Assessment plan for the curriculum of the **Master's** degree programme in Biology, 2024-2025

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1. Vision on assessment

1. Assessment guides and evaluates student learning towards knowledge and understanding of the structure, function, development and evolution of living systems, in biological research areas that integrate these core principles, or connect between scales of biological organization.
2. Assessment stimulates the integration of knowledge and skills in a research-based educational context, including the development of (academic) communication skills, collaboration in projects, creative and analytical thinking, and the acquisition of methodological expertise.
3. Assessment assures and rewards transparency and integrity in learning, research and communication, and encourages the student's independent ability to apply the scientific method, in academic research or another working environment, as a guiding principle for lifelong learning.

2. Assessment guidelines

Please explain the general assessment procedures that are used in the programmes. For example, 4-eyes principle in test design, standardised grading forms, rubrics.

1. Assessment strategies incorporate a mix of formative and summative assessment activities.
2. Course units that use multiple summative tests, use different methods of summative evaluation to determine partial grades. Course units in the same academic period coordinate their method of summative assessment so as to realize a sufficiently diversified mix of assessment activities.
3. Formative assessment can be organized online and onsite, all summative assessment is organized onsite.
4. Resits follow the original assessment strategy, unless this is not feasible. In any event, the result of a resit must be a valid and reliable assessment of the student's mastery of the learning outcomes. Except in case of force majeure, the use of a different assessment method in a resit must be specified in the course unit description on Ocasys.
5. Individual grades from group assignments are determined using peer assessment methods or by inclusion of the assessment of practical work.
6. Unless explicitly prohibited in the description of the relevant course unit on Ocasys, students may use AI tools in assignments in which they have to create written products. The design of the writing assignment and its assessment help to ensure that the student's creative input is complemented rather than substituted by the use of AI tools. In addition, students must define how they have used AI tools at all stages of the writing process and include explanations of their usage within the assignment.
7. In a MSc research project, colloquium, or other learning activity where a student is supervised individually, a typical learner can be expected to deliver a final product of sufficient quality after two rounds of feedback (one in an early stage, focusing on design and global structure , the other with detailed comments when a first complete draft is available). If a third round of feedback is needed to achieve a product of sufficient quality, supervisors will take this into account in the

determination of the final grade, along with other relevant information: if no mitigating circumstances apply, the grade awarded for the final product is restricted to be ≤ 7..

8. Reports of research projects or internships should include a section describing the author's contribution to the work that is presented in the report.

3. Learning outcomes of the degree programme

Learning outcomes for the degree programme, further specified learning outcomes (where relevant) and/or specified for tracks within the degree programme. Please add extra rows if necessary.

	Learning Outcome *At the end of the programme, the graduate*
1	a) has acquired in depth knowledge on one or more scientific disciplines within the general field of Biology and can use this knowledge to explain in detail the relevant concepts, using the appropriate terminology b) has acquired cross disciplinary knowledge of issues across scientific disciplines within the field of Biology and can use this knowledge to explain current societal and scientific challenges;
2	can design, and conduct scientific research, and systematically organize his/her work in scientific research;
3	can independently investigate and critically evaluate scientific literature;
4	can identify new developments in the relevant disciplines, and can become familiar with these developments;
5	can formulate realistic, and original solutions to complex problems;
6	can participate in and contribute to a multidisciplinary team;
7	can effectively communicate acquired knowledge, insights and skills to others, both in writing and in oral presentation;
8	can identify societal and ethical implications of scientific research and is able to critically reflect on his/her actions in this context;
9	can independently acquire new knowledge and skills that are relevant for his/her professional career, in science, in policy & management or society.

4. Overview of assessment methods, test moments for course units, and examiners

This table shows all the course units for each year of the programme and assessment methods. Please add extra rows if necessary.

Year	**Period**	**Course**	**EC**	**Assessment methods**	**Does (part of the) assessment have a formative function?**	**Test moment(s)** (e.g. mid-term, continuous assessment, exam week, etc) *	**First examiner**	**Second examiner**
1	1A1	Skills for Biology 1: Professional Perspectives and Career Orientation	5	R/P	Yes		J. Zevenberg, PhD	Drs. S. Grooters
1	1A2	Skills for Biology 2: Quantitative Research Methods	5	R/P	Yes		K.J. van Benthem, PhD	Dr. A. Milias Argeitis
1/2	1A3	Advanced light microscopy	5	WE/P/PR	Yes		F.Bianchi PhD	Dr. R. Vlijm
1/2	1A3	Mathematical models for Biology	5	AST	Yes		Prof. dr. R.S. Etienne	Prof.dr. G.S. van Doorn
1/2	1B1	Programming C++ for biologists	5	P/PR/AST	Yes	IT	Dr. T. Janzen (coordinator) (examiner G.S. van Doorn)	J. Bakker
1/2	1B2	Modelling Complex Biological Systems	5	AST	Yes		Dr. G.S. van Doorn	Prof. dr. J. van de Koppel
1/2	1B2	Radioisotopes in Experimental Biology	5	WE/MC/R	Yes		Drs. E.J. Bunskoeke	Prof.dr. A. Kortholt
1/2	1B3	Laboratory Animal Science	5	WE/MC/PR/AST	Yes		Drs. L.M. Jorna	Prof.dr. G.J. van Dijk

