Biomedical Laboratory Science Programme

Biomedicinska analytikerprogrammet
180 credits

MGBA2

Valid from: 2022 Autumn semester

Determined by

The Faculty Board at the Faculty of Health Sciences

Date determined

2016-01-28

Revised by

Chairman of The Board for First and Second Cycle Programmes

Revision date

2017-03-13; 2017-01-26; 2016-12-01; 2021-05-03; 2024-10-11

Registration number

LiU-2015-02322; LiU-2017-00046; LiU-2021-01655; LiU-2024-01436

Offered first time

Autumn semester 2016

Offered for the last time

Replaced by

Purpose

The purpose of the programme is to prepare students for licensing as biomedical laboratory scientists for employment in various laboratory settings. The programme is also intended as a general bachelor's degree that prepares students to continue their education in the second and third cycles.

Aim

General objectives

Chapter one of the Higher Education Act (SFS 1992:1434 including updates) have adopted the following general objectives for the first cycle:

8 § Undergraduate level education should be primarily based on knowledge students receive from national programmes at upper-secondary school level or equivalent. However, the government may decide on exemptions relating to the fine, applied, and performing arts.

First-cycle programmes and courses will develop students'

- abilities to make independent and critical assessments,
- abilities to independently identify, formulate and solve problems,
- preparedness to meet changes in working life

Within the specific field of education, the students will, in addition to their knowledge and skills, develop the abilities to:

- seek out and evaluate knowledge at a scientific level,
- follow the development of the field,
- exchange knowledge also with people without specialized knowledge in the field

Degree objectives

Qualitative targets for a Degree of Bachelor of Science in Biomedical Laboratory Science as set out in the Higher Education Ordinance (SFS 1993:100 with updates), Appendix 2 – System of Qualifications.

For a Degree of Bachelor of Science in Biomedical Laboratory Science, the student will demonstrate the knowledge and ability required in order to qualify as a biomedical laboratory scientist.

Knowledge and understanding
For a Degree of Bachelor of Science in Biomedical Laboratory Science, the student will be able to:

- demonstrate their knowledge of the disciplinary foundation of the field of study, familiarity with current research and development work and knowledge of the relationship between research findings and proven experience and the significance of this relationship to professional practice,
- demonstrate their knowledge of relevant methods within the field, and
- demonstrate their knowledge of relevant statutes.

Skills and Abilities

For a Degree of Bachelor of Science in Biomedical Laboratory Science, the student will be able to:

- demonstrate their ability to independently plan and implement analysis and investigations and collaborate with the patient and relatives in conjunction with these,
- demonstrate their ability to develop, use and quality assure biomedical laboratory and investigation methods,
- demonstrate their ability to apply their expertise in order to manage a variety of situations, phenomena and queries on the basis of the needs of groups and individuals,
- demonstrate their ability to inform and teach a variety of groups,
- demonstrate their ability to gather, process and critically interpret the results of analyses and investigations, to identify and manage discrepancies and to describe and discuss the results verbally and in writing with those concerned and document these in accordance with relevant statutes,
- demonstrate their ability to work as part of a team and with other professions,
- demonstrate their ability to critically appraise, assess and use relevant information and to discuss new information, phenomena and queries with a variety of groups and thus contribute to the development of the profession and the activities in question.

Judgement and attitude
For a Degree of Bachelor of Science in Biomedical Laboratory Science, the student will be able to:

- demonstrate their self-knowledge and ability to empathise,
- demonstrate their ability to make assessments using a comprehensive view of the person and on the basis of relevant scientific, social and ethical aspects, paying particular attention to human rights,
- demonstrate their ability to adopt a professional attitude in contact with patients and their relatives,
- demonstrate their ability to identify their requirements for additional

learning and to continually develop their expertise.

