Assessment plan for the curriculum of the Bachelor's degree programme in Life Science and Technology, 2023/2024

Introduction

This assessment plan is a systematic description of the type of assessment used in the various modules of the bachelor's degree programme Life Science and Technology. This assessment plan fits within the assessment policy of the Faculty of Science and Engineering[1], and the protocol used by the Board of Examiners of the degree programme[2].

This assessment plan applies to the curriculum of Life Science and Technology as of September 2020.

The assessment plan is based on:

- The learning outcomes of the degree programme
- The Teaching and Examination regulations of the degree programme
- The description of the various modules of the degree programme in the *Course Unit Assessment Overview*, including:
    - Objective of the module
    - Course content
    - Lecturers and examiners
    - Assessment method used
    - Lecture format

The assessment plan contains two parts:

1. An overview of the examiners and assessment types used for all modules in the bachelor's degree programme Life Science and Technology.

   The following types of assessments are distinguished in this scheme:
   - Written examination (WE)
   - Multiple choice (MC)
   - Interim Test (IT)
   - Oral examination (OE)
   - Assignment (AST)
   - Report (R)
   - Assessment of Practical work, including laboratory and computer work (PR)
   - Presentation (P)
   - Mandatory Attendance (Att)
   - Other assessment mode to be specified (ALT)

[1] FSE Quality Assurance Manual 2018-2019
[2] Quality Assurance Guide for the Board of Examiners 2015

2. Matrices describing the relation between the various modules of the bachelor's degree programme Life Science and Technology and the learning outcomes of the degree programme.

Learning outcomes of the degree programme

1. Explain general basic principles of biology from chemical and physical perspectives;
2. Explain the basic principles of applied technology within the field of life sciences;
3. Estimate the relevance of research results in STEM published in academic journals and discuss these results with peers;
4. Describe fundamental and/or applied scientific research and/or a technological method and recognize areas of interest within it;
5. Describe the relationship between various disciplines and integrate terms and concepts from the subject areas;
6. Recognise and analyse scientific problems, and design a scientific/academic approach to them in a systematic manner;
7. 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;
8. Explain the societal relevance of the discipline, evaluate the related responsibilities and judge their individual role in that context;
9. Develop a work method independently and proactively, justify it, and carry it out in order to achieve a specific aim;
10. Contribute to and take responsibility for solving a specific problem or task in a specific role as part of a team;
11. Report about research in a structured manner, both orally and in writing;

Overview of examiners and testing and assessment modes for study components

Year 1

Course unit name	ECTS	First examiner	Second examiner	Mode of assessment
Optics	5	M.H. Diniz Guimaraes	M.S. Pchenitchnikov	WE, MC
Mammalian Cell Biology	5	G. van den Bogaart	R. Vlijm	WE, MC, Ast
Practical Course Optics and Cell Biology	5	A. U. Zielinska	M. Fontana	R, PR
Organic Chemistry for Life Science 1	5	A.J. Minnaard	S. Harutyunyan	WE, OE, AST
Biochemistry for LST	5	A. Kortholt	D.J. Scheffers	WE, MC, AST
Calculus for LST	5	S.S. Faraji	W.R. Browne	WE
Programming for Life Sciences	5	K.M. Tych	S.J. Marrink	IT, AST
Principles of Physiology	5	G. van Dijk	C. Drion	MC, R, P, PR
Thermodynamics	5	A.H. de Vries	S.J. Marrink	WE
Biophysics	5	W.H. Roos	R. Vlijm	WE, AST
Pharmaceutical Analysis A	5	E.M.J. Verpoorte	J.W. Meints	WE, PR
Scientific Reading and Communication Skills	5	A.M.W.H. Thunnissen	A. Guskov	AST

Year 2

Course unit name	ECTS	First examiner	Second examiner	Mode of assessment
Applied Microbiology	5	S.K. Billerbeck	A.J.M. Driessen	MC, WE
Linear Algebra	5	P. Kilicer	X. Lamprou	WE, IT, AST,
Practical Microbiology	5	J.L. Kamenz	S.K. Billerbeck	R, P, PR
Bioinorganic Chemistry	5	J.E.M.N. Klein	E. Otten	WE
Quantum and Classical Mechanics	5	C.H. van der Wal	J.L. Slawinska	WE, AST
Spectroscopic Tools for Life Sciences	5	R.M. Hildner	P.C.A. van der Wel	WE, IT, AST
Organic Chemistry for Life Science 2	5	M.T.C. Walvoort	A.J. Minnaard	WE, AST
Practical Skills in Organic Chemistry	5	N.N.H.M. Eisink	M.D. Witte	PR, R
Imaging	5	P.C.A. van der Wel	R.M. Hildner	WE, R, AST
Applied Biotechnology	5	S. Schmidt	K. Haslinger	WE, P
LST and Society: Ethical and Professional Aspects	5	S. Grooters	J. Zevenberg	WE, MC, R
Genetics and Evolution	5	K.J. Tiedge	S.J.J. Lequime	WE, AST

Year 3

Due to the set-up of the LST-programme, the third year is when LST-students have to follow courses they need in order to gain access to the Master degree programme they wish to continue with.

