary, to appeal to the Examinations Appeals Board (in Dutch: COBEX).	

Article 3.5 Examination opportunities

1. a. Per academic year, two opportunities to take examinations per educational	Ordinance CvB,
component will be offered.	see appendix 3
b. The options for retaking practical components, work placements and theses are detailed	
in the relevant work placement manual, teaching regulations or graduation regulations.	
2. The most recent mark will apply in the event of a resit. A retake is allowed for both	Ordinance CvB,
passed and failed units of study.	see appendix 3
3. The resit for a (partial) interim examination must not take place within ten working	Advice OLC;
days of the announcement of the result of the (partial) examination being resat.	approval FGV (7.13 j)
4. The Examination Board may allow a student an extra opportunity to sit an	Ordinance CvB,
examination if that student:	see appendix 3
a) is lacking only those credits to qualify for his or her degree;	
b) has failed the examination during all the previously offered attempts, unless	
participation in an examination was not possible for compelling reasons.	
The extra opportunity can only be offered if it concerns a written examination, a paper or	
a take home examination. This provision excludes the practical assignments and the	
Master's thesis. Requests for an additional examination opportunity must be submitted	
to the Examination Board no later than 15 July. If necessary, the method of	
examination may deviate from the provisions in the study guide.	

Article 3.6 Marks

Marks are given or	n a scale fror	n 1 to 10 with no m	ore than one deci	mal point.	Ordinance CvB,
				1	see appendix 3
2. The final marks ar	e given in wl	hole or half points.			Ordinance CvB,
					see appendix 3
3. Final marks betwe	en 5 and 6 w	ill be rounded off to	whole marks: up	to 5.5 rounded down;	Ordinance CvB,
from 5.5 rounded to	ıp. To pass a	course, a 6 or high	er is required.		see appendix 3
In case the examination	on of a comp	onent consists of tv	vo or more parts,	each of which are	
graded separately,	the (weighte	d) mean of these ma	arks (meaning: th	e final mark) must be	
rounded off using	rounded off using the following table:				
	From	Up to	Grade		
	1,00	1,25	1		
	1,25	1,75	1,5		
	1,75	2,25	2,0		
	2,25	2,75	2,5		



	2,75	3,25	3,0		
	3,25	3,75	3,5		
	3,75	4,25	4,0		
	4,25	4,75	4,5		
	4,75	5,50	5,0		
	5,50	6,25	6,0		
	6,25	6,75	6,5		
	6,75	7,25	7,0		
	7,25	7,75	7,5		
	7,75	8,25	8,0		
	8,25	8,75	8,5		
	8,75	9,25	9,0		
	9,25	9,75	9,5		
	9,75	10,0	10		
4. The Examination	Board can all	ow to use symbols	rather than numbe	ers, such as:	Ordinance CvB,
pass, fail, (un)satisfac	ctory, good, V	RS (exemption). Is	n case a student de	oes not take part in	see appendix 3
any (interim) exan	nination, the	examiner will regist	ter the mark 'ns' ((c.q. no show).	

Article 3.7 Exemption

1.	At the written request of the student, the Examination Board may exempt the student from taking one or more examination components, if the student: a) has passed a course component of a university or higher professional education programme that is equivalent in terms of content and level; b) has demonstrated through his/her work and/or professional experience that he/she has sufficient knowledge and skills with regard to the relevant course component. The Examination Board will make a decision within six weeks after receiving the request.	Advice OLC; approval FGV (7.13 r)
2.	The Master's thesis, the final work placement (c.q. internship) and the final project (c.q. final paper) are excluded from this exemption possibility.	Advice OLC; approval FGV (9.38 sub b)
3.	A maximum of 18 EC for a one one-year master programme and 36 EC for a one two-year master programme can be accumulated through granted exemption. The substituting courses (educational components) are not included.	Advice OLC, approval FGV (art. 7.13 par. 2, under r WHW jo art. 9.38 par. b)

Article 3.8 Validity period for results

1.	The validity period of interim examinations passed and exemption from interim	WHW
	examinations is unlimited, unless otherwise specified in Section B.	
2.	The validity period of a partial examination is limited to the academic year in which it	Advice OLC;
	was sat or until the end of the unit of study concerned, as stipulated for the relevant unit	approval FGV
	of study in Section B.	(9.38 sub b)