Year	Period	Course	EC	Assessment methods	Does (part of the) assessment have a formative function?	Test moment(s) (e.g. mid-term, continuous assessment, exam week, etc) *	First examiner	Second examiner
1/2	1B3	Practical Computing for Biologists	5	PR/AST	Yes		Prof. dr. P.J. Palsboll	Dr. S.J.J. Lequime
1/2	1B3	Practical modelling for biologists	5	AST/P	Yes		Prof. dr. J. van de Koppel	Dr. G.S. van Doorn
1/2	1B3	Evolutionary Medicine Diseases of Affluence (EMDA)	5	AST	Yes	IT	Prof. dr. H.L. Dugdale	M.G. Elliot PhD
1/2	2A1	Evolutionary Medicine Infectious Diseases (EMID)	5	WE/P/AST	Yes		Dr. S.J.J. Lequime	Dr.ir. M.G.J. de Vos
2	2B	Orientation on Non-academic Careers	5	R/P	No		Drs. M.J. van den Nieuwenhof - Schilstra	Drs. S. Grooters
2	2B	Advanced statistics	6	R	Yes		Prof. Dr. I.R. Pen	Dr. G.S. van Doorn

The abbreviations for the relevant teaching methods are explained in the legend of the table.
Examples of assessment methods include:

- *Written Exam (WE)*
- *Multiple Choice (MC)*
- *Oral Exam (OR)*
- *Report (R)*
- *Presentation (P)*
- *Practical Work (PR)*
- *Assignment (AST)*

* With block courses there is no overlap in test moments, as only one course runs at a time and therefore there is no coordination within the programme as to who will take the exam and when.

All Biology owned (elective) course units are part of this table; other available courses within the different Integrative Biology profiles can be found in the Teaching and Examination Regulations (OERs) and/or Ocasys. This satisfies requirement 3 in the Protocol of Duties and Powers of the Board of Examiners of the Faculty of Science and Engineering.

5. Relationship between course units and details of the learning outcomes

Please note in the table below the course units per block in the programme. Indicate which learning outcomes are assessed in which courses by adding an X in the relevant cell. Please add extra rows if necessary.

An X means that the learning outcome is explicitly assessed (not merely addressed) in the course.

		Learning outcomes of the degree programme Integrative Biology								
		1	2	3	4	5	6	7	8	9
Period	**Course**	**Year 1 –compulsory courses**								
1A1	Skills for Biology 1: Professional Perspectives and Career Orientation			X	X		X	X	X	X
1A2	Skills for Biology 2: Quantitative Research Methods		X			X		X		
1B	Research Project 1	X	X	X	X	X	X	X	X	X
Period	**Course**	**Year 1 Electives (if applicable)**								
1A3	Advanced light microscopy	X			X			X		X
1A3	Mathematical models for Biology	X				X				
1B1	Programming C++ for biologists (5 ECTS)	X				X	X	X		X
1B2	Modelling Complex Biological Systems	X				X		X		X

		Learning outcomes of the degree programme Integrative Biology								
1B2	Radioisotopes in Experimental Biology	X				X		X	X	
1B3	Laboratory Animal Science		X		X	X	X	X	X	X
1B3	Practical Computing for Biologists	X			X	X	X	X		X
1B3	Practical modelling for biologists	X			X	X	X	X		
1B3	Evolutionary Medicine Diseases of Affluence (EMDA)	X			X			X		X
2A1	Evolutionary Medicine Infectious Diseases (EMID)	X			X	X		X	X	X
Period	**Course**	**Year 2 compulsory courses**								
	Research Project 2	X	X	X	X	X	X	X	X	X
	Colloquium	X		X	X			X	X	X
Period	**Course**	**Year 2 Electives (if applicable)**								
2B	Orientation on Non-academic Careers						X	X	X	X
2B	Advanced statistics		X		X		X	X		X

		Learning outcomes of the degree programme SBP track									
		1	2	3	4	5	6	7	8	9	
Period	**Course**	**Year 2 –compulsory courses**									
2A	Introduction Science and Business	X			X	X	X		X	X	
2A	Introduction Science and Policy	X			X	X	X		X	X	
2B	Work Placement		X	X	X	X	X	X	X	X	
	Colloquium	X		X	X	X		X	X	X	