Bachelor of Medical Science specialising in Biomedicine

180 credits  First cycle  VGBIM

Programme description

The Bachelor of Medical Science specialising in Biomedicine is a degree combining science and medicine. The programme prepares students for a future professional role in biomedical research (whether in the private sector or in academia) and as caretakers, communicators and developers of biomedical knowledge. The profile and professional focus of the programme clearly delimit it from the degree programmes in laboratory science, biology, chemistry and medicine by combining a theoretical and practical grounding in science through subjects such as human cell biology, physiology, immunology and pathology. The objective of the programme is to provide students with an understanding of the link between molecular mechanisms and biological functions, and with an ability to apply this awareness to issues of relevance to the origin of disease in humans. The programme is designed to provide a gradual development of knowledge and skills through subjects ranging from molecular processes to more complex human systems and through components of professional development throughout the programme concluded by an independent project in semester 6.

The enormous advances in knowledge and technology over past decades has brought about a need for a special programme in biomedicine, since the subject has become much too complex to allow it to be covered simply as part of other programmes, such as those in medicine, chemistry or molecular biology. Furthermore, knowledge of biomedicine is becoming an increasingly important part of the everyday lives of many people, in everything from personal health decisions to politics and culture. Consequently, the goal is that students graduating from the programme will be able to conduct biomedical research and development in both companies and universities or other public sector organisations, but also that they will be able to act as caretakers, communicators and developers of biomedical knowledge in other roles, such as that of journalist, teacher or politician.

The Bachelor of Medical Science specialising in Biomedicine is a first-cycle programme of three years that qualifies students to pursue second-cycle studies.

The programme includes courses taught in either English or Swedish.

Learning outcomes

On completion of the programme, the student must have achieved the learning outcomes specified in the Higher Education Ordinance (2006:1053), Annex 2, Qualifications Ordinance:

“Knowledge and understanding

For a Degree of Bachelor the student shall
demonstrate knowledge and understanding in the main field of study, including knowledge of the
disciplinary foundation of the field, knowledge of applicable methodologies in the field, specialised
study in some aspect of the field as well as awareness of current research issues.

**Competence and skills**

For a Degree of Bachelor the student shall

- demonstrate the ability to search for, gather, evaluate and critically interpret the relevant information
  for a formulated problem and also discuss phenomena, issues and situations critically
- demonstrate the ability to identify, formulate and solve problems autonomously and to complete
  tasks within predetermined time frames
- demonstrate the ability to present and discuss information, problems and solutions in speech and
  writing and in dialogue with different audiences, and
- demonstrate the skills required to work autonomously in the main field of study.

**Judgement and approach**

For a Degree of Bachelor the student shall

- demonstrate the ability to make assessments in the main field of study informed by relevant
  disciplinary, social and ethical issues
- demonstrate insight into the role of knowledge in society and the responsibility of the individual for
  how it is used, and
- demonstrate the ability to identify the need for further knowledge and ongoing learning.

**Independent project (degree project)**

A requirement for the award of a Degree of Bachelor is completion by the student of an independent project
(degree project) for at least 15 credits in the main field of study.

**Specific learning outcomes for the Lund University Biomedicine programme**

For a Degree of Bachelor of Science specialising in Biomedicine the student shall be able to

- account for the basic processes of life at various levels, such as the levels of chemistry,
  biochemistry, cells, organisms (physiology) and populations
- explain how descriptions of medical problems such as the mechanisms of origin and expression,
  diagnosis and treatment are linked to current biomedical knowledge
- apply his or her knowledge to a development or minor research project planned and performed at a
  biomedical research laboratory, laboratory medicine department or the equivalent
Course information

The Bachelor of Science specialising in Biomedicine consists of six semesters of first-cycle studies. The two first years include basic courses in chemistry, biochemistry and cell biology as well as specialisation courses in cell and molecular biology and a gradual focus on the organism in terms of physiology, pathobiology and pharmacology. The third and final year has the aim of reinforcing the medial perspective through a course in molecular medicine and course in developmental biology and genetics. The programme is concluded in the sixth semester with an independent project of 20 weeks which is primarily to be carried out at a biomedical research laboratory and to be reported in writing and defended orally at a seminar.

All semesters include laboratory exercises to some extent, during the first year primarily in the form of exercises in traditional laboratory techniques and application of the course content. During the second and third year, students will be trained to work increasingly independently and with methods in modern cell and molecular biology, and the third year will also include individual laboratory training at a research laboratory.

Professional development courses are integrated in the programme from the first semester. They usually comprise 1–2 weeks of study each semester and deal with subjects such as library skills, theory of science, research methods, research ethics, biostatistics and academic writing.

Degree

For the degree of Bachelor of Medical Science specialising in Biomedicine, students must complete 180 credits, of which at least 90 credits in the main field of biomedicine. The courses in the second and third year of the programme make up the main field of biomedicine. At least 15 credits are to be from an independent degree project.

The name of the degree is Bachelor of Medical Science specialising in Biomedicine (Medicine kandidatexamen med huvudområde biomedicin).

Admission requirements and selection criteria

To be admitted to the programme, students must fulfil the general entry requirements for higher education in Sweden and have passes in Biology B, Physics B, Chemistry B, Mathematics D or Biology 2, Physics 2, Chemistry 2, Mathematics 4 from upper secondary school (field-specific entry requirements 13/A13). The selection criteria are grades and results from the Swedish Scholastic Aptitude Test.
### Structure of Bachelor of Medical Science specialising in Biomedicine

Valid from the autumn semester 2015

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<tr>
<th>Semester 1</th>
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<tbody>
<tr>
<td>Cell Biology 22.5 credits</td>
<td>General Chemistry 7.5 credits</td>
<td>Inorganic Chemistry 7.5 credits</td>
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<th>Semester 2</th>
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<tr>
<td>Cell Biology cont.</td>
<td>Cell Chemistry 15 credits</td>
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<td>Organic Chemistry</td>
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<th>Semester 3</th>
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<tbody>
<tr>
<td>Molecular Cell Biology 10 credits</td>
<td>Immunology and Microbiology 12.5 credits</td>
<td>Virology 7.5 credits</td>
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<th>Semester 4</th>
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<tr>
<td>Human Physiology 15 credits</td>
<td>Pharmacology and Pathobiology 13.5 credits</td>
<td>Biomedical Ethics 1.5 credits</td>
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<tr>
<td>Developmental Biology and Genetics 15 credits</td>
<td>Molecular Medicine 15 credits</td>
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<td>Degree Project 30 credits</td>
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Courses offered by the Bachelor of Medical Science programme in Biomedicine

Courses offered by the Department of Chemistry