Article 3.9 Right of inspection and post-examination discussion

1. For twenty working days after the announcement of the results of a written interim	Advice OLC;
examination, the student can, on request, inspect his or her assessed work, the questions	approval FGV (7.13 p en q)
and assignments set in it, as well as the standards applied for marking.	(7.13 p en q)
The place and time referred to in the previous clause will be announced at the time of the	ļ
interim examination on VUnet or Canvas.	
2. If a collective post-examination discussion has been organized, individual post-	Advice OLC;
examination discussions will be held only if the student has attended the collective	approval FGV (7.13 q)
	(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,



	discussion or if the student was unable to attend the collective discussion through no fault of his or her own.	
3	. Students who meet the requirements stipulated in paragraph 1 can submit a request for an	Advice OLC;
	individual post-examination discussion to the relevant examiner. The discussion shall take	approval FGV (7.13 p en q)
	place at a time and location to be determined by the examiner.	(7.15 p on q)

Article 3.10 Fraud and plagiarism

1. The provisions of the Rules and Guidelines for the Examination Board apply in full.	Ordinance CvB
2. Electronic detection software programmes may be used to detect plagiarism in texts.	Ordinance CvB
In submitting a text, the student implicitly consents to the text being saved in the	
database of the detection programme concerned.	

4. Academic student counselling and study progress

Article 4.1 Administration of study progress and academic student counselling

1.	The faculty board is responsible for the correct registration of the students' study results.	Advice OLC;
	After the assessment of an educational component has been registered, every student has	approval FGV
	the right to inspect the result for that component and also has a list of the results achieved	(7.13 u)
	at his or her disposal in VUnet.	
2.	Enrolled students are eligible for academic student counselling. Academic student	Advice OLC;
	counselling is in any case provided by:	approval FGV (7.13 u)
a.	The Student General Counselling Service	(7.13 u)
b.	Student psychologists	
c.	Faculty academic advisors	

Article 4.2 Adaptations for students with a disability

	<u> </u>	
1.	A student with a disability can, at the moment of submission to VUnet, or at a later instance, submit a request to qualify for special adaptations with regard to teaching, practical training and interim examinations. These adaptations will accommodate the student's individual disability as much as possible, but may not alter the quality or degree of difficulty of a unit of study or an examination. In all cases, the student must fulfil the exit qualifications for the study programme.	Advice OLC; approval FGV (7.13 m)
2.	The request referred to in the first paragraph must be accompanied by a statement from a doctor or psychologist. If possible, an estimate should be given of the potential impact on the student's study progress. In case of a chronic disability a single (one time) request suffices.	Advice OLC; approval FGV (7.13 m)
3.	Students who have been diagnosed with dyslexia must provide a statement from a BIG, NIP or NVO registered professional who is qualified to conduct psychological evaluation.	Advice OLC; approval FGV (7.13 m)
4.	The faculty board, or on behalf of the faculty board, the educational director, or the programme director, decides on the adaptations concerning the teaching facilities and logistics. The Examination Board will rule on requests for adaptations with regard to examinations.	Advice OLC; approval FGV (7.13 m)
5.	In the event of a positive decision in response to a request as referred to in paragraph 1, the student will make an appointment with the study adviser to discuss the details of the provisions.	Advice OLC; approval FGV (7.13 m)
6.	A request for adaptations will be refused if it would place a disproportionate burden on the organization or the resources of the faculty or university were it upheld.	Advice OLC; approval FGV (7.13 m)
7.	If the disability justifies an extension of the interim examination time, the Examination Board will grant permission testifying to this entitlement to an extension. If a disability justifies other measures to be taken, the Examination Board will advice the Faculty Board on the necessary measures to be taken.	Advice OLC; approval FGV (7.13 m)
8.	The decision as referred to in paragraph 7, is valid for a maximum period of one year with	Advice OLC; approval FGV



the exception for the chronic diseases and disabilities.	(7.13 m)

5. Hardship clause

Article 5.1 Hardship clause

In instances not regulated by the Teaching and Examination Regulations or in the event of	Advice OLC;
demonstrable extreme unreasonableness and unfairness, the faculty board responsible for the	approval FGV
study programme will decide, unless the matter concerned is the responsibility of the	(9.38 sub b)
Examinations Board.	

Article 5.2. Publication

1. The faculty board will ensure the appropriate publication of these Regulations and any	WHW
amendments to them.	
2. The Teaching and Examination Regulations will be posted in the study guide or on	WHW
VUnet.	

Approved by authorized representative advisory body FGOV of the Faculty of Science on 3 September 2019.

Adopted by the Faculty Board on 30 August 2019.



