

Assessment plan for the curriculum of the Bachelor's degree programme Biology in 2023-2024

Introduction

This Assessment Plan is a systematic description of the way of examination and assessment of all study components in the bachelor degree programme Biology. It is based on the assessment policy of the Faculty of Science and Engineering (FSE), as set out in the 2016-2017 version of the FSE Quality Assurance Manual (Chapter 6: Assessment policy) and the protocol setting out the duties and powers of the Faculty's Board of Examiners (Manual for Board of Examiners 2017-2018, Chapter 4: Duties of the Board of Examiners).

The assessment plan for the curriculum consists of the following parts:

1. Objective(s) of the degree programmes
2. The learning outcomes of the degree programmes
3. Descriptions of the study components, as set out in the appendices to the Teaching and Examination Regulations 2023-2024 of the degree programme
4. Descriptions of the content of each study component in Ocasys, the online course catalogue. The following elements are relevant in this context:
 - objectives
 - description of content
 - lecturers
 - assessment mode(s) and calculation of final mark
 - mode(s) of instruction.
5. An overview of the coordinators and the assessment mode for each study component. This overview is based on the curriculum approved by the Programme Committee, as set out in the appendices to the Teaching and Examination Regulations 2023-2024 for the degree programme.
6. A matrix showing the relationship between the study components and the learning outcomes for the degree programme.

Parts 3 and 4 are not included in this document. For the descriptions of the study components, see the Appendix to the Teaching and Examination Regulations 2023-2024 for the degree programme in Biology. Descriptions of the content of each study component can be found in Ocasys, the online course catalogue (<https://ocasys.rug.nl/current>).

Objectives of the degree programmes

The bachelor degree programme Biology enables the graduates to acquire scientific skills and knowledge as entry to responsible societal positions and stimulates a life-long learning attitude. The ultimate goal of the programme is to educate the graduates as autonomous, critical and responsible academics in the field of Life Sciences.

1. BSc Biology

1.1. Learning outcomes of the degree programme BSc. Biology

Graduates are able to:

1. Explain general basic principles of biology and describe how they relate to each other;
2. Estimate the relevance of research results in one or more areas of biology published in academic journals and discuss these results with peers;
3. Describe fundamental and/or applied scientific research and recognize areas of interest within it;
4. Describe the relationship between various disciplines and integrate terms and concepts from the subject areas;
5. Recognise and analyse scientific problems, and design a scientific/academic approach to them in a systematic manner.
6. Under supervision, formulate a research hypothesis or propose a research design within their own discipline, and possess sufficient practical skills to conduct the research themselves;
7. Explain the societal relevance of the discipline, evaluate the related responsibilities and judge their individual role in that context.
8. Develop a work method independently and proactively, justify it, and carry it out in order to achieve a specific aim;
9. Contribute to and take responsibility for solving a specific problem or task in a specific role as part of a team;
10. Report about research in a structured manner, both orally and in writing;

The degree programme also offers the student:

