

# **Implementation Regulation for the BSc Programme Nanobiology**

Part of the Course and Exam Regulation of the Bachelor Programme  
As referred to in Section 2 of the Course and Exam Regulation.

2015-2016

Faculty of Medicine (Erasmus MC) of  
the Erasmus University Rotterdam

and

Faculty of Applied Sciences of  
Technical University Delft

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## **Paragraph 1 General**

### **Article 1. Division of the academic year**

The academic year of the programme is divided in two semesters. Each semester consist of 2 periods (quarters). Each period consist of two octals.

### **Article 2. Admission to the programme**

The requirements for admission to the BSc programme Nanobiology are described in Section 1, Article 5 of the Course and Examination Regulation Nanobiology (TER 2014-2015)

### **Article 3. Final attainments**

Final attainments of the BSc programme are describe in Section 1, Article 4 of the Course and Examination Regulation Nanobiology (TER 2014-2015)

### **Article 4. Minor**

The BSc programme Nanobiology is a three year BSc programme of 180credit. The first year (propaedeutic phase) is 60credit, the second and third year (post propaedeutic phase) consist of 120credit.

The programme has a major/minor structure. The major is the main component of the BSc (Propaedeutic phase + 90 credit in post-propaedeutic phase). The minor phase is 30credit, the Nanobiology minor is a deepening minor. Admission to this minor is for Nanobiology students only. Students are only admitted when they have finalized the Propaedeutic phase + 30credit from the second year BSc Nanobiology at the start of the minor period in September.

Minors other than the deepening minor Nanobiology may also be followed at the Erasmus University, TUDelft or other Universities. Approval for these minors should be obtained from the Board of Examiners Nanobiology.

## Paragraph 2 First year Bachelor program Nanobiology

### Article 5a. COMPOSITION OF THE STUDY PROGRAMME OF THE FIRST YEAR; 2015-2016

First year bachelor program Nanobiology academic year 2015-2016								
Course	Code	credit	Attainments (see Art 4 TER)					
			1	2	3	4	5	6
Analysis 1	WI1415NB	5	X					
Analysis 2	WI1423NB	5	X					
Analysis 3	WI1416NB	3	X					
Linear Algebra (WI1142TN)	WI1142NB	3	X					
Physics 1a	NB1140	4	X	X				
Physics 1b	NB1143	3	X	X				
Chemistry (NB1101-D1)	NB1102	3	X	X				
Chemistry (NB1101-D2)	NB1110	3	X	X				
Biomolecular Dynamics (Biochemistry and Molecular Biology)	NB1012	3	X	X				
Biomolecular Dynamics (Biochemistry and Molecular Biology)	NB1016	3	X	X				
Biomolecular Programming	NB1120	3	X	X		X		
Genetics	NB1022	4	X	X	X		X	
Physical Biology of the Cell (Cell Biology)	NB1072	3	X	X				X
Introduction to Studying Nanobiology	NB1031	3	X				X	X
Lab Course 'Nanobiology' part 1	NB1062	3	X			X	X	
Lab Course 'Nanobiology' part 2	NB1066	3	X			X	X	
Biophysics	NB1132	3	X	X		X		
Journal Club	NB1052	3	X	X	X		X	X

### Article 5b. COMPOSITION OF THE STUDY PROGRAMME OF THE THE FIRST YEAR; 2014-2015

First year bachelor program Nanobiology academic year 2014-2015								
Course	Code	credit	Attainments (see Art 4 TER)					
			1	2	3	4	5	6
Analysis 1	WI1411NB	5	X					
Analysis 2	WI1422NB	5	X					
Analysis 3	WI1413NB	3	X					
Linear Algebra (WI1142TN)	WI1142NB	3	X					
Physics 1a	NB1142	3	X	X				
Physics 1b	NB1143	3	X	X				
Chemistry (NB1101-D1)	NB1102	3	X	X				
Chemistry (NB1101-D2)	NB1110	3	X	X				
Biomolecular Dynamics (Biochemistry and Molecular Biology)	NB1012	3	X	X				
Biomolecular Dynamics (Biochemistry and Molecular Biology)	NB1016	3	X	X				
Biomolecular Programming	NB1120	3	X	X		X		