Besides the objectives above, the students will after completing the programme, have obtained the higher institution's local objectives as well as the local objectives of the programme,

Scope

A Degree of Bachelor is achieved once the student has completed course requirements worth 180 credits with a specific specialisation determined independently by each higher education institution, of which at least 90 credits involve a gradual specialisation within the programme's main field of study.

Knowledge and understanding

For a degree of bachelor, the student will:

- Demonstrate knowledge and understanding within the programme's main field of study, including knowledge of the field's disciplinary foundation, knowledge of applicable methods within the field, specialisation in one part of the field and orientation on current research questions.

Skills and abilities

For a degree of bachelor, the student will:

- Demonstrate their ability to search out, gather, evaluate and critically interpret information of relevance to a problem, and to critically discuss phenomena, questions and situations,
- demonstrate their ability to independently identify, formulate and solve problems, and to carry out tasks within given time frames,
- demonstrate their ability to describe and discuss information, problems and solutions verbally and in writing in dialogue with various groups,
- demonstrate such skills as are required to work independently within the field to which the programme pertains.

Judgement and attitude

For a degree of bachelor, the student will:

- demonstrate their ability to perform assessments within the programme's main field of study, taking into account relevant academic, societal and ethical aspects,
- demonstrate insight into the role knowledge has in society and into

individuals' responsibility for how it is used,
- demonstrate their ability to identify their requirements for additional learning and to continually develop their expertise.

Local objectives for the Faculty of Medicine and Health Sciences

Having completed the programme, the student will

- have the ability to critically appraise situations within healthcare in order to motivate and evaluate choice of actions as a working professional
- demonstrate knowledge about and understanding of factors which affect health from a local and global perspective
- have the ability to evaluate and apply knowledge in evidence-based medicine and quality improvement in healthcare
- be able to work for a sustainable and health promoting development of current and future generations
- have obtained inter-professional skills that enables working in teams with other professions
- demonstrate knowledge and understanding of the importance of equality and equal opportunities in society

Local objectives for the Biomedical Laboratory Science Programme

The programme integrates biomedical laboratory science with other fields of study and the student is able to come into contact with laboratory activities at an early stage of the programme. During the programme, the biomedical laboratory science student is given an opportunity to gain insight into the healthcare chain and other professions' areas of responsibility and expertise through placements in a clinical teaching department. A number of elements of particular significance to biomedical laboratory scientists' expertise recur and are explored in more depth throughout the entire programme. These elements are laboratory method, metrology, equipment studies, quality assurance, diagnostic value, statistics, patient contact and scientific method, scientific approach and ethics in biomedical laboratory science, and responsibility for and handling of patient samples.

Placements are one further element that permeates the entire programme and these begin early on in the programme.

Content

Each course's content builds on that of others and they must be completed in order.

The following courses are included in the programme:

Basic Biomedical Laboratory Science, 30 credits (semester 1)
Grundläggande biomedicinsk laboratorievetenskap, 30 hp (termin 1)

Biomedical Laboratory Science in Molecular Biology and Metabolism, 30 credits (semester 2)
Laboratorievetenskap inom molekylärbiologi och metabolism, 30 hp (termin 2)

Biomedical Laboratory Science in Endocrinology and Infection, 30 credits (semester 3)
Laboratorievetenskap inom endokrinologi och infektion, 30 hp (termin 3)

Biomedical Laboratory Science in Circulation and Respiration, 30 credits (semester 4)
Laboratorievetenskap inom cirkulation och respiration, 30 hp (termin 4)

Biomedical Laboratory Science in Neoplastic and Reactive States, 21 credits (semester 5)
Laboratorievetenskap vid neoplastiska och reaktiva tillstånd, 21 hp (termin 5)

Applied Clinical Laboratory Methods, 18 credits (semester 5 and 6)
Tillämpad klinisk Laboratoriemetodik, 18 hp (termin 5 och 6)

Advanced and Applied Clinical Laboratory Methods 4.5 credits (semester 6)
Fördjupad och tillämpad klinisk Laboratoriemetodik 4,5 hp (termin 6)

Course in Degree Project in Biomedical Laboratory Science, 16.5 credits (semester 6)
Kurs i självständigt arbete (examensarbete) inom biomedicinsk laboratorievetenskap, 16,5 hp (termin 6)

Specialisations

The specialised study in the main field and within the pertinent fields of study is indicated by the intended learning outcomes in the syllabus for each of the courses in the programme and by the suggested course literature in the reading lists.