11. To explore career opportunities and opportunities for follow-on degree programmes.

1.2. Overview of examiners and assessment modes of the study components – BSc. Biology

1.2.1. Course units in propaedeutic phase

Course Title	Course coordinator*	1st Examiner	2nd Examiner	WE	MC	OE	IT	R	P	PR	AST
Basic Cell and Molecular Biology		Scheffers, D.J.	t.b.d.		x						
Behavioural Neurosciences		Havekes, R.	Zee, E.A. van der		x			x			
Biochemistry and Cell Biology in Ecology and Evolution		Thunnissen, A.M.W.H.	Driessen, A.J.M.	x							
Biostatistics 1		Milias Argeitis, A.	Verhulst, S.	x							
Cell Biology and Immunology		Kamenz, J.L.	Heeringa, P.		x						
Ecophysiology of Plants and Animals		Veen, H. van	Dietz, M.W.	x						x	
Evolutionary Ecology		Verhulst, S.	Pen, I.R.	x							
First Year Symposium		Kortholt, A.	Scheffers, D.J.						x		
Genetics, Ecology and Evolution		Dugdale, H.L.	Tiedge, K.J.	x	x						x
Lab course		Kiel, J.A.K.W.	Bij, K. van der					x		x	x
Metabolism		Heinemann, M.	Bakker, B.	x							
Microbiology		Poolman, B.	Driessen, A.J.M.	x	x		x				
Molecules of Life		Kudernac, T.	Walvoort, M.T.C.	x							
Physiology		Drion, C.D.	Scheurink, A.J.W.		x					x	
Research Skills in Ecology and Evolution 1		Geuverink, E.	Smit, C.					x			x
Research Skills in Ecology and Evolution 2		Smit, C.	Geuverink, E.	x	x						
Research Skills in Ecology and Evolution 3		Geuverink, E.	Smit, C.							x	x
Research Skills in Life Sciences 1		Kortholt, A.	Drion, C.		x						
Research Skills in Life Sciences 2		Bianchi, F.	Kortholt, A.					x		x	x
Research Skills in Life Sciences 3		Kortholt, A.	Drion, C.						x		

*This table shows all the study components for the propaedeutic phase of the programme, the intended course coordinator (*if different from the first examiner), the first and second examiner, the relationship with the learning outcomes and the assessment modes. This satisfies requirement 3 in the Protocol of Duties and Powers of the Board of Examiners of the Faculty of Science and Engineering:*

<i>Before the academic year commences, the Board of Examiners determines the examiners responsible for carrying out testing and assessment in the degree programme.</i>
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The abbreviations for the relevant teaching methods are explained in the legend of the table. Examples of assessment modes include:

- *Written exam with open questions (WE)*
- *Written exam with multiple-choice questions (MC)*
- *Oral exam (OE)*
- *Interim indicator test (IT)*
- *Report (R)*
- *Presentation (P)*
- *Assessment of practical assignment (PR)*
- *Assessment of (homework) assignments (AST)*

1.2.2. Course units in post-propaedeutic phase

Course Title	Course coordinator*	1st Examiner	2nd Examiner	WE	MC	OE	IT	R	P	PR	AST
Behavioural Biology		Riedstra, B.J.	Nicolaus, M.	x	x		x				
Big Data in Human Disease		Kurilshchikov, A.M.	Yang-Fu, J.					x	x		x
Big Data Management in Ecology and Evolution	Bentham, K.J. van	Doorn, G.S. van	Zee, E.A. van der						x		x
Bioanalytical and Omics Techniques		Thunnissen, A.M.W.H.	Horvatovich, P.L.	x					x		
Bioinformatics		Jong, A. de	Incarnato, D.						x	x	x
Biology & Society: Ethical and Professional Aspects		Graver, J.	Zevenberg, J.	x	x			x			
Biology of Cancer		Jong, S. de	Kruyt, F.A.E.		x				x		
Biology of Human Behaviour		Riedstra, B.J.	Zee, E.A. van der	x						x	
Biomedical Research Laboratory Course		Ma, K.Y.	Westers, H.					x		x	
Bio-organic Chemistry		Walvoort, M.T.C.	Kudernac, T.	x							
Biostatistics 2	Bentham, K.J. van	Pen, I.R.	Doorn, G.S. van	x							
Biotechnology		Fraaije, M.W.	Doorn, G.S. van	x	x						
C++ for Biologists	Janzen, T.	Doorn, G.S. van	Bakker, J.					x		x	x
Cardiovascular Disease		Krenning, G.	Kamps, J.A.A.M.		x						x
Cell Biology and Microscopy		Klei, I.J. van der	Roos, W.H.	x	x						
Cell Migration and Communication		Bogaart, G. van den	Billerbeck, S.K.	x	x						
Chronobiology		Hut, R.A.	Meerlo, P.		x			x	x		x
Competences and Professionalization in Biology		Rijssel, M. van	Rybczynska, A.A.					x	x		
Conservation Biology		Eriksson, B.D.H.K.	Olf, H.	x				x		x	x
Ecological and Evolutionary Modelling		Egas, M.	Doorn, G.S. van							x	x
Endocrinology		Faas, M.M.	Vos, P. de		x						x
Enzymology and Thermodynamics		Slotboom, D.J.	Maglia, G	x							
Epigenetics and Gene-editing		Rots, M.G.	Foijer, F.		x						x
Evolution and Development		Elliot, M.G.	Billeter, J.C.	x	x				x	x	