Section B1: Programme specific – general provisions

6. General programme information and characteristics

Article 6.1 Study programme information

1.	The programme Biomedical Technology and Physics CROHO number 60800 is offered on a full-time basis.	Advice OLC; approval FGV (7.13 i)
2.	The language of instruction is English.	Advice OLC;
		approval FGV (9.38 b)

Article 6.1a. Deviant size of educational component

By way of derogation	on from art. 2.1 par. 3, the units listed below have devian	nt size of 3 EC:	Approval OLC
Course code	Course component	EC	(art. 7.13 lid 2, under e),
- AM_470707	Ethics in life Sciences	3	approval CvB
- XM_422613	Major research Project	39	11
- XM_0065	Major research Project	30	
- XM_422614	Minor research Project	21	
- XM_42000	Minor research Project	27	
- X_420563	Scientific Writing in English for BTP	3	
- O_MLDIDAC_	3 Didactiek3	9	
- O_MLPRAK_3	Praktijk 3	15	
- O_MLPROZ_1	Praktijkonderzoek 1	3	
- O_MLPRAK_2	Praktijk 2	9	

Article 6.2 Teaching formats used and modes of assessment

Ittoic	o.2 Teaching formats used and modes of assessment	
1.	The programme uses the teaching formats as specified in the Study Guide.	Advice OLC;
		approval FGV
		(7.13 x)
2.	The modes of assessment used per educational component are specified in the	Advice OLC;
	Study Guide.	approval FGV
		(7.13 1)

Article 6.3 Academic student counselling

		<u> </u>	
ĺ	1.	The programme offers the following counselling in addition to the student	Advice OLC;
		counselling mentioned in Section A:	approval FGV
		 Master's coordinator; 	(7.13 u)
		 Academic advisor. 	

7. Further admission requirements

Article 7.1 Intake date(s)

1.	The programme starts on September 1. The intake date mentioned in this paragraph	Advice OLC;
	ensures that a programme can be completed within the nominal study duration set for	approval
	the programme.	FGV (9.38 b)

Article 7.2 Admission requirements

1.	Admission to the Master's programme is possible for an applicant who has obtained a	Partly legal
	Bachelor's degree obtained at an institution of academic higher education, which	provison & ordinance CvB, see
	demonstrates the following knowledge, understanding and skills:	appendix 3.
	• knowledge: mathematics, physics and chemistry at least comparable with the	Admission
	bachelor Medische Natuurwetenschappen;	requirements



 understanding: mathematics, physics a the bachelor Medische Natuurwetensch 	appen;	excepted from participation in WHW
 skills: academic communication skills a experimental skills at least comparable Natuurwetenschappen. 		
The Admissions Board will investigate whe requirements.	ther the applicant meets the admission	Legal provision

Article 7.3 Pre-Master's programme

1.	a) Students with a Bachelor's degree of a university of applied science (HBO) in a field that corresponds to a sufficient extent with the subject area covered by the Master's programme can request admission to the pre-Master's programme. b) Students with a Bachelor's degree from an institution of academic higher education in a field that does not sufficiently corresponds with the subject area covered by the Master's programme can request admission to the pre-Master's programme.	Advice OLC; approval FGV (9.38 sub b)
2.	Not applicable.	Advice OLC; approval FGV (9.38 sub b)
3.	The pre-Master's programme comprises a maximum of 30 EC and is typically made up of the following units of study: a. Vector calculus (3 EC); b. Optica en optisch waarnemen (6 EC); c. Differentiaal vergelijkingen (6 EC); d. Statistiek (6 EC); e. Thermodynamica (6 EC), or Van Quantum tot molecuul (6 EC).	Advice OLC; approval FGV (9.38 sub b)
4.	A successfully completed pre-Master's programme serves as proof of admission to the specified Master's programme in the subsequent academic year.	Legal provision
5.	A candidate can only participate in one pre-Master's programme at the Vrije Universiteit.	Ordinance CvB, see appendix 3

8. Interim examinations and results

Article 8.1 Sequence of interim examinations

1.	Students may participate in interim examinations [or practical exercises] of the	Advice OLC;
	components below only if they have passed the interim examination or	approval FGV
	examinations for the components mentioned hereinafter:	(7.13 h, s & t)
	• The major and minor project only after passing 24 EC of master courses is fulfilled unless the Examination Board decides otherwise.	

Article 8.2 Validity period for results

1.	See Article 3.8 of the Teaching and Examination Regulations, section A. No	Advice OLC;
	further specific provisions.	approval
	Turtuer specific provisions.	FGV
		(7.13 k)
2.	A student may request the Examination Board to extend the validity of an exam. If the	Legal
	exam shows that a student's knowledge is insufficient or outdated, or if the student's	provision
	skills and insights evaluated in the exam are demonstrably outdated, the Examination	
	Board may impose a supplementary examination, impose a replacement examination or	
	refuse to extend the period of validity.	
	refuse to extend the period of validity.	



3	3. In situations where a limited period of validity applies, the period of validity of	Legal
	examinations may be extended in the event of extenuating circumstances as stipulated in	provision
	WHW Article 7.51, paragraph 2, with at least the period of allocated financial	
	assistance specified in WHW Article 7.15, paragraph 1.	

Article 8.3 Maximum Exemption(s)

A maximum of 36 EC of the curriculum can be accumulated through granted exemptions,	Advice OLC,	
based on previous results within other master's programmes	approval FGV (7.13	
	par. 2,	
	under r jo art.	

