Report on Development Dialogue

Programme details	
School	Erasmus School of Medicine (Erasmus MC)
Programme name	B Nanobiologie (joint degree), M Nanobiology (joint degree)
CROHO	55003, 65011

Accreditation details			
NVAO Framework	2018		
Date site visit	May 23, 2022		
Panel	*Chair*	Prof. dr. M.L. (Marloes) de Groot, chair (Vrije Universiteit Amsterdam): Faculty of Science, LaserLab, section Biophotonics and Medical Imaging	
	Member	Prof. dr. J.A.E. (Jan) Eggermont, domain expert (KU Leuven): Laboratory of Cellular Transport Systems (part of Cellular and Molecular Medicine)	
	Member	Dr. ir. W.K.P. (Wilko) van Loon, domain expert (Wageningen University & Research): Programme director BSc Agrotechnology, MSc Biosystems Engineering, and BSc + MSc Molecular Life Sciences	
	Student member	A.T. (Anne) Leerling BSc, student member: Combines finalising MSc Medicine and PhD Endocrinology with academic courses Philosophy	
	Secretary	drs. B.E. (Barbara) Roemers	
Panel conclusion		56627	60020
	Standard 1	*Meets the standard*	*Meets the standard*
	Standard 2	*Meets the standard*	*Meets the standard*
	Standard 3	*Meets the standard*	*Meets the standard*
	Standard 4	*Meets the standard*	*Meets the standard*
	Standard 5	*Meets the standard*	*Meets the standard*
	Overall assessment of the programme	*Positive*	*Positive*
NVAO decision	January 1, 2023 (BSc) | February 16, 2023 (MSc)		
The most recent results of the programme accreditation can be consulted at https://www.nvao.net/nl/besluiten/opleidingen.			

Development dialogue details	
Date	29 August 2022
Participants	Accreditation panel and programme management

Context development dialogue

In line with the NVAO assessment framework, each study programme or cluster of study programmes conducts a 'development dialogue' (ontwikkelgesprek) with the assessment panel following the assessment visit. During this development dialogue, future developments, associated with potential improvements, are discussed from a development perspective. The agenda is drawn up by the study programmes, and the programmes proposed three themes to discuss in the dialogue. Although the development dialogue is part of the programme review, the outcomes are not part of the accreditation assessment. Pursuant to the Higher Education and Scientific Research Act (WHW), Article 5.13, paragraph 6, we publish the report of the development dialogue with this document. The development dialogue took place immediately after the site visit for the two programmes.

Context Themesdialogue

In May 2022 the site visit Nanobiology took place at TU Delft. The official report for the NVAO was finalised in July. On the 29th of August the 'ontwikkelgesprek' (development session) took place. This report is a brief summary of what has been discussed during this ontwikkelgesprek.

- Developing a Common Framework of Reference
- Formative assessment
- Extracurricular activities

Discussion takeaways

1. Developing a Common Framework of Reference

<u>Related programmes</u>

Possible programmes to involve in exploring opportunities (the list is neither exhaustive nor prescriptive)

- BSc Life science and technology (RUG, joint degree UL & TUD)
- MSc Biomedical Engineering (RUG, TUD, UT, TU/e)
- BSc Medische Natuurwetenschappen and MSc Biomedical technology and Physics (VU)
- MSc Molecular Sciences (Radboud)
- BSc + MSc Molecular Life Sciences (WUR)
- BSc + MSc Molecular Science and Technology (joint degree UL & TUD)
- BSc Molecular and Biophysical Life Sciences (UU)
- BSc Clinical technology and MSc Technical Medicine (UT, joint degree UL & TUD)
- MSc of Biophysics, Biochemistry and Biotechnology (Leuven)

Aim

Try to find a common ground, a common core. The programmes share an interdisciplinary approach of physics, biology, chemistry and maths. This could serve as a starting point for a national framework describing the minimum requirements of the programmes, at the same time leaving enough room for individual characteristics and profiling (more or less focus on chemistry/maths/physics/biology, more or less focus on engineering, on microscopy, on industrial/entrepreneurial skills, on research skills etc.).

