Master (120 credits) of Medical Science specialising in Biomedicine

120 credits Second cycle VABME

Programme description

The Master’s programme consists of courses in the main field of biomedicine. It is designed to provide students with both breadth and specialisation through combinations of compulsory and elective courses. The programme results in a degree of Master (120 credits) in biomedicine.

The objective of the programme is to provide students with cutting-edge qualifications in biomedicine that make them well prepared to independently pursue medical research and development, also in management positions in academic environments, private sector companies and the public sector. A completed Master’s programme can, subject to an assessment, be included in a third-cycle programme.

Second-cycle courses in a number of research and technology fields are intended to prepare students for modern experimental medical research and development. There are also opportunities for specialisation in adjacent and supplementary subject fields within the programme, e.g. laboratory medicine, and through cooperation with other faculties at Lund University.

The language of instruction on the programme is English.

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 Master (120 credits) the student shall

- demonstrate knowledge and understanding in the main field of biomedicine, including both broad knowledge of the field and a considerable degree of specialised knowledge in certain areas of the field as well as insight into current research and development work, and

- demonstrate specialised methodological knowledge in biomedicine.

Competence and skills

For a degree of Master (120 credits) the student shall

- demonstrate the ability to critically and systematically integrate knowledge and analyse, assess and deal with complex phenomena, issues and situations even with limited information
– demonstrate the ability to identify and formulate issues critically, autonomously and creatively as well as to plan and, using appropriate methods, undertake advanced tasks within predetermined time frames and so contribute to the formation of knowledge as well as the ability to evaluate this work

– demonstrate the ability in speech and writing both nationally and internationally to clearly report and discuss his or her conclusions and the knowledge and arguments on which they are based in dialogue with different audiences

– demonstrate the skills required for participation in research and development work in biomedicine or autonomous employment in some other qualified capacity

– demonstrate the ability to engage in teamwork, also in the capacity of manager, with other staff categories within the field of biomedicine

– demonstrate the ability to provide popular science presentations and applications of biomedicine

**Judgement and approach**

For a degree of Master (120 credits) the student shall

– demonstrate the ability to make assessments in the field of biomedicine informed by relevant disciplinary, social and ethical issues and also to demonstrate awareness of ethical aspects of research and development work

– demonstrate insight into the possibilities and limitations of research, its role in society and the responsibility of the individual for how it is used

– demonstrate the ability to identify the personal need for further knowledge and take responsibility for his or her ongoing learning

**Specific learning outcomes for the Lund University Master’s programme in Biomedicine**

For a degree of Master of Medical Science (120 credits) specialising in Biomedicine the student shall be able to

– immediately fit into a research team or the equivalent and contribute to its activities

– immediately apply advanced methods of relevance to experimental research in biomedicine

– independently process scientific problems and propose theoretical and/or practical solutions

– independently apply and critically review biostatistical methods of relevance to biomedical research
Independent project (degree project)

A requirement for the award of a degree of Master (120 credits) is completion by the student of an independent project (degree project) for at least 30 credits in the main field of study. The independent project may comprise less than 30 credits, however no less than 15 credits, if the student has already completed an independent project in the second cycle for at least 15 credits in the main field of study or the equivalent from a programme of study outside Sweden.

The independent project is to be documented in writing in the form of a research report and include a popular science summary. Furthermore, the degree project is to be presented orally at a seminar where the student’s performance will be assessed by a previously appointed examiner. The student is also to critically review the degree project of a fellow student.

Course information

Year 1 – semester 1: Advanced Molecular Medicine

The semester provides students with specialised knowledge and skills in biomedicine. The course work includes theoretical specialisation, modern experimental laboratory work with relevant methodology and generic skills such as academic writing and applied biostatistics that are adapted to the issues and data generated by the students during the course. The course content is highly relevant to all later specialisations within the programme.

Year 1 – semester 2: Individual Specialisation

The semester provides students with the opportunity of designing their own specialisation through free selection of courses within an extensive range, partly offered within the programme and partly within second-cycle studies at other higher education institutions in Sweden and abroad. The courses can be combined in different ways to reach the individual specialisation.