Article 8.4 Degree

=======================================	
1. Degree Students who have successfully completed their Master's final Examination are	Legal
awarded a Master of Science degree (Msc). The degree awarded is stated on the diploma.	provisio WHW
l	

2. Requirements for NVKF certificate | Special provisions for the Dutch Society for Clinical Physics certificate.

Students who complete the Bachelor's programme in Biomedical Technology and Physics and the Research Variant of the Master's programme in Biomedical Technology and Physics are entitled to a certificate indicating that their prior education meets the requirements of the Dutch Society for Clinical Physics for admission to the post-graduate programme in Clinical Physics. Specifically, they must meet the relevant requirements for the Bachelor's programme (as listed in the Academic and Examination Regulations for that programme) and the following requirements for the Master's programme:

- 1. The following electives must be completed:
 - Physics of Organs I: Cardio-Pulmonary Physics
 - Advanced Medical Image Processing in C++
 - Electronics and Signal Processing
 - Parameter Estimation in Medical and Biological Sciences or Dynamics of Biomolecules and Cells
 - Biomedical Optics
 - Tracer kinetic modelling
- 2. The student must complete a Major Research Project BMTP in the field of Medical Physics.
- 3. The student must complete a Colloquium / Literature Thesis BMTP on a physics topic.
- 4. Any deficiencies in the student's Bachelor's programme can be eliminated by choosing specific elective courses in consultation with the Master's coordinator and the Examination Board.
- The BMTP Examination board provides this certificate after consultation of BMTP master's coordinator.



Section B2: Programme specific – content of programme

9. Programme objectives, specializations and exit qualifications

Article 9.1 Workload

1.	The programme has a workload of 120 EC.	Advice OLC;
		(7.13 a)

Article 9.2 Variants

The programme offers the following variants:	Advice OLC;
- Research variant;	(7.13 a)
- Communication variant;	
- Education variant, and;	
- Society Oriented variant.	

Article 9.3 Programme objective

The objective of the programme is that students should acquire sufficient knowledge, skills and insight within the field of Biomedical Technology and Physics, and any related disciplines, to be able to operate as an independent professional at an academic level, and to be a suitable candidate for a subsequent course of study leading to a career in research or development.

Another aim of the programme is to develop students' understanding of the

Advice OLC; (7.13 a)

Another aim of the programme is to develop students' understanding of the interrelationships between academic disciplines, as well as their sense of social responsibility.

Article 9.4 Exit qualifications

- 1. At all events, a graduate of the study programme:
 - a. has a sound theoretical and practical understanding of the modern Biomedical Technology and Physics (including the requisite knowledge of other disciplines);
 - has a thorough knowledge of theoretical and experimental methods, as well as research experience in at least one sub-field of Biomedical Technology and Physics;
 - c. is capable, within a reasonable period of time, of becoming conversant in other sub-fields of the discipline;
 - d. is capable of formulating a work plan for research within the Biomedical Technology and Physics, on the basis of a realistic research question;
 - e. is capable of analyzing and formulating research results, and of drawing conclusions from them;
 - f. is capable of writing a report, or an academic paper for publication in an international journal, and of participating in a discussion on a topic related to the field of study in question;
 - g. is capable of studying the professional literature (including international publications) in relevant sub-fields, and of utilizing the relevant content;
 - h. is capable of applying knowledge of the Biomedical Technology and Physics within a wider, multidisciplinary context;
 - i. is capable of dealing with the ethical, safety and environmental aspects of the Biomedical Technology and Physics;

Approval OLC (7.13 c)



- is capable of taking on posts for which knowledge and research skills in the field of the Biomedical Technology and Physics are required;
- k. has sufficient knowledge of and insight into the social role of the Biomedical Technology and Physics to decide on a responsible choice of profession and professional practice;
- I. is capable of cooperating with others, of imparting knowledge to others, and of delivering a lecture both to specialists and to a wider audience.

The programme emphasizes:

- the student's personal development;
- the student's sense of social responsibility, and;
- the student's communication skills in the English language.
- 2. Without prejudice to the provisions of paragraph 1, a graduate of the following variants will have the following knowledge and understanding:

Approval OLC (7.13 b)

Research variant

The graduate:

- a. is capable of independently designing, conducting and assessing experiments and the associated controls with a given period of time;
- b. is capable of contextualizing the results and conclusions obtained, within the framework of results obtained by others;
- c. is capable of formulating a perspective on the development of scientific research within the field in question;
- d. is capable of quantitatively and qualitatively analyzing medical, biological, chemical and physical processes, entering the data into existing models (or models yet to be developed), and presenting the results at various levels of abstraction:
- e. must possess insight into the role of the Biomedical Technology and Physics in a sustainable society.