Genetics	NB1022	4	X	X	X		X	
Physical Biology of the Cell (Cell Biology)	NB1071	3	X	X				X
Introduction to Studying Nanobiology	NB1031	3	X				X	X
Lab Course 'Nanobiology' (NB1061-D2)	NB1062	3	X			X	X	
Lab Course 'Nanobiology' (NB1061-D1)	NB1066	3	X			X	X	
Biophysics	NB1131	3	X	X		X		
Faculty Seminar	NB1042	1		X	X		X	X
Journal Club	NB1052	3	X	X	X		X	X

**Article 5c. COMPOSITION OF THE STUDY PROGRAMME OF THE PROPEDEUTIC PHASE; 2013-2014**

Propaedeutic exam Academic year 2013-2014								
Course	Code	credit	Attainments (see Art 4 TER)					
			1	2	3	4	5	6
Analysis 1	WI1411NB	5	X					
Analysis 2	WI1422NB	5	X					
Analysis 3	WI1413NB	3	X					
Linear Algebra (WI1142TN)	WI1142NB12	3	X					
Physics 1a	NB1142	3	X	X				
Physics 1b	NB1143	3	X	X				
Chemistry (NB1101-D1)	NB1102	3	X	X				
Chemistry (NB1101-D2)	NB1110	3	X	X				
Biomolecular Dynamics (Biochemistry and Molecular Biology)	NB1012	3	X	X				
Biomolecular Dynamics (Biochemistry and Molecular Biology)	NB1016	3	X	X				
Biomolecular Programming	NB1120	3	X	X		X		
Genetics	NB1022	4	X	X	X		X	
Physical Biology of the Cell (Cell Biology)	NB1071	3	X	X				X
Introduction to Nanobiology	NB1031	3	X				X	X
Lab Course 'Nanobiology' (NB1061-D2)	NB1062	3	X			X	X	
Lab Course 'Nanobiology' (NB1061-D1)	NB1066	3	X			X	X	
Biophysics	NB1131	3	X	X		X		
Faculty Seminar	NB1042	1		X	X		X	X
Journal Club	NB1052	3	X	X	X		X	X

**Article 5d. COMPOSITION OF THE STUDY PROGRAMME OF THE PROPEDEUTIC PHASE; 2012-2013**

Propaedeutic exam Academic year 2012-2013								
Course	Code	credit	Attainments (see Art 4 TER)					
			1	2	3	4	5	6
Analysis 1	WI1411NB	5	X					
Analysis 2	WI1412NB	4	X					
Analysis 3	WI1413NB	3	X					
Linear Algebra	WI1142TN	3	X					
Fourier Analysis	WI1414NB	1	X					
Physics 1	NB1141	6	X	X			X	
Chemistry	NB1101-D1	3	X	X				
Chemistry	NB1101-D2	3	X	X				
Biomolecular Dynamics (Biochemistry and Molecular Biology)	NB1011-D1	3	X	X			X	
Biomolecular Dynamics (Biochemistry and Molecular Biology)	NB1011-D2	3	X	X			X	
Biomolecular Dynamics (Biochemistry and Molecular Biology)	NB1011-D3	3	X	X			X	
Genetics	NB1021	4	X	X	X			X
Physical Biology of the Cell (Cell Biology)	NB1071	3	X	X				X
Introduction to Nanobiology	NB1031	3	X				X	X
Lab Course 'Nanobiology'	NB1061-D1	3	X				X	X
Lab Course 'Nanobiology'	NB1061-D2	3	X				X	X
Biophysics	NB1131	3	X	X			X	
Faculty Seminar	NB1041	2		X	X			X
Journal Club	NB1051	2	X	X	X			X