Course Title	Course coordinator*	1st Examiner	2nd Examiner	WE	MC	OE	IT	R	P	PR	AST
Evolutionary and Ecological Genomics		Lequime, S.	Falcao Salles, J.F.	x							x
Evolutionary Medicine		Vos, M.G.J. de	Elliot, M.G.	x	x				x		
Evolutionary Processes	Under discussion	Beukeboom, L.W.	Etienne, R.S.	x							x
Food and Metabolism		Kruit, J.K.	Jonker, J.W.		x			x			
Genes and Behaviour		Billeter, J.C.	Eisel, U.L.M.	x					x	x	
Genes and Evolution		Wertheim, B.	Geuverink, E.	x							
Hematopoietic stem cells: development, differentiation and disease		Boom, V. van den	Schuringa, J.J.	x	x				x	x	x
Host-Microbe Interactions		El Aidy, S.	Harmsen, H.J.M.	x	x		x	x			
Human Genetics and Genomics		Ma, K.Y.	Westers, H.	x					x		x
Immunology		Bogaart, G. van den	Nawijn, M.		x						
Immunology and Disease		Laman, J.	Heeringa, P.		x						x
Integrative Biology	Laetz, E.M.J.	Doorn, G.S. van	Under discussion	x					x		x
Integrative Neuroscience		Dijk, G.J. van	Zee, E.A. van der		x		x	x		x	
Marine Biology		Meij, S. van der	Boer, M.K. de	x					x		
Medical Cell Biology		Mauthe, M.	Baron, W.	x					x		
Medical Physiology		Duinen, H. van	Otter-Drost, T.A.	x	x						
Medical Structural Biology		Guskov, A.	Thunnissen, A.M.	x	x						x
Microbes and Infection		Sol, M.	Huckriede, A.L.W.		x			x		x	
Microbiome		Falcao Salles, J.	Vos, M.J. de						x		x
Modelling Life		Doorn, G.S. van	Milias Argeitis, A.	x							x
Molecular Genetics		Incarnato, D.	Alvarez-Sieiro, P.	x	x						
Molecular Research in Human Disease		Koonen, D.P.Y.	Sluis, A.J.A. van de					x	x		x
Neurobiology of Ageing		Zee, E.A. van der	Jorna, L.M.		x						x
Practical Carrousel		Billerbeck, S.K.	Fraaije, M.W.	x						x	x
Programming for Life Sciences		Marrink, S.J.	Wassenaar, T.A.				x				x
Psychobiology		Meerlo, P.	Scheurink, A.J.W.	x	x			x	x		
Research Project Biomedical Sciences	Rybczynska, A.A.	Appointed examiner	Rybczynska, A.A.					x	x	x	

Course Title	Course coordinator*	1st Examiner	2nd Examiner	WE	MC	OE	IT	R	P	PR	AST
Research Project Behaviour & Neurosciences	Jorna, L.M.	Appointed examiner	Jorna, L.M.					x	x	x	
Research Project Ecology and Evolution 1	Geuverink, E.	Appointed examiner	Geuverink, E.					x	x	x	
Research Project Ecology and Evolution 2	Tiedge, K.J.	Appointed examiner	Tiedge, K.J.					x	x	x	
Research Project Integrative Biology 1	Geuverink, E.	Appointed examiner	Geuverink, E.					x	x	x	
Research Project Integrative Biology 2	Geuverink, E.	Appointed examiner	Geuverink, E.					x	x	x	
Research Project Molecular Life Sciences	Alvarez Sieiro, P.	Appointed examiner	Alvarez Sieiro, P.					x	x	x	
Systems Ecology & Ecological Interactions 1		Veen, H. van	Both, C.	x							
Systems Ecology & Ecological Interactions 2		Both, C.	Veen, H. van	x						x	