The TER-appendix of LST 2023/2024 contains several packages of courses that can be used for access to the master programmes of:

- Biology
- Biomedical Engineering
- Biomedical Sciences
- Biomolecular Sciences
- Chemistry
- Medical Pharmaceutical Sciences
- Physics

The admission requirements for each master programme are listed in the TER-appendix of those master programmes.

Examiners and assessment methods of those courses are listed in the assessment plans of those programmes.

The bachelor research project is an essential part of fulfilling the entry requirements for a Master degree programme. An LST-student who wishes to gain access to a Master degree programme has to do a bachelor research project in the field of that master.

In practice, this means doing a bachelor research project within the Bachelor degree programme that Master degree programme is linked with.

Course unit name	**ECTS**	**Examiner(s) / course coordinator**	**Mode of assessment**
Bachelor Research Project	15	Examiners from the relevant/corresponding bachelor programmes of our faculty	R, P, PR (in accordance with the assessment plan of the respective Bachelor programmes)

Examiners for Life Science & Technology (for the new curriculum as of 2020/2021)

This alphabetical overview of all LST examiners is mainly for administrative purposes and to show changes per academic year.

- A.K. Biegun
- S.K. Billerbeck
- G. van den Bogaart
- W. Browne
- G. van Dijk
- M.H. Diniz Guimaraes
- N.N.H.M. Eisink
- S. Grooters
- K. Haslinger
- R.M. Hildner
- J.L. Kamenz
- P. Kilicer
- J.E.M.N. Klein
- A. Kortholt
- S.J.J. Lequime
- A.J. Minnaard
- W.H. Roos
- D.J. Scheffers
- S. Schmidt
- J.L. Slawinska
- A.M.W.H. Thunnissen
- K.J. Tiedge
- K.M. Tych
- E.M.J. Verpoorte
- R. Vlijm
- A.H. de Vries
- C.H. van der Wal
- M.T.C. Walvoort
- P.C.A. van der Wel
- M.D. Witte
- J. Zevenberg
- A. U. Zielinska

The degree programme has proposed that the following teachers become examiners for Life Science & Technology and is awaiting the decision from the Board of Examiners:

- Kristine van der Bij
- Shirin Faraji

Relationship between course units and details of the learning outcomes

	1	2	3	4	5	6	7	8	9	10	11
Mammalian Cell Biology	X	x	x	X	x	x	o	o	o	o	x
Optics	o	X	o	X	x	o	o	o	o	o	o
Practical Course Optics and Cell Biology	x	x	o	x	o	x	X	o	x	x	X
Biochemistry for LST	X	x	o	o	o	o	o	o	o	o	o
Calculus for LST	o	X	o	X	x	X	o	x	X	o	o
Organic Chemistry for Life Science 1	X	o	o	x	x	x	o	o	o	o	o
Biophysics	X	x	x	x	x	x	o	o	o	o	x
Principles of Physiology	X	o	o	o	x	x	x	x	o	x	X
Thermodynamics	X	X	o	X	o	X	o	o	o	o	o
Pharmaceutical Analysis A	X	x	o	o	o	x	x	o	o	X	x
Programming for Life Sciences	o	o	o	x	o	X	X	o	X	x	x
Scientific Reading and Communication Skills	x	X	X	X	x	X	o	o	o	X	X
Applied Microbiology	X	X	x	o	o	o	o	x	o	o	o
Bioinorganic Chemistry	X	x	o	x	x	x	o	o	o	o	o
Practical Microbiology	X	X	o	X	o	x	X	o	x	x	X
Linear Algebra	o	X	x	o	x	o	o	o	o	o	o
Quantum and Classical Mechanics	X	X	o	x	x	x	o	o	x	o	X
Spectroscopic Tools for Life Sciences	o	X	o	x	o	x	o	o	o	o	o
Organic Chemistry for Life Science 2	X	o	o	o	x	x	o	o	o	o	o
Practical Skills in Organic Chemistry	o	X	o	x	o	x	x	o	o	o	X
Imaging	o	x	x	X	x	o	o	o	o	o	o
Applied Biotechnology	x	X	x	x	x	o	o	x	o	o	o
LST and Society: Ethical and Professional Aspects	o	o	x	o	x	x	x	X	x	X	X
Genetics and Evolution	X	x	o	X	x	o	o	x	o	o	o
Bachelor Project (thesis + research)	X	X	X	X	X	X	x	X	X	x	X

(o= no contribution to the specified learning outcome, x = minor contribution to the specified learning outcome, X= large contribution to the specified learning outcome)