university of groningen

Appendices for the Bachelor's degree programme(s) in Life Science & Technology 2025/2026

I. Learning outcomes of the Bachelor's degree programme
II. Majors and Minors
III. Course units first year of the degree programme
IV. Course units second and third years of the degree programme
V. Contact hours
VI. Additional Requirements Open degree Programmes
VII. Transitional provisions

university of groningen

Appendix 1. Learning outcomes of the Bachelor's degree programme (art. 3.1)

Graduates are able to:

1. The graduate has demonstrated basic knowledge and understanding of biology, chemistry and physics enabling them to understand and describe concepts in life sciences, chemical biology and biophysics.
2. The graduate has knowledge and understanding of the main methods by which biological processes can be investigated using concepts and techniques from physics, chemistry, mathematics and computer science.
3. The graduate can work safely (under supervision) in various laboratory settings, specifically chemical synthesis laboratories, and can work according to Safe Microbiological Techniques (SMT) guidelines.
4. The graduate is able to (under supervision), formulate a research hypothesis or propose a research design, and possesses sufficient practical skills to (under supervision) conduct the experiment and interpret the results.
5. The graduate has the ability to interpret the results of scientific research and relate the interpretation to other results and interpretations described in the scientific literature.
6. The graduate has understanding of both the societal relevance and impact of the life sciences in different cultural and/or geographical contexts, and is aware of the ethical aspects involved with life sciences research and applications (such as genetic modification, animal testing).
7. The graduate can collaborate and communicate effectively with peers in a multidisciplinary context and in a multicultural team, taking multiple perspectives into account.
8. The graduate can report and discuss, both orally and in writing, on life sciences related subjects, both with specialists as well as non-specialists.
9. The graduate is capable of recognizing and acquiring novel techniques and skills in the broader life sciences, such as the use of artificial intelligence.
10. The graduate is capable of making an autonomous, argued decision on further learning trajectories, such as the choice of a fitting MSc programme, and is aware of the importance of life-long learning.

Appendix II. Majors and Minors of the Bachelor's degree programme (art. 3.7 and 7.1.3)

As of September 2020, the degree programme has one major: Life Science & Technology.

This consists of the course units listed in Appendix III.

The degree programme includes a minor of 30 ECTS, see also TER article 7.1. Students who started with Life Science & Technology after the 1st of September 2020 are allowed to do all the university minors, including the ones offered by the Faculty of Science and Engineering.

Students who started with the Life Science & Technology programme before the 1st of September 2020 should contact the Board of Examiners of Biology about the requirements for graduating.

Students who complete their bachelor degree programme have access to several master programmes within FSE. Admission requirements are listed in the TER appendix of those master programmes:

- Biology
- Biomedical Engineering
- Biomedical Sciences (for LST students who started in 2020/2021 or 2021/2022)
- Biomolecular Sciences
- Chemistry
- Energy and Environmental Sciences
- Medical Pharmaceutical Sciences
- Physics
- Science Education and Communication
- Admission to other FSE master programmes is decided by the Board of Admission of that master programme

Appendix III. Course units in the first year of the degree programme

- **List of course units (art. 4.1.1)**
- **Compulsory order of examinations (art. 9.3)**

First year programme:

Course unit name	Course code	ECTS	Practical	Entry requirements
Optics	WBLT001-05	5		
Mammalian Cell Biology	WBLT002-05	5		
Practical Course Optics and Cell Biology	WBLT003-05	5	Lab	
Organic Chemistry for Life Science 1	WBLT004-05	5		
Biochemistry for LST	WBLT005-05	5	Computer	
Calculus for LST	WBLT006-05	5		
Programming for Life Sciences	WBLT009-05	5	Computer	
Thermodynamics	WBLT008-05	5		
Principles of Physiology	WBLT011-05	5	Lab	
Pharmaceutical Analysis A	WBFA035-05	5	Lab	
Biophysics	WBLT007-05	5		
Scientific Reading and Communication Skills	WBLT010-05	5		

university of groningen

Appendix IV. Course units in the second and third year of the degree programme

- **List of course units (art. 7.1.1)**
- **Compulsory order of examinations (art. 9.3)**

Second year programme

Course unit name	Course code	ECTS	Practical	Entry requirements
Applied Microbiology	WBLT012-05	5		
Linear Algebra for LST	WBLT015-05	5		
Practical Course Microbiology *	WBLT014-05	5	Lab	
Bioinorganic Chemistry	WBLT013-05	5		
Quantum and Classical Mechanics for LST	WBLT016-05	5		
Imaging	WBLT020-05	5		
Organic Chemistry for Life Science 2	WBLT018-05	5		
Spectroscopic Tools for Life Sciences	WBLT017-05	5		
Practical Skills in Organic Chemistry for LST	WBLT019-05	5	Lab	
Genetics and Evolution	WBLT023-05	5		
Applied Biotechnology	WBLT021-05	5		
LST and Society: Ethical and Professional Aspects	WBLT022-05	5		

* LST students can get a certificate for Safe Microbiological Techniques (SMT)/ Veilige Microbiologische Technieken (VMT) via this course.

