



Utbildningsplan

En tillgänglighetsanpassad version av utbildningsplanen finns i Kurs- och programkatalogen.

Masterprogram, medicinsk bioteknologi 120 hp

Master's Programme, Medical Biotechnology, 120 credits

Gäller för antagna till utbildningen fr o m HT11.

Utbildningens mål

Kunskap och förståelse

After completing the **Medical Biotechnology** programme the students should:

- have knowledge and skills in biotechnology and chemistry with an emphasis on medical applications.
- be able to grasp information and communicate with experts within neighbouring subjects to biotechnology and chemistry, such as physics, biology and medicine.
- have knowledge about biological and chemical processes on a molecular-, cellular-, and organism level.
- have a deep understanding of current research and development in one area of medical biotechnology.

- have some knowledge about the biotechnological industry in Sweden and in other countries.

Färdigheter och förmågor

After completing the *Medical Biotechnology* programme the students should have:

- a capacity to critically read and extract information of technical and scientific nature from various sources.
- a capacity to analytically and critically plan, execute and evaluate experiments.
- skills in the use of standard and advanced biotechnological methods and techniques on a level appropriate for continued studies as a doctoral student.
- skills in oral and written technical communication with both experts and non-experts of biotechnology and chemistry.

Värderingsförmåga och förhållningssätt

After completing the *Medical Biotechnology* programme the students should be able to:

- critically evaluate existing and new technological advancements in biotechnology and apply them to develop improved or novel commodities for society.
- use biotechnological methods, products and processes in a responsible manner.
- understand the impact of biotechnological developments on a social, ethical and gender level.
- understand the implications of biotechnological developments in the context of a sustainable society.

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

http://intra.kth.se/regelverk/utbildning-forskning/grundutbildning/examina/1.27227?l=en_UK

Utbildningens omfattning och innehåll

Medical biotechnology is a two-year (120 higher education credits) master programme on the advanced level (second cycle). The instruction language is entirely English. The programme consists of courses given by KTH, mainly by the School of Biotechnology.

Behörighet och urval

General admission requirements

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

Language requirements – applicants must proof their proficiency in English, which is most commonly established through an internationally recognized test.

Documentation – for detailed information about list of required documents, see “Admission requirements and selection” http://www.kth.se/en/studies/programmes/master/admission?l=en_UK

Specific admission requirements

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

- Courses in **cellbiology, biochemistry, microbiology and gene technology/molecular biology** with a total of at least 20 higher education credits
- Courses in **chemistry** of at least 30 higher education credits
- Basic knowledge in **mathematics, numerical analysis and computer science** with a total of at least 20 higher education credits.

For more information, see Study at KTH, Master’s programmes at KTH, “Admission requirements”.

http://www.kth.se/en/studies/programmes/master/programmes/biotechnology/industrialbio/industrial-and-environmental-biotechnology-application-and-admission-for-external-applicants-1.48684?l=en_UK

Selection process

The selection process for the **Medical biotechnology** programme is based on a total evaluation of the following criteria: university, grade point average (GPA), courses relevant to the programme, motivation letter, relevant work experience, references and English proficiency.

Complete information on the eligibility requirements can be found in the local admission policy of KTH, see:

http://intra.kth.se/regelverk/utbildning-forskning/grundutbildning/antagning/antagning-till-master-och-magisterprogram-pa-avancerad-niva-med-undervisning-pa-engelska-1.27192?l=en_UK

Utbildningens genomförande

Utbildningens upplägg

The academic year at KTH consists of 40 weeks, divided into four study periods, where two or three courses are simultaneously studied. The nominal study pace is 60 higher education credits each academic year.

The mandatory courses comprise 38 higher education credits during the first academic year and 49.5 higher education credits (of which the degree project, second level is 30 higher education credits) during the second academic year. The list of courses in appendix 1 contains a group of recommended courses from which the students must choose at least 17.5 higher education credits. The last higher education credits to reach 120 can be freely chosen by the student.

Kurser

Utbildningen sker i kursform. Kurslistor finns i bilaga 1.

Teaching and examination methods vary between courses. Commonly, the concepts and theory of a subject is taught through lectures. Exercises, seminars and laboratory sessions aim to emphasize and deepen the understanding of the most important aspects of a subject. The programme is concluded with a degree project, advanced level of 30 higher education credits. To receive the degree “*Master of Science (120 credits)*”, the students should have passing grades in all the mandatory and optional courses, which including the thesis will comprise 120 higher education credits.

Betygssystem

För kurser på KTH används en sjugradig målrelaterad betygsskala A-F som slutbetyg för kurser på grundnivå och avancerad nivå. A-E är godkända betyg med A som högsta betyg. Betygen godkänd (P) och underkänd (F) används som slutbetyg då särskilda skäl föreligger.

Villkor för deltagande i utbildningen

Students accepted to the programme will start the programme in the end of August when the registration also takes place and where the student must be present in person. The students are thereafter required to make a study registration and course selection for the coming term no later than November 15 and May 15 each academic year, respectively. At least 45 higher education 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 programme coordinator for an individual study plan, otherwise the student will not be registered on any courses in the upcoming

academic year. This study plan will include residual courses and appropriate courses for the upcoming year.