### Paragraph 3: Second and Third Year

#### Article 6a. COMPOSITION OF THE STUDY PROGRAMME OF THE SECOND YEAR; 2015-2016.

Second year Nanobiology; Academic year 2015-2016								
Course	Code	credit	Attainments (see Art 4 TER)					
			1	2	3	4	5	6
Differential equations	NB2061	3	X					
Electronic Instrumentation	NB2211-14	6	X			X		
Physical Biology of the Cell	NB2072	3	X	X				X
Physics 2	NB2141	3	X	X				
Signals and Systems	TN2545	6	X					
Philosophy and Ethics	NB2022	3	X		X		X	X
Journal Club	NB2151	1	X	X	X		X	X
Evolutionary Developmental Biology Part 1&2	NB2032	6	X	X		X		X
Thermodynamics and Transport	NB2011	3	X					
Optics & Microscopy	NB2041	3	X	X		X		X
Evolution	NB2111	3	X	X				X
Statistics	WI3104TN	3	X					
Statistical Physics	TN2624NB	3	X					
Computation / Matlab	TN2513	3	X			X		
Image Analysis	NB2121	3	X	X				
Bioinformatics	NB2161	4.5	X	X				X
Nanotechnology	NB2081	2		X	X		X	X
Microscopy / Nanoscopy practice	NB2046	1.5	X			X		

#### Article 6b. COMPOSITION OF THE STUDY PROGRAMME OF THE SECOND YEAR; 2014-2015.

Second year Nanobiology; Academic year 2014-2015								
Course	Code	credit	Attainments (see Art 4 TER)					
			1	2	3	4	5	6
Differential equations	NB2061	3	X					
Electronic Instrumentation	NB2211	6	X			X		
Physical Biology of the Cell	NB2071	3	X	X				X
Physics 2	NB2141	3	X	X				
Signals and Systems	TN2545	6	X					
Philosophy and Ethics	NB2022	3	X		X		X	X
Journal Club	NB2151	1	X	X	X		X	X
Evolutionary Developmental Biology Part 1&2	NB2031	6	X	X		X		X
Thermodynamics and Transport	NB2011	3	X					
Optics & Microscopy	NB2041	3	X	X		X		X
Evolution	NB2111	3	X	X				X
Statistics	WI3104TN	3	X					
Statistical Physics	TN2624NB	3	X					
Computation / Matlab	TN2513	3	X			X		
Image Analysis	NB2121	3	X	X				
Bioinformatics	NB2161	4.5	X	X				X
Nanotechnology	NB2081	2		X	X		X	X
Microscopy / Nanoscopy practice	NB2046	1.5	X			X		

**Article 6c. COMPOSITION OF THE STUDY PROGRAMME OF THE SECOND YEAR; 2013-2014.**

Second year Nanobiology; Academic year 2013-2014								
Course	Code	credit	Attainments (see Art 4 TER)					
			1	2	3	4	5	6
Differential equations	WI2140TN	3	X					
Electronic Instrumentation	TN2211	6	X			X		
Physical Biology of the Cell	NB2071	3	X	X				X
Physics 2	NB2141	3	X	X				
Signals and Systems	TN2545	6	X					
Philosophy and Ethics part 1	NB2021	2	X		X		X	X
Philosophy and Ethics part 2	NB2051	1	X	X	X		X	X
Journal Club	NB2151	1	X	X	X		X	X
Evolutionary Developmental Biology Part 1&2	NB2031	6	X	X		X		X
Thermodynamics and Transport	NB2011	3	X					
Optics & Microscopy	NB2041	3	X	X		X		X
Advanced Evolution	NB2111	3	X	X				X
Statistics	WI3104TN	3	X					
Statistical Physics	TN2624NB	3	X					
Computation / Matlab	TN2513	3	X			X		
Image Analysis	NB2121	3	X	X				
Bioinformatics	NB2161	4.5	X	X				X
Nanotechnology	NB2081	2		X	X		X	X
Microscopy practice	NB2046	1.5	X			X		

**Article 6d. COMPOSITION OF THE STUDY PROGRAMME OF THE THIRD YEAR; 2015-2016.**

Third year Nanobiology; Academic year 2015-2016		
Course	Code	credit
Minor Nanobiology	NB-MI-183	30
Bachelor thesis project	NB3000	20
Current topics in Nanobiology: Cancer Biology	NB3010	2,5
Current topics in Nanobiology: Nanomedicine	NB3011	2,5
Current topics in Nanobiology: Protein structure, theory & tools	NB3012	2,5
Current topics in Nanobiology: Synthetic Biology	NB3013	2,5
Current topics in Nanobiology: A primer in Neural Networks	NB3014	2,5
Current topics in Nanobiology: Systems Neurobiology	NB3015	2,5
Current topics in Nanobiology: A primer on High-Speed Scientific Simulations	NB3016	2,5
Quantum mechanics in Nanobiology - 1	NB3017	2,5
Quantum mechanics in Nanobiology - 2	NB3018	2,5
Current topics in Nanobiology: Molecular Motors	NB3019	2,5
Current topics in Nanobiology: Genomics and Proteomics Technology in Breast Cancer Research'	NB3020	2,5