The aim is not to maximise the overlap. The aim is to get to know each other better, discover the common core in the programmes (and workfield) and, eventually, broaden the options for students (minors, electives, following MSc Y after BSc X etc.). Next to that, discovering the common ground also helps to discover the truly unique aspects of Nanobiology, which will stimulate profiling the programme more explicitly.

Finally, working on a shared framework could also be in the interest of the programmes mentioned above: ending up in a separate NVAO cluster that includes programmes with a larger common ground, makes the visitations more specific and output therefore more valuable. Many of the programmes mentioned above are evaluated in the cluster of Chemistry. The time could be right to combine forces and start the trajectory to "claim" a separate cluster. For the sake of completeness, the Chemistry cluster, the Biomedical Engineering cluster, the Technical Medicine cluster and the Biomedical Sciences cluster are included here:

Current Chemistry cluster (site visits will take place in 2027/2028):

visitatiegroep	WO Scheikunde	
roosterdatum	InstellingsnaamLang	NaamOpleidingLang
01-05-2028	Radboud Universiteit Nijmegen	B Chemistry
		B Molecular Life Sciences
		B Science
		M Molecular Sciences
	Rijksuniversiteit Groningen	B Scheikunde
		B Scheikundige Technologie
		M Chemical Engineering
		M Chemistry
	Technische Universiteit Delft	B Life Science and Technology (joint degree)
		B Molecular Science and Technology (joint degree)
		M Chemical Engineering
		M Life Science and Technology
	Technische Universiteit Eindhoven	B Scheikundige Technologie
		M Chemical Engineering
	Universiteit Leiden	B Bio-Farmaceutische Wetenschappen
		B Life Science and Technology (joint degree)
		B Molecular Science and Technology (joint degree)
		M Bio-Pharmaceutical Sciences
		M Chemistry
		M Life Science and Technology
	Universiteit Twente	B Scheikundige Technologie
		M Chemical Science & Engineering
	Universiteit Utrecht	B Scheikunde
		M Chemische Wetenschappen
	Universiteit van Amsterdam	B Scheikunde (joint degree)
		M Chemistry (joint degree)
	Vrije Universiteit Amsterdam	B Farmaceutische Wetenschappen
		B Scheikunde (joint degree)
		M Biomolecular Sciences
		M Chemistry (joint degree)
		M Drug Discovery and Safety
	Wageningen University	B Moleculaire Levenswetenschappen
		M Molecular Life Sciences

Current Biomedical Engineering cluster (site visits will take place in 2026/2027):

visitatiegroep	WO Biomedische technologie	
roosterdatum	**InstellingsnaamLang**	**NaamOpleidingLang**
01-05-2027	**Rijksuniversiteit Groningen**	M Biomedical Engineering
	Technische Universiteit Delft	M Biomedical Engineering
	Technische Universiteit Eindhoven	B Biomedische Technologie
		M Biomedical Engineering
		M Medical Engineering
	Universiteit Twente	B Biomedische Technologie
		M Biomedical Engineering
	Vrije Universiteit Amsterdam	B Medische Natuurwetenschappen
		M Biomedical Technology and Physics

Current Technical Medicine cluster (site visits will take place in 2023/2024 and in 2027/2028):

visitatiegroep	(Meerdere items)	
roosterdatum	**InstellingsnaamLang**	**NaamOpleidingLang**
01-05-2024	**Erasmus Universiteit Rotterdam**	M Technical Medicine (joint degree)
	Technische Universiteit Delft	M Technical Medicine (joint degree)
	Universiteit Leiden	M Technical Medicine (joint degree)
01-05-2028	**Erasmus Universiteit Rotterdam**	B Klinische Technologie (joint degree)
	Technische Universiteit Delft	B Klinische Technologie (joint degree)
	Universiteit Leiden	B Klinische Technologie (joint degree)
	Universiteit Twente	B Klinische Technologie
		M Technical Medicine