Communication and Education variants

The graduate can:

- a. independently acquire new knowledge of the subject in the area of communication and education, and can apply this in professional situations within the sphere of communication/education;
- b. impart any knowledge and insights obtained, verbally and in writing, both in educational contexts and to wider audiences.

Society Oriented variant

The graduate can:

- develop a perspective on the contributions that scientific knowledge and methods can potentially make to social problems related to the field in question;
- b. distil a research question from this perspective that is geared towards solutions;
- c. implement such questions in the form of targeted research;
- d. interpret and present data obtained from analyses conducted at different scales and different levels of abstraction;



e. cooperate with others in the context of a multidisciplinary project team.

10. Curriculum structure

Article 10.1 Composition of the programme

1.	The programme comprises at least a package of compulsory components and an individual Master's thesis or academic internship.	Ordinance CvB, see appendix 3
2.	The programme consists of the following components: a. required educational units; b. practical components; c. optional subjects (electives).	Advice OLC; (7.13 a)
3.	Educational components are categorized as specialized (400), research oriented (500) and highly specialized (600) level.	Ordinance CvB, see appendix 3
4.	Notwithstanding the provisions of paragraph 2, students may compose their own Master's programme under certain circumstances and with the prior approval of the Examination Board.	Advice OLC; (7.13 a)
5.	Students must submit details of each study programme in the form of the so-called Personal Educational Programme (PEP) to the BMTP master coordinator and to the programme's Examination Board for approval.	Advice OLC; (7.13 a)

Article 10.2 Compulsory educational components

A detailed description per educational component can be found in the Study Guide.

BMTP Programme						
Compulsory Courses in Research Variant (84 + 36 credits required)						
Educational component	course code	E C	level	Advice OLC; (7.13 a)		
Colloquium / Literature thesis	XM_422611	6	500	7		
Major research Project BMTP	XM_422613	39	500	7		
Minor research project	XM_422614	21	500	7		
Biomedical Modelling and Simulation	X_430112	6	400	7		
Current Clinical Issues	XM_0064	6	400			
What color is your parachute?	XM_0015	0	400	7		
Scientific Writing in English for BMTP	X_420563	3	400	7		
Ethics in Life Sciences	AM_470707	3	400	7		
Restricted choices (see article 10.3)		36				
	<u> </u>					
Society Oriented Variant						
Compulsory courses in Society Oriented Variant (48	+ 12 credits require	d)				
Educational component	course code	E C	level	Advice OLC; (7.13 a)		
Internship Science in Society (BIO)	AM_1134	30	400			
Research methods for analyzing problems	AM_1182	6	400			
Analysis of Governmental Policy	AM_470571	6	500			
Communication, Org. and Management	AM_470572	6	500			
Restricted choices in Society (see article 10.3)		12				
Compulsory Courses in Research Variant (48 + 12 d	credits required)					
Major research Project BMTP	XM_0065	30	500			
Biomedical Modelling and Simulation	X_430112	6	400			
Current Clinical Issues	XM_0064	6	400			



What color is your parachute?	XM_0015	0	400	
Scientific Writing in English for BTP	X_420563	3	400	
Ethics in Life Sciences	AM_470707	3	400	
Restricted choices in BMTP (see article 10.3)		12		
Communication Variant				
Compulsory Courses in Communication Variant (42	- 18 credits require	rd)		
Educational component	course code	EC	level	Advice OLC;
Research methods for analyzing problems	AM_1182	6	400	(7.13 a)
Science and Communication	AM_470587	6	500	1
Internship Science in Communication (see article			500	
10.3)		30		
Restricted choices in Communication (see article 10.3)	18		
Compulsory Courses in Research Variant (48 + 12 cm	redits required)		1	
Major research Project BMTP	XM_0065	30	500	
Biomedical Modelling and Simulation	X_430112	6	400	-
Current Clinical Issues	XM_0064	6	400	-
What color is your parachute?	XM_0015	0	400	-
Scientific Writing in English for BMTP	X_420563	3	400	-
Ethics in Life Sciences	AM_470707	3	400	-
Restricted choices in BMTP (see article 10.3)		12		-
	l l			l
Education Variant				
Compulsory Courses in Education Variant (60 credits	required)			
Master Leraar VHO	_			
Educational component	course code	EC	level	Advice OLC;
Didactiek 1	O_MLDIDAC_	6	400	(7.13 a)
D. 1.17.4	1		400	 -
Praktijk 1	O_MLPRAK_1	6	400	 -
Didactiek 3	O_MLDIDAC_ 3	9	400	
Praktijk 3	O_MLPRAK_3	15	400	-
Praktijkonderzoek 1	O_MLPROZ_1	3	400	1
Praktijkonderzoek 2	O_MLPROZ_2	6	400	1
Didactiek 2	O_MLDIDAC_	6	400	-
	2			
Praktijk 2				
	O_MLPRAK_2	9	400	
Compulsory Courses in Research Variant (48 + 12 cm		9	400	
Compulsory Courses in Research Variant (48 + 12 cm Major research Project BMTP		30	500	
	redits required)			
Major research Project BMTP	redits required) XM_0065	30	500	
Major research Project BMTP Biomedical Modelling and Simulation	XM_0065 X_430112	30 6	500 400	
Major research Project BMTP Biomedical Modelling and Simulation Current Clinical Issues	XM_0065 X_430112 XM_0064	30 6 6	500 400 400	
Major research Project BMTP Biomedical Modelling and Simulation Current Clinical Issues What color is your parachute?	XM_0065 X_430112 XM_0064 XM_0015	30 6 6 0	500 400 400 400	