*This table shows all the study components for the post-propaedeutic phase of the programme, the intended course coordinator (*if different from the first examiner), the first and second examiner, the relationship with the learning outcomes and the assessment modes. This satisfies requirement 3 in the Protocol of Duties and Powers of the Board of Examiners of the Faculty of Science and Engineering:*

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- *Report (R)*
- *Presentation (P)*
- *Assessment of practical assignment (PR)*
- *Assessment of (homework) assignments (AST)*

1.3. Relation between study components and further specification of the learning outcomes BSc. Biology

- X the course is essential and sufficient to realise one of the programme-level learning outcomes.
x the course makes an important contribution to a programme-level learning outcome (along with other courses that make complementary contributions).
. the course makes a minor contribution to a programme-level learning outcome.

1.3.1. Course units in the propaedeutic phase

Course Title	E.1	E.2	E.3	E.4	E.5	E.6	E.7	E.8	E.9	E.10	E.11
Basic Cell and Molecular Biology	x	.	.	x	.	.	.	.	.	.	.
Behavioural Neurosciences	x	X	.	X	.	.	x	.	.	.	X
Biochemistry and Cell Biology in Ecology and Evolution	x	x	.	X	.	.	x	.	.	.	x
Biostatistics 1	x	x	.	.	x	x	.	x	x	.	x
Cell Biology and Immunology	x	.	.	x	.	.	.	.	.	.	.
Ecophysiology of Plants and Animals	x	X	x	X	.	.	x	.	.	.	x
Evolutionary Ecology	x	X	x	X	.	.	x	.	.	.	X
First Year Symposium	.	x	.	.	.	.	.	.	x	x	.
Genetics, Ecology and Evolution	x	x	x	X	x	.	x	.	.	.	x
Lab course	x	.	.	x	x	.	.	x	.	x	x
Metabolism	x	.	x	.	.	.	.	.	.	.	.
Microbiology	x	x	x	x	x	.	x	.	.	.	.
Molecules of Life	x	.	x	x	x	.	x	x	.	.	.
Physiology	x	.	x	x	.	.	x	.	.	.	.
Research Skills in Ecology and Evolution 1	.	x	.	.	.	.	.	.	.	x	.
Research Skills in Ecology and Evolution 2	.	x	.	x	.	x	.	x	x	x	.
Research Skills in Ecology and Evolution 3	.	.	.	x	.	x	.	x	x	x	.
Research Skills in Life Sciences 1	x	X	x	.	x	x	.	.	.	x	.
Research Skills in Life Sciences 2	x	X	x	.	x	x	.	.	.	x	.
Research Skills in Life Sciences 3	x	X	x	.	x	x	.	.	.	x	.

This table establishes the relationship between the (specified) learning outcomes and study components of the propaedeutic phase of the curriculum.

1.3.2. Course units in the post-propaedeutic phase

Course Title	E.1	E.2	E.3	E.4	E.5	E.6	E.7	E.8	E.9	E.10	E.11
Behavioural Biology	x	x	x	.	.	.	.	.	.	.	.
Big Data in Human Disease	x	x	x	x	x	x	.	x	x	x	.
Big Data Management in Ecology and Evolution	.	x	x	x	x	.	x	x	.	x	.
Bioanalytical and Omics Techniques	x	X	x	x	x	.	.	.	x	x	.
Bioinformatics	x	.	.	.	x	.	.	x	X	x	.
Biology & Society: Ethical and Professional Aspects	.	x	.	x	.	x	X	.	X	x	X
Biology of Cancer	x	x	x	x	x	.	x	.	X	x	.
Biology of Human Behaviour	x	X	.	.	.	x	.	.	.	x	.
Biomedical Research Laboratory Course	x	.	.	x	x	X	.	x	x	x	.
Bio-organic Chemistry	x	x	x	x	.	.	.	.	.	.	.
Biostatistics 2	.	X	.	.	x	x	.	x	.	.	.
Biotechnology	x	x	X	X	.	.	x	.	x	.	x
C++ for Biologists	.	.	.	x	x	.	.	x	x	x	x
Cardiovascular Disease	x	X	x	x	x	.	.	.	X	x	.
Cell Biology and Microscopy	x	x	.	x	.	.	x	.	.	.	x
Cell Migration and Communication	x	x	.	.	.	.	.	.	.	.	.
Chronobiology	x	X	.	.	x	x	.	x	x	x	x
Competences and Professionalization in Biology	.	x	x	x	x	.	x	.	x	x	x
Conservation Biology	x	x	x	x	.	.	x	.	.	.	X
Ecological and Evolutionary Modelling	x	.	x	x	x	.	.	.	.	.	x
Endocrinology	X	x	x	.	.	.	.	.	x	X	.
Enzymology and Thermodynamics	x	.	.	x	.	.	.	.	.	.	.
Epigenetics and Gene-editing	x	.	x	.	.	.	.	.	x	.	.
Evolution and Development	x	X	x	X	.	.	x	.	.	.	x
Evolutionary and Ecological Genomics	x	X	x	X	.	.	x	.	.	.	x
Evolutionary Medicine	x	x	x	X	.	.	.	.	x	x	.
Evolutionary Processes	x	x	x	x	x	.	x	.	.	.	x
Food and Metabolism	x	x	x	X	x	.	x	x	x	x	.
Genes and Behaviour	x	.	.	X	x	x	x	x	x	x	.
Genes and Evolution	x	.	x	x	.	.	.	.	.	x	.