Teaching and working methods

Student centred and problem based learning make up the foundation of the teaching at the Faculty of Medicine and Health Sciences. The student takes responsibility for, studies and researches current content of the courses and study programme. The methods of the course work challenge the students to independently formulate questions for learning, to seek out knowledge and assess and evaluate achieved knowledge in dialogue with others. Students work together in groups based on reality based situations to develop their own learning, contribute to co-students' learning and to practice cooperation. The teacher's role is to support the students in this way of learning. The programmes consist of subject integrated themes, theoretical and practical modules integrated throughout the study programme. The study programmes at the Faculty of Medicine and Health Sciences cooperate in certain integration modules where inter-professional learning takes place through the participation of students from several professions learning with, about and from each other. The course methods and integration modules stimulate and support the student's development of professional and inter-professional competencies as well as prepare the student for teamwork and cooperation in the future profession.

Entry requirements

In addition to the general entry requirements, there are specific entry requirements for the Biomedical Laboratory Science Programme is
Biology 2
and
Physics 1a or 1b1 and 1b2
and
Chemistry 2
and
Mathematics 3b or 3c or Mathematics C

Threshold requirements

Entry to the course Biomedical Laboratory Science in Molecular Biology and Metabolism, 30 credits (semester 2) requires a pass in the basic group work and the course element Documentation, Calculations and Safety in the course Basic Biomedical Laboratory Science (semester 1).

Entry to the course Biomedical Laboratory Science in Endocrinology and Infection, 30 credits (semester 3) requires a pass in the course Basic Biomedical Laboratory Science, 30 credits (semester 1) and a pass in the basic group work in the course Biomedical Laboratory Science in Molecular Biology and Metabolism, 30 credits (semester 2).

Entry to the course Biomedical Laboratory Science in Circulation and Respiration, 30 credits (semester 4) requires a pass in the course Biomedical Laboratory Science in Molecular Biology and Metabolism, 30 credits (semester 2) and a pass in the basic group work in the course Biomedical Laboratory Science in Endocrinology and Infection, 30 credits (semester 3) In addition, the entry requirements to the preceding courses as per above must be met.

Entry to the courses Biomedical Laboratory Science in Neoplastic and Reactive States, 21 credits and Applied Clinical Laboratory Methods, 18 credits (semester 5) requires a pass in the course Biomedical Laboratory Science in Endocrinology and Infection, 30 credits (semester 3) and a pass in the basic group work in the course Biomedical Laboratory Science in Circulation and Respiration, 30 credits (semester 4) In addition, the entry requirements to the preceding courses as per above must be met.

Entry to the courses Advanced and Applied Clinical Laboratory Methods 4.5 credits and Course in Degree Project in Biomedical Laboratory Science, 16.5 credits (semester 6) requires a pass in the course Biomedical Laboratory Science in Circulation and Respiration, 30 credits (semester 4) and a pass in the basic group work in the course Biomedical Laboratory Science in Neoplastic and Reactive States, 21 credits (semester 5). In addition, the entry requirements to the preceding courses as per above must be met.>

Degree thesis

For a Degree of Bachelor of Science in Biomedical Laboratory Science and a Degree of Bachelor of Medical Science in Biomedical Laboratory Science, the student shall have completed within the scope of the course requirements a degree project worth at least 15 credits within the programme's main field of study.

Degree requirements

Following completion of a programme worth 180 credits, a degree certificate with the title Degree of Bachelor of Science in Biomedical Laboratory Science and Degree of Bachelor of Medical Science in Biomedical Laboratory Science is issued to the student upon request.