Article 10.3 Elective educational components

1. The student can take one or more of the following electives without prior consent from the Examination Board:			
Educational component	course code	EC	level
BMTP Programme			
Restricted Choice (36 EC required)			
Live cell imaging	AM_470726	6	500
Physics of Organs I: Cardiopulmonary physics	X_428527	6	400
Soft Condensed Matter and Biological Physics	X_420167	6	400
Entrepeneurship in Biomedical Physics and Sechnology	XM_0013	6	400
Advanced Medical Image Processing in C++	X_422610	6	400
Dynamics of Biomolecules and Cells	X_422583	6	400
Elektronica en signaalverwerking	X_420533	6	300
Parameter Estimation Sciences applied to Medical & Biological	X_432631	6	500
Biomedical Optics	XM_41014	6	400
Fracer kinetic modelling	XM_0014	6	400
nnovative Clinical Technologies	XM_0062	6	400
Compulsory Choice 1 of 2 (at least 21 EC equired)			
Minor research Project	X_422614	21	500
finor research Project	XM_42000	27	500
Foreknowledge for the courses Parameter Estimation Sciences applied to Medical & Biological and Advanced Medical Image Processing in C++			
mage Processing for BMTP	X_422612	6	400
Medische beeldvorming	X_436504	6	400
Foreknowledge for the course Dynamics of Biomolecules and Cells			
Microscopie en spectroscopie voor MNW	X_420586	6	400
Mechanics and Thermodynamics in the Cell	X_422589	6	400
ociety Oriented Variant Compulsory choice (12 EC required)			
Societal entrepreneurship H&L sciences	AM_470575	6	500
usiness management	AM_470584	6	500
isability and development	AM_470588	6	500
ealth, Globalisation and Human Rights	AM_470818	6	500
olicy, Politics and Participation	AM_470589	6	500
cience in Dialogue	AM_1002	6	500
linical Development and Clinical Trials	AM_1180	3	500
pidemiology	AM_1179	3	500



Restricted Choice (12 EC required)			
Live cell imaging	AM_470726	6	500
Physics of Organs I: Cardiopulmonary physics	X_428527	6	400
Soft Condensed Matter and Biological Physics	X_420167	6	400
Advanced Medical Image Processing in C++	X_422610	6	400
Dynamics of Biomolecules and Cells	X 422583	6	400
Elektronica en signaalverwerking	X_420533	6	300
Parameter Estimation Sciences applied to Medical	X 432631	6	300
& Biological	A_432031		500
Biomedical Optics	XM_41014	6	400
Tracer kinetic modelling	XM_0014	6	400
Innovative Clinical Technologies	XM_0062	6	400
Communication Variant			
Compulsory choice (18 EC required)			
Communication, Org. and Management	AM_470572	6	500
Science in Dialogue	AM_1002	6	500
Science Journalism	AM_471014	6	500
Science Museology	AM_470590	6	500
Internship communication: choose one			
Research Internship Science Comm.	AM_1162	30	600
Reflective Practice Int. SC. Comm.	_	30	
Reflective Practice Int. SC. Comm.	AM_1163	30	600
Restricted Choice (12 EC required)			
Live cell imaging	AM_470726	6	500
Physics of Organs I: Cardiopulmonary physics	X_428527	6	400
Soft Condensed Matter and Biological Physics	X_420167	6	400
Advanced Medical Image Processing in C++	X_422610	6	400
Dynamics of Biomolecules and Cells	X_422583	6	400
Elektronica en signaalverwerking	X_420533	6	300
Parameter Estimation Sciences applied to Medical	X_432631	6	
& Biological			500
Biomedical Optics	XM_41014	6	400
Tracer kinetic modelling	XM_0014	6	400
Innovative Clinical Technologies	XM_0062	6	400
Education Variant Restricted Choice (12 EC required)			
Live cell imaging	AM_470726	6	500
	_		
Physics of Organs I: Cardiopulmonary physics Soft Condensed Motter and Rielegical Physics	X_428527	6	400
Soft Condensed Matter and Biological Physics	X_420167	6	400
Advanced Medical Image Processing in C++	X_422610	6	400
Dynamics of Biomolecules and Cells	X_422583	6	400
Elektronica en signaalverwerking	X_420533	6	300



