



LUNDS UNIVERSITET  
Medicinska fakulteten

Board of the Faculty of Medicine

PROGRAMME SYLLABUS

Ref.<sup>1</sup>

M:G 221 1405/06

Approved by the Board of the Faculty of  
Medicine on  
30/1 2007      Valid from 1/7 2007

## **Master of Medical Science with a Major in Biomedicine and specialisation in laboratory medicine or experimental medicine**

120 higher education credits

Second cycle  
LADOK VABIM

### **Programme description**

The Master's programme contains courses with two specialisations: laboratory medicine and experimental medicine. The programme results in a Master's degree in biomedicine. The design of the Master's programme aims to provide students with a broad range of knowledge and enable them to acquire in-depth knowledge and specialisation through optional courses.

The objective of the course is to create a category of professionals qualified for leading functions in medical research and/or laboratory medicine in academic environments, private-sector companies and the public sector.

#### **Experimental medicine**

Courses at advanced level in a number of research and technology fields (including neurobiology, tumour biology and pathobiology, array technology, research animal and transgene technology) 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, and through cooperation with other faculties at Lund.

#### **Laboratory medicine**

Courses in laboratory medicine/clinical chemistry, human genetics/clinical genetics, clinical microbiology/immunology and clinical laboratory diagnosis are intended to provide cutting-edge skills in the field of laboratory medicine.

### **Learning outcomes**

On completing the course, students must have achieved the following learning outcomes in addition to those applying to the Master's degree in general.

#### **Knowledge and understanding**

For a degree, students must

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- demonstrate in-depth knowledge and awareness of the basic processes of life at various levels, such as chemical, biochemical, molecular, cellular and those of the organism (physiological) and population, with a degree of detail corresponding to that of a modern university-level textbook, and in selected areas that of review articles for specialists, of the type published in scientific journals such as Cell, Nature or Science.
- demonstrate in-depth knowledge and awareness of how to apply the above knowledge to describe various medical problems with respect to their cause, mechanism, diagnosis and treatment at a level of detail corresponding to that described above, and thus be able to contribute to knowledge development in the field.
- be able to demonstrate proof of how knowledge develops within the scientific process, critical thinking and creativity, particularly within the field of biomedicine.

## Skills and abilities

For a degree, students must

- be able to independently apply the above knowledge to plan and carry out development/research projects in a biomedical research laboratory, a clinical laboratory department or similar, and thus be able to contribute to knowledge development in the field.
- be able to independently generate ideas to practically plan and implement projects and studies in the field of biomedicine.
- be able to read and assess original scientific papers and review articles in the field of biomedicine, and be able to read, assess and choose between methodology descriptions for biomedical laboratory work, and in this, take into account and assess social and ethical aspects.
- be able to summarise, orally and in writing, the issue in question, implementation and results of a biomedical development project (of a size equivalent to a 30-credit project) for an expert and lay audience, including critique and issues weighed.

## Judgment and approach

For a degree, students must

- be able to work as part of a team alongside other professional categories in the field of biomedicine, such as doctors, nurses, chemists and laboratory scientists, and read and assess their views, and present their own in a constructive and assessing fashion, including at international level.
- be able to communicate and apply biomedical knowledge in public cultural and political debate, including insightful assessment and evaluation of information.

The following also applies to the experimental medicine specialisation:

- demonstrate detailed knowledge and skills in how biomedical research leads to basic knowledge of the body's normal and pathological functions at molecular, cellular, physiological and system biological level.

The following also applies to the laboratory medicine specialisation:



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- Clinical genetics 7.5 credits

Year 1, study period 3:

- Tumour biology 15 credits
- Integrative physiology 15 credits
- Optional courses (other Master's programmes) 15 credits

Year 1, study period 4:

- Functional genomics 15 credits
- Molecular and experimental neurobiology 15 credits
- Clinical microbiology and clinical immunology 7.5 credits
- Clinical laboratory diagnostics 7.5 credits
- Independent degree project 15 credits
- Optional courses (other Master's programmes) 15 credits

Year 2, study period 1:

- The lung: from clinic to laboratory 15 credits
- Project work 15 credits
- Independent work with careers counselling 30 credits
- Independent work with careers counselling 45 credits
- Independent work with careers counselling 60 credits
- Optional courses (other Master's programmes) 15 credits

Year 2, study period 2:

- Optional courses (year 1, study period 2): 15 credits
- Project work 15 credits
- Independent work with careers counselling 30 credits
- Independent work with careers counselling 45 credits
- Optional courses (other Master's programmes) 15 credits

Year 2, study period 3:

- Optional courses (year 1, study period 3): 15 credits
- Project work 15 credits
- Independent work with careers counselling 30 credits
- Optional courses (other Master's programmes) 15 credits

Year 2, study period 4:

- Optional courses (year 1, study period 4): 15 credits
- Project work 15 credits
- Optional courses (other Master's programmes) 15 credits

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<sup>1</sup> Applicants are guaranteed a place in this specialisation. If a Master's degree with a specific specialisation is desired, at least 30 credits must come from the 45 credits of courses listed beneath. The other 15 are optional.

<sup>2</sup> This course is taught by the Faculty of Science and is optional for all students on this programme.

## Degree

The Master's degree in biomedicine requires at least 30 credits of optional courses within the programme, and at least 30 credits of independent work including careers counselling within the programme. Other courses must have a clear biomedical or scientific orientation. A maximum of 15 credits may be counted from courses in other subject areas.

The Master's degree in biomedicine specialising in experimental medicine requires at least 30 credits of optional courses within the programme, and at least 30 credits of independent work including the careers school within the specialisation. Other courses must have a clear biomedical or scientific orientation. A maximum of 15 credits may be counted from courses in other subject areas.

The Master's degree in biomedicine specialising in laboratory medicine requires at least 45 credits from the 60 credits of obligatory courses within the specialisation, and at least 30 credits of independent work including careers counselling within the specialisation. Other courses must have a clear biomedical or scientific orientation. A maximum of 15 credits may be counted from courses in other subject areas.

The name of the degree is Master of Medical Science with a Major in Biomedicine. The phrase "and a specialisation in laboratory medicine/experimental medicine" can be added on to the name of the degree on the condition that the optional courses defining the different specialisations are included in the degree certificate.

## Admission requirements and selection procedure

The following eligibility requirements apply:

- a minimum of 35 credits in basic chemistry, of which 15 include the subject areas biochemistry, cell chemistry or similar.
- at least 50 credits in basic cell biology (including the subject areas cell biology, molecular biology, microbiology, immunology, genetics and/or developmental biology)
- at least 15 credits in physiology
- at least 30 credits in molecular medicine and/or pathobiology

The following are also required by the start of the programme:

- a completed course of education, including 15 credits of independent work (degree project) within a biomedical/scientific field, with a pass at Bachelor level or equivalent first cycle level of at least 180 higher education credits in biomedicine, molecular biology or a similar Swedish or internationally recognised degree with a similar specialisation and scope.
- good prior knowledge of English;
- foreign, non-Nordic students who cannot document that English is their native language must also be able to show that they have passed an internationally recognised English test such as TOEFL (at least 550/213), IELTS (at least 6.0) or the Cambridge Certificate of Proficiency.

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If there are more applicants than places, selection takes place on the following criteria:

- number of completed higher education credits at the end of the application period (maximum 165 credits).
- if applicants have identical qualifications, places will be allocated by the drawing of lots.