Third year programme

Course unit name	ECTS	Practical	Entry requirements
Minor	30	Depends on minor	
Bachelor Research Project *	15	X	At least 120 ECTS, including the complete first year programme
Electives * • Biology • Chemistry • Biomedical Engineering • Medical Pharmaceutical Sciences • Physics	15	Depends on elective	Depends on course

* Electives and bachelor research project will also depend on the master programme the student wants to pursue. Electives and bachelor research project must be approved by the Board of Examiners.

For entry requirements, check the TER appendix of the relevant bachelor programme.

Electives and bachelor project in Biomedical Engineering

These electives can also be used to create a minor in Biomedical Engineering.

The assessment method of the courses can be found in the assessment plan of the degree programme and in the Ocasys database. For entry requirements, check the TER appendix of the relevant bachelor

Course unit name	Course code	ECTS	Specialisation BME
Anatomy and Physiology	WBBE024-05	5	X
Applied Medical Visualization	WBBE045-05	5	X
Biomechanics	WBBE002-05	5	
Ethics 3: Research Ethics	WBBE046-01	1	X
Mathematical Tools (for BME)	WBBE055-05	5	X
Microscopy and Imaging	WBBE058-05	5	X
Physics and Technology of Medical Imaging	WBBE057-05	5	X
Research Course BME	WBBE010-09	9	X
Signals and Systems	WBIE030-05	5	X
Waves and Optics for BME	WBBE040-05	5	X
Bachelor Project in Biomedical Engineering	WBBE901-15	15	X

programme and the Ocasys database.

Electives and bachelor project in Medical Pharmaceutical Sciences

These electives can also be used to create a minor in Medical Pharmaceutical Sciences.

Course unit name	Course code	ECTS	Specialisation MPS
Biostatistics	WBFA011-05	5	X
Drugs for the Central Nervous System	WBFA033-05	5	1 from this group
Immunopharmacology	WBFA015-05	5	
Introduction to Nanomedicine and Drug Targeting	WBFA060-05	5	
Medicinal Chemistry and Biophysics	WBFA038-05	5	
Metabolism and Toxicology	WBFA016-05	5	X
MG: Circulatory Tract	WBFA040-05	5	1 from this group
MG: Endocrine System and Digestive and Respiratory Tract	WBFA039-05	5	1 from this group
MG: Infectious diseases and Oncology	WBFA041-05	5	1 from this group
Pharmacoepidemiology	WBFA028-05	5	X
Pharmacokinetics	WBFA018-05	5	X
Bachelor project	WBFA903-15	15	X

The assessment method of the courses can be found in the assessment plan of the degree programme and in the Ocasys database. For entry requirements, check the TER appendix of the relevant bachelor programme and the Ocasys database.

Electives and bachelor project in Chemistry

These electives can also be used to create a minor in Chemistry.

Course unit name	Course code	ECTS	Specialisation Chemistry
Artificial Intelligence and Machine Learning in Chemistry	WBCH060-05	5	
(Bio)Catalysis	WBCH019-05	5	X
Bioenergy, Metabolism and Bioresources	WBCH009-05	5	
Carbohydrates	WBCH010-05	5	
Electrochemical Technology	WBCE021-05	5	X
Nuclear and Radiochemistry	WBCH052-05	5	
Organic Synthesis	WBCH051-05	5	
Physical Chemistry 2	WBCH015-05	5	X
Physical Organic and Photochemistry	WBCH027-05	5	X
Research Practical	WBCH070-05	5	X
Soft Molecular Materials	WBCH017-05	5	X
Synthesis 2 Lab Course	WBCH008-05	5	X
Bachelor Research Project in Chemistry	WBCH901-15	15	X

The assessment method of the courses can be found in the assessment plan of the degree programme and in the Ocasys database. For entry requirements, check the TER appendix of the relevant bachelor programme and the Ocasys database.

Electives and bachelor project in Physics

These electives can also be used to create a minor in Physics.

Course unit name	Course code	ECTS	Specialisation Physics
Calculus 2 (for Physics)	WBPH058-05	5	X
Differential Equations	WBPH089-05	5	X
Electricity and Magnetism	WBPH033-10	10	X
Experimental Particle Physics	WBPH040-05	5	1 from this group
From Atoms to Solids	WBPH085-10	10	X
Ionizing Radiation in Medicine	WBPH007-05	5	
Mechanics for IEM	WBIE024-05	5	X
Nuclear Energy	WBPH010-05	5	
Quantum Physics 2	WBPH052-05	5	1 from this group
Relativity Theory	WBPH061-05	5	
Solid state physics	WBPH068-05	5	
Statistics for Modern Physics	WBPH080-05	5	
Subatomic Physics	WBPH031-05	5	1 from this group
Symmetry in Physics	WBPH047-05	5	
Waves and Optics	WBPH032-05	5	X
Bachelor Research Project Physics for LST *	WBPH904-15	15	X

The assessment method of the courses can be found in the assessment plan of the degree programme and in the Ocasys database. For entry requirements, check the TER appendix of the relevant bachelor programme and the Ocasys database.