Parameter Estimation Sciences applied to Medical	X_432631	6		
& Biological			500	
Biomedical Optics	XM_41014	6	400	
Tracer kinetic modelling	XM_0014	6	400	
Innovative Clinical Technologies	XM_0062	6	400	

Article 10.4 Practical exercise

1. Students are expected to participate actively in all degree components for which they are registered.

Approval OLC (7.13 d)

- In addition to the general requirement regarding active participation, the study guide details additional requirements for each degree component, as well as component attendance requirements.
- 3. At the start of each degree component, a specification will be made available which details:
 - The final attainment levels of the degree component;
 - The study guidelines for passing the degree component;
 - The way in which the final attainment levels are assessed;
 - The regulations for examinations and resits;
 - The guidance provided by lecturers during scheduled hours and otherwise;
 - Component attendance requirements;
 - The provision of feedback to the student on assignments and reports submitted, and presentations given during the degree component.
- 4. If a student is prevented by force majeure from attending a required degree component, then the student must send written notification of his or her absence to the examiner and the academic advisor as soon as possible. The examiner may, after consultation with the academic advisor, give the student an alternative assignment.
- 5. Absence from degree components with required attendance is only allowed in the case of force majeure.
- 6. In the event of inadequate participation, either qualitative or quantitative, the examiner may exclude the student from further participation in the degree component or a part of the degree component. The details of the student's inadequate participation must be recorded in advance and approved by the Director of Studies.

11. Evaluation and transitional provisions

Article 11.1 Evaluation of the education

-			
	1.	The education provided in this programme is evaluated in accordance with the	Approval
			OLC (7.13
		(attached) evaluation plan. The faculty evaluation plan offers the framework.	01)

Article 11.2 Transitional provisions

By way of departure from the Teaching and Examination Regulations currently in force, the following transitional provisions apply for students who started the programme under a previous set of Teaching and Examination Regulations:

Students in the MNW specializations "Medical Physics" or "Physics of Life" mayenter the new programme "Biomedical Technology and Physics", but students in the MNW specializations "Physiology" or "Molecular Clinical Diagnostics" are excluded.



Advice and approval by the Programme Committee of M Biomedical Technology and Physics, on 6 June 2019.

Approved by the Faculty Joint Assembly, on 3 September 2019.

Adopted by the board of the Faculty of Science, on 30 August 2019.



Appendix I Overview of articles that must be included in the OER

Based on Section 7.13, paragraph 2, of the WHW and other Sections of the Act.

Section B1: Programme specific – general provisions

General programme information and characteristics			
Article 6.1 Study programme information 7.13 paragraph 2 s			
Article 6.2 Teaching formats used and modes of assessment	7.13 paragraph 2 sub l, x		
[option:] Article 6.3 Academic student counselling 7.13 paragraph 2 sub u			
7. Further admission requirements			
Article 7.2 Admission requirements 7.30b paragraph 2			
8. Interim examinations and results			
Article 8.1 Sequence of interim examinations	7.13 paragraph 2 sub h, s, t		
[option 1:] Article 8.2 Validity period for results	7.13 paragraph 2 sub k		
[option 2:] Article 8.2 Validity period for results	7.13 paragraph 2 sub k		

Section B2: Programme specific – content of programme

. Programme objectives, specializations and exit qualifications				
Article 9.1 Workload	7.13 paragraph 2 sub g			
Article 9.2 Specializations	7.13 paragraph 2 sub a			
Article 9.3 Programme objective	7.13 paragraph 2 sub a			
Article 9.4 Exit qualifications	7.13 paragraph 2 sub b, c			
10. Curriculum structure				
Article 10.1 Composition of the programme 7.13 paragraph 2				
Article 10.2 Compulsory educational components	7.13 paragraph 2 sub a			
[Optional] Article 10.3 Elective educational components	7.13 paragraph 2 sub a			
[Optional] Article 10.4 Practical exercise	7.13 paragraph 2 sub d			
Article 10.5 Participation in practical training and tutorials	7.13 paragraph 2 sub d			
11. Evaluation and transitional provisions				
Article 11.1 Evaluation of the education	7.13 paragraph 2 sub a1			
Article 11.2 Transitional provisions 7.13 paragraph 2 sub a				



$\label{eq:consultation} \textbf{Appendix II} \quad \textbf{Overview of rights to prior consultation (advice) and rights to approve OLC and FGV$

(Dutch only)