**Article 6e. COMPOSITION OF THE STUDY PROGRAMME OF THE THIRD YEAR; 2014-2015.**

Third year Nanobiology; Academic year 2014-2015		
Course	Code	credit
Minor Nanobiology	NB-MI-183	30
Bachelor thesis project	NB3000	20
Current topics in Nanobiology: Cancer Biology	NB3010	2,5
Current topics in Nanobiology: Nanomedicine	NB3011	2,5
Current topics in Nanobiology: Protein structure, theory & tools	NB3012	2,5
Current topics in Nanobiology: Synthetic Biology	NB3013	2,5
Current topics in Nanobiology: Stem Cell Biology	NB3014	2,5
Current topics in Nanobiology: Genomics and Proteomics	NB3015	2,5
Current topics in Nanobiology: A primer on High-Speed Scientific Simulations	NB3016	2,5
Quantum mechanics in Nanobiology - 1	NB3017	2,5
Quantum mechanics in Nanobiology - 2	NB3018	2,5
Current topics in Nanobiology: Molecular Motors	NB3019	2,5
Current topics in Nanobiology: Genomics and Proteomics Technology in Breast Cancer Research'	NB3020	2,5

**Article 6d: HONOURS TRACK**

Nanobiology Honours program; Academic year 2015-2016		
Course	Code	credit
Honours programme Seminars	NB2901HPB	2
Honours programme Journal Club	NB2902HPB	4
Honours programme Project	NB2903HPB	7
Honours programme Project – In depth research overview	NB2903HPB-RO	
Honours programme Project – Research proposal	NB2903HPB-RQ	
Honours programme Project – Business plan	NB2903HPB-BP	
Honours programme Broaden-your-experience-project	NB2904HPB	2

**Admission to the Honours program**

Requirements will be: average grade  $\geq 8.0$ , first year completed (= 60 EC), strong motivation (proven capability and willingness to commit for two years) and study plan for extracurricular activities. All Nanobiology students who meet these requirements are welcome to apply for the Honours programme of Nanobiology. Students will be selected by the HP director and coordinator.

## Paragraph 4: Exams

### Article 7: FORM OF THE EXAM AND THE ASSESSMENT STRATEGY

1. The form of the exam and the assessment strategy is described for each course in the digital studyguide: <http://www.studiegids.tudelft.nl/>
2. Attendance requirement is specified for each course in the digital studyguide or on Blackboard at the start of the course.
3. Rules on the composition of the final course grade can be found in the "TER" and the "Rules and Regulations of the Exam Committee"

### Article 8: Minor

Deepen knowledge and skills in current methods, techniques, and instruments used in Nanobiology research

- 4 Modules of ~4 weeks (7 ec each) + Presentation on one project (2 ec)
- Students will work in (small) groups
- Entry requirement: **P + 30 ec**
- Application: 1-31 May via application form

Each module will be assessed by the responsible faculty/instructors of the module.

Each module needs to be graded sufficient (5.8 or higher) for the student to pass the minor.

In the case one individual module is graded with < 5.8, the module responsible with the minor coordinator will decide on the re-take. The final grade is the weight average of 4 grades received.

### Article 9: BACHELOR THESIS PROJECT

Admission requirements for a student to register for the Bachelor thesis project is when the student has finalized the first year plus 60EC from 2<sup>nd</sup> and 3<sup>rd</sup> year.

Preferably all second year courses are finalized. In the case that some second year courses are not finalized before the start of the BSc end project and when these courses are relevant for the subject in the BSc end project, the student cannot start with this end project.

Information on the Bachelor end project and a list of participating faculty members and projects can be found on Blackboard: Blackboard Delft > organization> education > applied sciences > Eindprojecten Administratie TNW/Thesis Office Applied Sciences.

### Article 10: ORDER OF THE EXAMS

This Article describes the order of the exams and the prerequisites to participate in practical work.