Degree in Swedish

Biomedicinsk analytikerexamen och Medicine kandidatexamen i biomedicinsk laboratorievetenskap.

Degree in English

Degree of Bachelor of Science in Biomedical Laboratory Science och Degree of Bachelor of Medical Science in Biomedical Laboratory Science

Specific information

Parts of this programme and the placements may be located outside of the study venue and may entail increased costs for the student.

The language of instruction is primarily Swedish, but some elements may be conducted in English.

Internationalisation

It is possible to conduct all or part of a course at a foreign university in the semesters listed.

Thanks to partnerships with higher education institutions outside of Sweden, there may be foreign students and/or teachers on the programme.

Common rules

Directions regarding deferment, leave from studies, returning to study, transferring of credits etc are referred to the Linkoping University regulations and to the Faculty of Medicine and Health Sciences Board regulations.

If special circumstances prevail, the vice-chancellor may in a special decision specify the preconditions for temporary deviations from this course syllabus, and delegate the right to take such decisions.

Transition rules

Entry into force and transitional provisions

1. This programme syllabus entered into force on 29 August 2016 and applies to students who are admitted to the programme from 1 July 2016. From autumn semester 2019, the programme syllabus also applies to students admitted prior to 1 July 2016.
2. Courses in accordance with the programme syllabus that was adopted on 07/05/2008, revised 18/05/2010, 26/04/2012 and 07/06/2012 (Reg. no. LiU 1287/07-41) are being gradually phased out from autumn semester 2016. This means that a course in semester 1 is taught for the final time in autumn semester 2015, a course in semester 2 is taught for the final time in spring semester 2016 and so forth. A course in semester 6 is thus taught for the final time in spring semester 2018.
3. Students who were admitted to the programme prior to 1 July 2016 are entitled to sit retakes under the previous programme syllabus on three occasions within/in connection to the two semesters subsequent to that in which each course is taught for the final time.
4. The programme coordinator makes decisions concerning individual study plans and examination formats for students who were admitted under and have adhered to the previous programme syllabus and have, due to approved leave from studies or some other reason, not completed their studies by the end of spring semester 2018.

Curriculum

Semester 1 (Autumn 2025)

Preliminary courses

Course code	Course name	Credits	Level	Weeks	ECV
8BLG10	Basic Biomedical Laboratory Science	30.0	G1X		C

Semester 2 (Spring 2026)

Preliminary courses

Course code	Course name	Credits	Level	Weeks	ECV
8BLG20	Biomedical Laboratory Science in Molecular Biology and Metabolism	30.0	G1X		C

Semester 3 (Autumn 2026)

Preliminary courses

Course code	Course name	Credits	Level	Weeks	ECV
8BLG30	Biomedical Laboratory Science in Endocrinology and Infection	30.0	G2X		C

Semester 4 (Spring 2027)

Preliminary courses

Course code	Course name	Credits	Level	Weeks	ECV
8BLG40	Biomedical Laboratory Science in Circulation and Respiration	30.0	G2X		C

Semester 5 (Autumn 2027)

Preliminary courses

Course code	Course name	Credits	Level	Weeks	ECV
8BLG50	Biomedical Laboratory Science in Neoplastic and Reactive States	21.0	G2X		C
8BLG51	Applied Clinical Laboratory Methodology	18.0*	G2F		C

Semester 6 (Spring 2028)

Preliminary courses

Course code	Course name	Credits	Level	Weeks	ECV
8BLG51	Applied Clinical Laboratory Methodology	18.0*	G2F		C
8BLG52	Advanced and Applied Clinical Laboratory Methodology	4.5	G2F		C
8BLG60	Course in Degree Project in Biomedical Laboratory Science	16.5	G2E		C

ECV = Elective / Compulsory /Voluntary
*Kursen läses över flera terminer