Onderwerpen Onderwijs – en Examenregeling (OER) 7.13 paragraph 2 WHW		FGV		OplC	
		A	I	A	
a. de inhoud van de opleiding en van de daaraan verbonden examens					
a1. de wijze waarop het onderwijs in de desbetreffende opleiding wordt geëvalueerd					
b. de inhoud van de afstudeerrichtingen binnen een opleiding					
c. de kwaliteiten op het gebied van kennis, inzicht en vaardigheden die een student zich bij					
beëindiging van de opleiding moet hebben verworven					
d. waar nodig, de inrichting van praktische oefeningen					
e. de studielast van de opleiding en van elk van de daarvan deel uitmakende onderwijseenheden					
f. de nadere regels, bedoeld in de artikelen 7.8b, zesde lid, en 7.9, vijfde lid (BSA)					
g. ten aanzien van welke masteropleidingen toepassing is gegeven aan artikel 7.4a, achtste lid					
(verhoogde studielast)					
h. het aantal en de volgtijdelijkheid van de tentamens alsmede de momenten waarop deze					
afgelegd kunnen worden					
i. de voltijdse, deeltijdse of duale inrichting van de opleiding					
j. waar nodig, de volgorde waarin, de tijdvakken waarbinnen en het aantal malen per studiejaar					
dat de gelegenheid wordt geboden tot het afleggen van de tentamens en examens					
k. waar nodig, de geldigheidsduur van met goed gevolg afgelegde tentamens, behoudens de					
bevoegdheid van de examencommissie die geldigheidsduur te verlengen					
l. of de tentamens mondeling, schriftelijk of op een andere wijze worden afgelegd, behoudens de					
bevoegdheid van de examencommissie in bijzondere gevallen anders te bepalen					
m. de wijze waarop studenten met een handicap of chronische ziekte redelijkerwijs in de					
gelegenheid worden gesteld de tentamens af te leggen					
n. de openbaarheid van mondeling af te nemen tentamens, behoudens de bevoegdheid van de					
examencommissie in bijzondere gevallen anders te bepalen					
o. de termijn waarbinnen de uitslag van een tentamen bekend wordt gemaakt alsmede of en op					
welke wijze van deze termijn kan worden afgeweken					
p. de wijze waarop en de termijn gedurende welke degene die een schriftelijk tentamen heeft					
afgelegd, inzage verkrijgt in zijn beoordeelde werk					
q. de wijze waarop en de termijn gedurende welke kennis genomen kan worden van vragen en					
opdrachten, gesteld of gegeven in het kader van een schriftelijk afgenomen tentamen en van de					
normen aan de hand waarvan de beoordeling heeft plaatsgevonden					
r. de gronden waarop de examencommissie voor eerder met goed gevolg afgelegde tentamens of					
examens in het hoger onderwijs, dan wel voor buiten het hoger onderwijs opgedane kennis of					
vaardigheden, vrijstelling kan verlenen van het afleggen van een of meer tentamens				<u> </u>	
s. waar nodig, dat het met goed gevolg afgelegd hebben van tentamens voorwaarde is voor de					
toelating tot het afleggen van andere tentamens	-			 	
t. waar nodig, de verplichting tot het deelnemen aan praktische oefeningen met het oog op de					
toelating tot het afleggen van het desbetreffende tentamen, behoudens de bevoegdheid van de examencommissie vrijstelling van die verplichting te verlenen, al dan niet onder oplegging van					
vervangende eisen					
u. de bewaking van studievoortgang en de individuele studiebegeleiding					
v. indien van toepassing: de wijze waarop de selectie van studenten voor een speciaal traject					
binnen een opleiding, bedoeld in artikel 7.9b, plaatsvindt (excellentietraject binnen een					
opleiding)					
x. de feitelijke vormgeving van het onderwijs					
alle overige onderwerpen die in de OER zijn geregeld maar die niet als zodanig zijn genoemd in					
art. 7.13 WHW onder a t/m x.					

De lettering komt overeen met de lettering van artikel 7.13 lid 2 WHW



Appendix III Ordinances VU CvB and Binding Guidelines (richtlijn)

Section B1, article:	Concerns:	CvB ordinance / guideline
7.2.1	Admission criteria; at least WO Bachelor's	Richtlijn Bachelor en Masteronderwijs, revised
	degree	on 6 June 2017
7.2.3	Additional admission criteria; type of criteria	Richtlijn Bachelor en Masteronderwijs, revised
		on 6 June 2017
Section B1,	Concerns:	CvB ordinance / guideline
article:		
10.1	Composition programme	Richtlijn Bachelor en Masteronderwijs, revised
		on 6 June 2017
10.2	Categorization of components	Richtlijn Bachelor en Masteronderwijs, revised
		on 6 June 2017