1. Attendance requirement is specified in the digital studyguide or on Blackboard at the start of the course.
2. The laboratory practices in the first year are mandatory. This includes the introductory lectures and the laboratory work.
3. The practice in Electronic Instrumentation in the second year is mandatory and can only be followed when the safety training test on the first practice day is successfully passed.
4. Requirement to take part in the deepening minor Nanobiology is finalizing Labcourse 1 and 2 (NB1062 and NB1066) from the first year

## Article 11: SCHEDULE FOR RESITS ACADEMIC YEAR 2015-2016

### 1<sup>st</sup> Year

In the first year bachelor phase the resits will be planned as follows.

4-8 January	Friday 26 <sup>th</sup> February	May 2,3,4	May 23-27	8-12 August
Genetics NB1022	Chemistry 2 NB1110	Biomol. Dynamics-1 NB1012	Physica 1b (octal 5) NB1143	Biomol. Dynamics-2 NB1016
Intro to Nanobiology NB1031		Physics 1a (octal3-4) NB1142		Biophysics NB1131
Analysis 1 WI1411NB		Journal Club NB1052		Phys. Biol. of the Cell NB1071
Chemistry 1 NB1102		Analysis 2 WI1422NB		Labcourse-2 NB1066
		Labcourse-1 NB1062		Linear Algebra WI1142NB
				Analysis 3 WI1413NB

### 2<sup>nd</sup> Year

In the 2<sup>nd</sup> year the resits for octal 1-6 courses will be scheduled in the evening hours from 18.00-21.00 hours, in the 10<sup>th</sup> week after the regular exam (holiday not included). Resits for courses in octal 7 and 8 will be in the August retake period (week 5.6)

### 3<sup>rd</sup> Year

In the 3<sup>rd</sup> year the resits for octal 1-6 courses will be scheduled 10 weeks after the regular exam (holiday not included). Resits for courses in octal 7 and 8 will be in the August retake period (week 5.6)

## Paragraph 5 Degree Audit

### Article 12. TRANSITION REGULATIONS

#### Academic year 2015-2016

Program 2015-2016			Program 2014-2015		
Code	Course name	EC	Code	Course name	EC
WI1415NB	Analysis 1	5	WI1411NB	Analysis 1	5
WI1423NB	Analysis 2	5	WI1422NB	Analysis 2	5
WI1416NB	Analysis 3	3	WI1413NB	Analysis 3	3
NB1140	Physics 1a	4	NB1142	Physics 1a	3
NB1062	Labcourse Nanobiology part 1	3	NB1062	Labcourse Nanobiology	3

NB1066	Labcourse Nanobiology part 2	3	NB1066	Labcourse Nanobiology	3
NB1072	Physical Biology of the cell	3	NB1071	Physical Biology of the cell	3
NB1132	Biophysics	3	NB1131	Biophysics	3
Faculty seminar will not continue			NB1042	Faculty seminar	1
NB2211-14	Electronic instrumentation	6	NB2211	Electronic instrumentation	6
NB2032	Evolutionary Developmental Biology part 1 and 2	6	NB2031	Evolutionary Developmental Biology part 1 and 2	6
NB3020	Current topics in Nanobiology: Genomics and Proteomics Technology in Breast Cancer Research	2,5	New course also accessible for students from before cohort 2013		

NB1140: Physics 1a: students from cohort 2014 or before will receive 4 EC for retake of Physics 1a  
 NB1042: Faculty seminar: students from cohort 2014 and before Two retake moments will be available for students that need to retake this course.

### **Academic year 2014-2015**

NB2022: Philosophy and Ethics is a merger of NB2021 and NB2051 from the academic year 2013-2014. Students that missed one of these two (NB2021-NB2051) will have two retake possibilities in the academic year 2014-2015. Students that need to retake both can follow the course NB2022.

NB2211: Due to structural reorganization of this course, the course content will be different from last academic year.

Students that passed the practicals in academic year 2013-2014 only need to retake the exam for the course TN2211.

NB10421 from academic year 2012-2013 is replaced by NB1042 and NB1043 starting in academic year 2013-2014. Students from cohort 2012 will have to pass both courses NB1042 (3EC) and NB1043 (3EC) to have the equivalent of NB1041 (6EC)

### **Paragraph 6 Introduction provision**

#### **Article 13: ENTRY INTO FORCE**

The implementation regulation is valid for the academic year 2015-2016 starting on September 1st 2015