* Entry requirements for LST students are 120 ECTS within the LST programme, including completion of the first year programme.

Electives, research project and bachelor thesis in Biology

These electives can also be used to create a minor in Biology.

Course unit name	Course code	ECTS	Specialisation
Behavioural Biology	WBBY013-05	5	
Big Data in Human Disease	WBBY027-05	5	
Big Data Management in Ecology and Evolution	WBBY028-05	5	
Bioanalytical and Omics Techniques	WBBY073-05	5	
Bioinformatics	WBBY002-05	5	
Biology of Cancer	WBBY030-05	5	
Biology of Human Behaviour	WBBY031-05	5	
Biostatistics II	WBBY032-05	5	
Chronobiology	WBBY003-05	5	
Competences and Professionalization in Biology	WBBY076-05	5	
Conservation Biology	WBBY016-05	5	
Endocrinology	WBBY035-05	5	
Evolution and Development	WBBY037-05	5	
Evolutionary and Ecological Genomics	WBBY054-05	5	
Evolutionary Medicine	WBBY039-05	5	
Evolutionary Processes	WBBY040-05	5	
Food and Metabolism	WBBY041-05	5	
Genes & Behaviour	WBBY018-05	5	
Human Genetics and Genomics	WBBY042-05	5	
Immunology	WBBY020-05	5	
Integrative Biology	WBBY056-05	5	
Integrative Neuroscience	WBBY006-05	5	
Machine Learning in Ecology and Evolution	WBBY091-05	5	
Medical Cell Biology	WBBY045-05	5	
Medical Structural Biology	WBBY007-05	5	
Microbiome	WBBY060-05	5	
Modelling Life	WBBY024-05	5	
Molecular Genetics	WBBY008-05	5	
Practical Carrousel	WBBY048-05	5	X – Biomolecular Sciences
Psychobiology	WBBY063-05	5	
Research project (in discipline of interest)	Varies	10	
Bachelor thesis (in discipline of interest)	WBBY901-05	5	
Research Project Ecology and Evolution	WBBY911-15	15	
Research Project Molecular Life Sciences	WBBY901-15	15	X – Biomolecular Sciences

The assessment method of the courses can be found in the assessment plan of the degree programme and in the Ocasys database. Check for entry requirements the TER of the relevant bachelor programme.

Miscellaneous electives from FSE bachelor programmes

These are elective courses that do not go with a specific specialization.

Course unit name	Course code	ECTS
Autonomous Systems	WBAI002-05	5
Biochemical Engineering	WBCE029-05	5
Calculus 2	WBMA029-05	5
Introduction to Graph Theory	WBMA052-05	5
Introduction to Science Communication	WBEC001-05	5
Oriëntatie op Onderwijs in de Bètawetenschappen	WBEC002-05	5
Product Technology	WBCE019-05	5
Polymer Engineering	WBCE030-05	5
Statistics	WBAI049-05	5

The assessment method of the courses can be found in the assessment plan of the degree programme and in the Ocasys database. Check for entry requirements the TER of the relevant bachelor programme.

Appendix V. Contact hours (art. 3.6)

Degree programme year 1	
Structure contact hours	**Contact hours per year**
Lectures	+/- 210
Tutorials	+/- 136
Practicals	+/- 236
Supervision during an internship	N/A
Examinations	+/- 30
Career services/Mentorate	+/- 6

Degree programme year 2	
Structure contact hours	**Contact hours per year**
Lectures	+/- 186
Tutorials	+/- 123
Practicals	+/- 198
Supervision during an internship	N/A
Examinations	+/- 30
Career services/Mentorate	+/- 5

Degree programme year 3	
Structure contact hours	**Contact hours per year**
Lectures	Depends on minor/specialisation/electives
Tutorial	Depends on minor/specialisation/electives
Tutoring	Depends on minor/specialisation/electives
Supervision during an internship	Depends on minor/specialisation/electives
Examinations	Depends on minor/specialisation/electives

university of groningen

Appendix VI. Additional Requirements Open degree Programmes (art. 7.3)

Students wishing to pursue an open degree should file a request with the Board of Examiners.

Appendix VII. Transitional provisions (art. 12.1)

There are no changes within the LST part of the programme.

There are some changes in the electives offered by other programmes. Applicable transitional agreements can be found in the TER appendix of that programme.