



Programme syllabus

Master's Programme, Molecular Techniques in Life Science, 120 credits

Masterprogram, molekylära tekniker inom livsvetenskaperna
120.0 credits

Valid for students admitted to the education from autumn 18 (HT - Autumn term; VT - Spring term).

This is a translation of the Swedish, legally binding, programme syllabus.

Programme objectives

Knowledge and understanding

After completing the Molecular techniques in life science programme the students should:

- have broad knowledge and understanding of molecular life science.
- have deep knowledge and understanding of certain areas of molecular life science.
- have deep understanding of current research and development in molecular life science.
- have deep knowledge of methods used in molecular life science.

Skills and abilities

After completing the Molecular techniques in life science programme the students should have:

- a capacity to critically and systematically integrate knowledge and be able to analyze, judge and handle complex phenomena, questions and situations even with incomplete information.
- a capacity to critically, independently and creatively identify and express questions and problems.
- a capacity to plan and execute complex tasks with adequate methods within given time frames and thereby contribute to the knowledge development, including evaluation of the results.
- a capacity to discuss conclusions including the background knowledge and arguments supporting them in national and international contexts with different groups.
- a capacity to work with research and development or to independently work with sophisticated activities.

Ability to make judgements and adopt a standpoint

After completing the Molecular techniques in life science programme the students should:

- be able to critically evaluate relevant scientific, societal and ethical aspects on questions and problems within molecular life science.
- have an awareness of ethical aspects concerning research and development.
- have an awareness of possibilities and limits of science and its role in society.
- have an understanding of how scientific methods, products and processes can be used in a responsible manner.
- be able to identify the need for additional knowledge and be responsible for his/her own knowledge development.

For more information see “Local regulation for degrees at first and second cycle, local system of qualifications” at www.kth.se

Extent and content of the programme

Molecular techniques in life science is a two-year (120 credits) master programme, second cycle. The language of instruction is English.

Eligibility and selection

General admission requirements

A completed Bachelor's degree - corresponding to a Swedish Bachelor's degree (180 credits), or equivalent academic qualifications from an internationally recognized university.

For more information regarding general admission requirements, see: <https://www.kth.se/en/studies/master/molecular-techniques-life-science/entry-requirements>

Specific admission requirements

In addition to the general admission requirement, the programme requires:

- Courses in life science, e.g. courses in cell biology, biochemistry, microbiology, gene technology or molecular biology corresponding to a total of at least 20 credits.
- Courses in theoretical mathematics corresponding to at least 10 credits
- English proficiency corresponding to "Engelska B" in Swedish secondary school.

English proficiency is most commonly established through an internationally recognized test.

For more information on how to show English proficiency, see: <https://www.kth.se/en/studies/master/molecular-techniques-life-science/entry-requirements>

Required documents

All applications must be supported by documentation including Transcripts of Records, Degree certificate /Diploma, proof of English proficiency etc.

Detailed information about required documents can be found at <https://www.kth.se/en/studies/master/molecular-techniques-life-science/entry-requirements>

In addition, the following set of documents is required

- Curriculum Vitae
- Letter of recommendation (at least 1, at most 3)
- Description and documentation of relevant work experience, if any
- Completed Summary sheet

Selection process

The selection process is based on the following selection criteria: University, previous studies (for instance GPA, grades in specific subjects, and English), motivation for the studies (for instance motivational text in Summary sheet, references, courses, and relevant work experience). The evaluation scale is 1-75.

KTH's general admission regulations (in Swedish) see www.kth.se

Implementation of the education

Structure of the education

The programme runs for two academic years with two semesters each year. The nominal study pace is 60 credits each academic year. The first semester consists of courses provided by Karolinska Institute, the second semester consists of courses provided by Stockholm University and the third semester consists of courses provided by KTH. The degree project is performed during the fourth semester.

Courses

The programme is course-based. Lists of courses are included in [appendix 1](#).

All courses on the programme are mandatory and there are no specializations.

Teaching and examination methods vary between courses. Lectures, group work, exercises, seminars, and computer laboratory sessions aim to emphasize the crucial contents of each course, and to deepen the understanding of the subjects and their interplay. The programme is concluded with a degree project, advanced level, of 30 credits.

