



# Programme syllabus

[An accessible version of the syllabus can be found in the Course and programme directory.](#)

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

Masterprogram, molekylära tekniker inom livsvetenskaperna

*Valid for students admitted to the education from autumn 21 (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 student 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 student 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 student 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](http://www.kth.se)

## Extent and content of the programme

Molecular techniques in life science is a two-year (120 credits) master programme, second cycle, 100% day time. 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 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
- Description and documentation of relevant work or research experience, if any
- Completed Summary sheet including motivational text

### **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, relevant work or research experience). The evaluation scale is 1-75.

KTH's general admission regulations (in Swedish) see [www.kth.se](http://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. 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 except the second half of the third semester, where 2 out of 3 provided courses should be chosen. 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 Institute 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.

To participate, admission to the courses within the program and registration on the courses are required. Course registration for courses at KTH is done via [www.kth.se](http://www.kth.se) (personal menu).

For students starting the education from fall semester 2018, the previous requirement of having passed a certain number of credits in the first year in order to be allowed to start the second year is substituted with specific requirements for each individual course. The requirements for specific requirements is specified.

## 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 Engineering Sciences in Chemistry, Biotechnology and Health at KTH or at Stockholm University.

The degree project is the final part of the education. The degree project course can be started when the specific requirements of 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 Engineering Sciences in Chemistry, Biotechnology and Health. More information on the KTH policy on the degree project see [www.kth.se](http://www.kth.se)

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

## Degree

The master of science degree is obtained after completion of all mandatory courses and 2 out of the 3 elective courses during semester 3 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](http://www.kth.se)

Appendix 1 - Course list

Appendix 2 - Programme syllabus descriptions





# Appendix 1: Course list

## Master's Programme, Molecular Techniques in Life Science (TMTLM)

### General courses

#### Year 1

#### Supplementary information

##### **Fall semester 2020**, Courses organized by **Karolinska Institute**

- 5MT009 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 2021**, 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)

Code	Name	Credits	Edu. level
<a href="#">CB2021</a>	Clinical applications of biotechnology	6.0 hp	Second cycle
<a href="#">CB2040</a>	Applied gene technology and large-scale data analysis	7.5 hp	Second cycle
<a href="#">CB2060</a>	Applied programming for life science 3	1.5 hp	Second cycle

### Conditionally elective courses

Code	Name	Credits	Edu. level
<a href="#">CB2030</a>	Systems biology	7.5 hp	Second cycle
<a href="#">CB2050</a>	Project in molecular life science	7.5 hp	Second cycle
<a href="#">CB2090</a>	Drug Development	7.5 hp	Second cycle

## Supplementary information

**Fall Semester 2021**, Courses organized by **KTH Royal Institute of Technology**

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

## Information regarding conditionally elective courses

Conditional elective courses, 2 out of three courses should be selected





# Appendix 2: Specialisations

## Master's Programme, Molecular Techniques in Life Science (TMTLM)

This programme has no specialisations.