Course Title	E.1	E.2	E.3	E.4	E.5	E.6	E.7	E.8	E.9	E.10	E.11
Hematopoietic stem cells: development, differentiation and disease	x	x	x	x	x	.	x	.	x	x	.
Host-Microbe Interactions	x	.	x	x	x	.	x	x	.	x	.
Human Genetics and Genomics	x	x	x	x	x	.	x	.	x	.	.
Immunology	x	.	x	.	.	.	x	.	.	.	.
Immunology and Disease	x	x	x	x	x	.	x	.	X	x	.
Integrative Biology	x	x	x	X	.	.	.	.	x	x	.
Integrative Neuroscience	x	.	.	x	.	.	.	.	x	x	.
Lab course	x	.	.	x	x	.	.	x	.	x	x
Marine Biology	x	.	.	x	.	.	x	.	x	.	x
Medical Cell Biology	x	X	x	x	x	.	.	.	.	x	x
Medical Physiology	x	.	.	X	.	.	.	.	x	.	.
Medical Structural Biology	x	.	x	x	x	.	.	x	.	.	.
Microbes and Infection	x	.	x	x	x	.	x	.	X	x	.
Microbiome	x	X	x	x	x	.	x	.	.	.	x
Modelling Life	x	.	x	x	x	.	.	.	x	x	.
Molecular Genetics	x	x	x	x	x	.	x	.	.	.	.
Molecular Research in Human Disease	x	X	x	.	x	x	.	x	X	x	.
Neurobiology of Ageing	x	x	x	x	.	.	x	.	.	.	x
Practical Carrousel	.	.	.	.	.	x	.	x	x	.	.
Programming for Life Sciences	.	x	.	x	x	x	x	x	x	x	x
Psychobiology	x	X	x	x	x	x	x	.	x	.	.
Research Project Biomedical Sciences	.	x	x	.	X	X	.	X	X	X	x
Research Project Behaviour & Neurosciences	.	x	x	.	X	X	.	X	x	X	.
Research Project Ecology and Evolution 1	.	x	x	.	X	X	.	X	X	X	x
Research Project Ecology and Evolution 2	.	x	x	.	X	X	.	X	X	X	.
Research Project Integrative Biology 1	.	x	x	.	X	X	.	X	X	X	x
Research Project Integrative Biology 2	.	x	x	.	X	X	.	X	X	X	x
Research Project Molecular Life Sciences	.	x	x	.	X	X	.	X	x	X	.
Systems Ecology & Ecological Interactions 1	x	x	x	X	.	.	.	.	.	.	x
Systems Ecology & Ecological Interactions 2	x	x	x	X	.	.	.	.	.	.	x

This table establishes the relationship between the (specified) learning outcomes and all study components of the post-propaedeutic phase of the curriculum.