Grading system

Courses in the first and the second cycle are graded on a scale from A to F. A-E are passing grades, A is the highest grade. The grades pass (P) and fail (F) are used for courses under certain circumstances.

Grading of courses given by Karolinska Institutet and Stockholm University follows their local guidelines.

Conditions for participation in the programme

Students accepted to the programme will start the programme at the end of August when the registration also takes place and where the student must be present in person.

Participation requires admission to courses within the programme and course registration. Course registration is done via the personal menu at www.kth.se

For students starting their education from the autumn semester 2018, previous promotion requirements have been replaced with special admission requirements to each course. Admission requirements are specified in the course syllabus.

Recognition of previous academic studies

The students have the right to transfer credits from previous studies at universities in or outside Sweden. The courses have to be at a level and include contents that agree with the goals of the programme. Transfer of credits is decided by the programme director.

For more information, see Policy on credits transfer for higher education courses including prior learning at www.kth.se

Studies abroad

Studies abroad are not suitable during semesters 1 to 3. For information about studies abroad, contact the programme director.

Degree project

Students admitted to the programme are required to perform an individual study in the form of a degree project, advanced level, corresponding to 30 credits. The project may be performed under examination by Karolinska Institute, The School of Biotechnology at KTH or at Stockholm University.

The degree project is the final part of the education. The project work may begin when special admission requirements for the course are fulfilled.

The purpose of the degree project is for the student to demonstrate the ability to perform an independent project, using skills obtained previously during the courses in the programme. It is the student's responsibility to find a suitable thesis project, with assistance from the programme director.

Students under examination by KTH follow a course syllabus for a degree project at the School of Biotechnology. More information on the KTH policy on the degree see www.kth.se

Students under examination by Karolinska Institute and Stockholm University follow their local course syllabuses.

Degree

The master of science degree is obtained after completion of all mandatory courses on the Molecular techniques in life science programme. The programme is designed so that students, when they graduate, have fulfilled Swedish national requirements for a Master degree.

Students who fulfil all the requirements will be awarded a Master of Science (120 credits). To apply use the web service “Application for degrees” that is found in the personal menu.

Degree name

Master of science (120 credits)

For further information see Local regulation for qualifications at first and second cycle at www.kth.se

[Appendix 1 - Course list](#)

[Appendix 2 - Programme syllabus descriptions](#)



Appendix 1: Course list

Master's Programme, Molecular Techniques in Life Science, 120 credits (TMTLM), Programme syllabus for studies starting in autumn 2018

General courses

Year 1

Supplementary information

Fall semester 2018, Courses organized by **Karolinska Institute**

5MT005 Genetics 5 credits

5MT006 Frontiers in translational medicine 16,5 credits

5MT008 Applied communication 7 credits

5MT007 Applied programming for life science 1 1,5 credits

Spring Semester 2019, Courses organized by **Stockholm University**

DA7062 Applied programming for life science 2 1,5 credits

KB7016 Bioinformatics 7 credits

KB7015 Structure and dynamics of biological membranes 7 credits

BL8060 Methods in molecular life science 7 credits

KB8019 Comparative genomics 7,5 credits

Year 2

Mandatory courses (15.0 Credits)

Course code	Course name	Credits	Edu. level
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CB2021	Clinical applications of biotechnology	6.0 hp	Second cycle
CB2040	Applied gene technology and large-scale data analysis	7.5 hp	Second cycle
CB2060	Applied programming for life science 3	1.5 hp	Second cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
CB2030	Systems biology	7.5 hp	Second cycle
CB2050	Project in molecular life science	7.5 hp	Second cycle
CB2090	Drug Development	7.5 hp	Second cycle

Supplementary information

Fall Semester 2019, Courses organized by **KTH Royal Institute of Technology**

Study year 2 consists of mandatory courses, two of the conditionally elective courses and the degree project, second cycle, 30 higher education credits.

Conditional courses, 2 out of three should be selected

Systems biology

Drug development

Project in molecular life science

Spring semester 2020

Mandatory:

Degree project, second cycle 30hp, see the list below.

5MT004 Degree project, Molecular Techniques in Life Science - KI

BL9065 Molecular Techniques in Life Science, Degree Project - SU



Appendix 2: Specialisations

Master's Programme, Molecular Techniques in Life Science, 120 credits (TMTLM), Programme syllabus for studies starting in autumn 2018

This programme has no specialisations.