Year 2 – semesters 3 and 4: Professional Development Courses and Research Specialisation

The last year will also be open to individual specialisation for the students. The courses offered are partly focused on preparation for further research studies and partly on professional work outside academia, e.g. within the pharmaceutical industry or other private sector activities. As in semester 2, students are allowed to select courses at other faculties or higher education institutions.

The last year of the programme also includes the independent project (degree project) which can amount to 30, 45 or 60 credits. The project is normally experimental in character and can be completed at another higher education institution or company in Sweden or abroad.

An updated list of the courses available within the programme can be found in appendix 1.

In addition to the courses included in the structural overview below, students may individually select “Biomedical Methods 7.5 credits”, “Second Cycle Project Work 15 credits” or “Second Cycle Project Work 30 credits”.

PROGRAMME SYLLABUS
Approved by the Board of the Faculty of Medicine Reg. no M 2011/942
20 September 2011 Valid from autumn semester 2012
Amended by the Board of the Faculty of Medicine Reg. no M 2012/1590
23 October 2012 Valid from spring semester 2013
Amended by the Board of the Faculty of Medicine Reg. no U 2014/413
2 June 2014 Valid from autumn semester 2015
Degree

For the degree of Master of Medical Science (120 credits) specialising in Biomedicine, students must complete a degree project of at least 30 credits and other courses within the programme amounting to at least 30 credits. No more than 60 credits of project courses may be credited for a degree, including the degree project. The remaining courses must have a clear specialisation in biomedicine or science. A maximum of 15 credits can be credited for courses within other disciplines.

The title of the degree is Master of Medical Science (120 credits) specialising in Biomedicine (Medicine masterexamen med huvudområde biomedicin).

Admission requirements and selection criteria

To be admitted to the programme, students must

- meet the general entry requirements and have a Bachelor’s degree of 180 credits in biomedicine, bioengineering, cell and molecular biology or medicine, including an independent project (degree project) of at least 15 credits in biomedicine or science. Furthermore, the student’s previous studies must include at least 30 credits of basic chemistry, of which 15 credits is to be in biochemistry, cell chemistry or the equivalent, at least 45 credits in basic cell biology (cell biology, molecular biology, microbiology, immunology, genetics and/or developmental biology) of which at least 5 credits of immunology and 5 credits of microbiology, at least 10 credits of human physiology, and at least 30 credits in molecular medicine, pathobiology and/or toxicology

- have proficiency in English corresponding to a pass in English B at a Swedish upper secondary school

Selection

- A combined qualitative assessment is made of the student’s previous education, relevant professional and/or research experience and reasons for applying to the programme. The applicant must attach a letter of intent and degree project to the application. Other research qualifications must be documented by a certificate of employment or written research paper.
Appendix 1

Structure of Master of Medical Science (120 credits) specialising in Biomedicine
Valid from the autumn semester 2015

**Semester 1: Advanced Molecular Medicine**

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<thead>
<tr>
<th>Course Name</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Advanced molecular medicine</td>
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**Semester 2: Elective Specialisation Courses**

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<thead>
<tr>
<th>Elective course 1</th>
<th>Elective course 2</th>
<th>Elective course 3</th>
<th>Elective course 4</th>
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<tbody>
<tr>
<td>(7.5 credits)</td>
<td>(7.5 credits)</td>
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**Semester 3: Elective Courses and Independent Project**

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<thead>
<tr>
<th>Course Name</th>
<th>Credits</th>
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<tbody>
<tr>
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<tr>
<td>Degree project</td>
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**Semester 4: Independent project**

<table>
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<tr>
<th>Course Name</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Degree project</td>
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* It is recommended that students do 15 credits of professional development and 45 credits of independent project work

The independent project must amount to 30 credits but can also amount to 45 or 60 credits. A maximum of 60 credits for project courses including the degree project may be credited towards the degree. In addition to the degree project, the programme offers project courses of 15 and 30 credits.