Current Biomedical Sciences cluster (site visits will take place in 2023/2024):

visitatiegroep	WO Biomedische wetenschappen	
roosterdatum	**InstellingsnaamLang**	**NaamOpleidingLang**
01-05-2024	**Radboud Universiteit Nijmegen**	B Biomedische Wetenschappen
		M Biomedical Sciences
	transnationale Universiteit Limburg	M Biomedical Sciences
	Universiteit Leiden	B Biomedische Wetenschappen
		M Biomedical Sciences
	Universiteit Maastricht	B Biomedische Wetenschappen
	Universiteit Utrecht	B Biomedische Wetenschappen
		M Biomedical Sciences
		M Master in Health Sciences
		M Neuroscience and Cognition
	Universiteit van Amsterdam	B Biomedische Wetenschappen
		M Biomedical Sciences
	Vrije Universiteit Amsterdam	B Biomedical Sciences
		B Gezondheid en Leven
		M Biomedical Sciences
		M Oncology

It does not seem likely that the clusters of Biomedical Engineering, Technical Medicine and Biomedical Sciences will be interested in changing the cluster structure since these three clusters are already rather small and specialised. But some more interdisciplinary oriented

programmes in the (too) large Chemistry cluster might be interested in separating from the Chemistry cluster and merge into a new cluster together with Nanobiology.

2. Formative assessment

A policy on the use of formative assessments in courses?
What does the committee think such a policy should include?
What do they think are important considerations?

According to the committee, essential for students is:

- Personal feedback (1 on 1, which is the case in a lab setting. Both programmes of Nanobiology already do put a lot of effort in this)
- More focus on reflection
- See progression in their development
- Focus on narrative feedback, tips for further improvement instead of focus on (high) grades. This can bring a "cultural change" amongst students (and teachers) in which experienced pressure will give way to shifting to a stronger, more explicit focus on improvement instead of achievement. (Note that introducing a student portfolio could be helpful in this perspective.)
- Fewer summative assessments = fewer resits = less pressure
  Fewer summative assessments with grades does not necessarily mean many more ECs per assessment. The committee agrees with the programme management that when a high number of ECs is covered in one assessment, this actually *increases* the pressure on students, for instance regarding their BSA. The committee suggests two solution strategies:
  - Replacing small summative assessments (2 EC/ 3 EC) with grades by pass/no pass evaluation moments without a grade, but with ECs. These evaluation moments do not necessarily have to be scheduled in advance for a complete group. Planning could probably be more flexible and more on an individual or small group basis.
  - Combine some of the smallest assessments and set a minimum of ECs per assessment (for instance 5 ECs).

The programme management expressed to fear for more delays when the number of summative assessments is decreased, because this would take away the big stick (*de stok achter de deur*). However, the committee has quite good experiences with fewer summative assessments. Students turn out to be very much willing to work for pass/fail, go/no-go assessments when rewarded with admittance to lab projects, internships etc.
The committee suggests setting up a meeting with the programme management of the TU Delft programme of Environmental Engineering (the newest programme of the faculty of CEG). This team has introduced a new assessment approach. Fewer summative and more formative assessments. And more focus on integrating theory in practical assessments (lab work) instead of assessing theory (mathematics, physics, biology, chemistry etc.) separately. Taking a closer look at their assessment "system" could be inspiring. It could reveal the advantages of summatively assessing theory and practice *integrated* in projects and only formatively assessing the theory during the process that precedes the lab project. Next to

that, this programme management might have developed a clear idea of how to keep students motivated without offering many small summative assessments.

3. Extracurricular activities

Does the committee have a sense of the value of alternative activities which slows down student's progress?
Should these be included somehow in the programme?
Should these extracurricular activities be encouraged or not?

According to the committee, extracurricular activities (board years, committees, training in managerial skills) are often valuable, even if these activities do not directly translate into study output. Especially career preparation can be of added value since many students aspire a career outside academia. The committee suggests considering incorporating something like a student portfolio (and reward this with a couple of ECs) to enable and stimulate students to demonstrate their individual preparation for their career. Maintaining such a portfolio can be time-consuming for students. The committee acknowledges that this is at odds with a programme that is already quite challenging.

The programme management considers adding electives and broadening projects to cover career preparation. Furthermore, the programme management stresses that the *Delftse bedrijvendagen* provide a lot of useful information on careers outside academia and Hooke organises information sessions and excursions. The programme is also counting on a fruitful relation with a growing body of alumni.