



# 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 120 credits

Masterprogram, molekylära tekniker inom livsvetenskaperna

*Valid for students admitted to the education from autumn 15 (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](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. The instruction language is entirely 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: study at KTH, "Admission requirements" at [www.kth.se](http://www.kth.se)

## **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 or gene technology/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: "Admission requirements" at [www.kth.se](http://www.kth.se)

## **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 "Admission requirements" at [www.kth.se](http://www.kth.se)

In addition, the following set of documents is required

- Curriculum Vitae
- Letter of recommendation
- 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](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 mainly provided by Karolinska Institute, the second semester consists of courses provided by Stockholm University and the third semester consists of courses mainly 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.

Courses given by KTH in the first and the second cycle are graded on a seven step goal-related grading system (A to F), where A-E are passing grades and A is the highest. The grades pass (P) and fail (F) are used for courses under certain circumstances. Grading of courses given by Karolinska Insitutet 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.

At least 45 credits have to be completed during the first academic year (including the re-examination period in August) in order for the student to be promoted to the second year of the programme. Students who have not passed 45 credits in the first year, must contact the educational coordinator for an individual study plan. This study plan will include residual courses and appropriate courses for the upcoming year.

## 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](http://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 main portion of the studies (60 credits) must be completed before the start of the degree project. The examiner of the degree project may add additional prerequisites. 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 follows 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](http://www.KTH.se)

Students under examination by Karolinska Institute and Stockholm University follows 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](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, 120 credits (TMTLM)

### General courses

#### Year 1

#### Supplementary information

The first semester consists of courses mainly taken at Karolinska Institutet, the second semester consists of courses mainly taken at Stockholm University and the third semester consists of courses mainly taken at KTH.

- BB2471 Genetics 5 credits - KTH
- 5MT000 Frontiers in translational medicine 16,5 hp - KI
- 5MT002 Applied communication 7,5 credits - KI
- 5MT001 Frontiers in life science 1, 1 credit - KI
- BL7049 Frontiers in life science 2, 1 credit - SU
- KB7004 Bioinformatics 7,5 credits - SU
- KB8019 Comparative genomics 7,5 credits - SU
- KB7012 Biophysical chemistry 7 credits - SU
- KB8024 Project in molecular life science 7 credits - SU

## Year 2

### Supplementary information

The first semester consists of courses mainly provided by KI Karolinska Institutet.

The second semester consists of courses mainly provided by SU Stockholm University.

The third semester consists of courses mainly provided by KTH Royal Institute of Technology.

The degree project is performed during the fourth semester at KI, KTH or SU.

- BB2170 Drug development 6 credits, period 1 - KTH
- BB2472 Applied gene technology 5 credits, period 2 - KTH
- BB2491 Analysis of Data from High-throughput Molecular Biology Experiments 7 credits, period 2 - KTH
- BB2505 Frontiers in life science 3, 1 credit, period 1 och 2 - KTH
- BB2510 Proteomics 6 credits, period 1 - KTH
- 5MT003 Project in molecular life science, 5 credits, priod 1 och 2- KI
- Degree project 30 credits, period 3 och 4, see the list below;

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

BB205X Degree project, Molecular Techniques in Life Science - KTH

BL9065 Molecular Techniques in Life Science, Degree Project - SU





# Appendix 2: Specialisations

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

This programme has no specialisations.