Tillgodoräknanden

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

For more information see:

http://intra.kth.se/regelverk/utbildning-forskning/grundutbildning/prestationer/policy-for-tillgodoraknande-av-hogskoleutbildning-inklusive-bedomning-av-reell-kompetens-1.27200?l=en_UK

Utlandsstudier

For information about studies abroad, contact the international coordinator at the School of Biotechnology.

Examensarbete

Students admitted to the programme are required to perform an individual study in the form of a degree project corresponding to 30 credits. The main portion of the studies must be completed before the start of the degree project. This means that at least 60 credits (of which 30 must be in the second cycle within the main field of study) have to be completed before the start of the degree project.

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

The degree project should normally be performed in the field of biotechnology. Degree projects in related fields may also be allowed, but need approval by the Director of Undergraduate and Masters' studies at the School of Biotechnology.

For more information, contact the study advisor at the BIO students office.

Grading of the degree project is done by a seven step goal-related grading system (A to F), where A-E are passing grades and A is the highest. The grade is based on three evaluation criteria:

- the process of planning and performing the degree project within the given timeframe.
- the use of engineering approach and skills when performing the degree project.
- the oral and written presentation of the degree project.

More information on the KTH policy on the degree project can be found at:
<http://intra.kth.se/en/regelverk/utbildning-forskning/grundutbildning/examensarbete/overgripande-regler-och-riktlinjer-for-examensarbete-30-hogskolepoang-for-masterexamen-120-hogskolepoang-samt-betygsattning-av-examensarbete-1.27212>

Examen

Master of Science (120 credits) - is obtained after completion of the Medical Biotechnology programme. The programme is designed so that students, when they graduate, have fulfilled Swedish national requirements for a degree and have completed courses comprising 120 higher education credits, of which:

- at least 90 higher education credits are at second cycle, of which at least 60 higher education credits (including the 30 higher education credit degree project) are in-depth studies in the main field of the programme.

Students must apply for the degree at the student office and are required to show proof of their basic degree (Bachelor or similar).

Degree name

Master of Science (120 credits)

Teknologie masterexamen

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

http://intra.kth.se/regelverk/utbildning-forskning/grundutbildning/examina/1.27227?l=en_UK

Bilaga 1 - Kurslista

Bilaga 2 - Inriktningsbeskrivningar



Bilaga 1: Kurslista

Masterprogram, medicinsk bioteknologi (TMBIM)

Gemensamma kurser

Årskurs 1

Obligatoriska kurser (38,0 Högskolepoäng)

Kurskod	Namn	Omfattning	Utbildningsnivå
AK2036	Vetenskapsteori och vetenskaplig metodik med tillämpningar (naturvetenskap)	7,5 hp	Avancerad nivå
BB2160	Strukturbiologi	7,5 hp	Avancerad nivå
BB2440	Bioinformatik och biostatistik	7,0 hp	Avancerad nivå
BB2470	Genetik och genomik	10,0 hp	Avancerad nivå
ME1000	Industrial Management	6,0 hp	Grundnivå

Rekommenderade kurser

Kurskod	Namn	Omfattning	Utbildningsnivå
BB1130	Analys och rening av biomolekyler	7,0 hp	Grundnivå
BB2020	Molekylär enzymologi	7,5 hp	Avancerad nivå
BB2280	Molekylär modellering	7,5 hp	Avancerad nivå
BB2330	Växtbioteknik	7,5 hp	Avancerad nivå
BB2460	Biokatalys	7,5 hp	Avancerad nivå
BB2490	Analys av data från storskaliga molekylärbiologiska experiment	7,5 hp	Avancerad nivå
BB2530	Mikro och nanoteknologier inom bioteknologi	6,0 hp	Avancerad nivå
DD2397	Tillämpad bioinformatik	7,5 hp	Avancerad nivå
KD2320	Spektroskopiska verktyg inom kemi	9,0 hp	Avancerad nivå
KD2410	Kemins avbildningsmetoder	6,0 hp	Avancerad nivå
ME2806	From Science to Business	7,5 hp	Avancerad nivå
MJ2613	Hållbar utveckling	6,0 hp	Avancerad nivå

Kompletterande information

Årskurs 1 består av obligatoriska kurser samt rekommenderade kurser.

Årskurs 2

Obligatoriska kurser (49,5 Högskolepoäng)

Kurskod	Namn	Omfattning	Utbildningsnivå
BB201X	Examensarbete inom bioteknik, avancerad nivå	30,0 hp	Avancerad nivå
BB2170	Läkemedelsutveckling	6,0 hp	Avancerad nivå
BB2290	Molekylär biomedicin	7,5 hp	Avancerad nivå
BB2510	Proteomik	6,0 hp	Avancerad nivå

Valfria kurser

Kurskod	Namn	Omfattning	Utbildningsnivå
BB2020	Molekylär enzymologi	7,5 hp	Avancerad nivå
BB2280	Molekylär modellering	7,5 hp	Avancerad nivå
KD2320	Spektroskopiska verktyg inom kemi	9,0 hp	Avancerad nivå
KD2410	Kemins avbildningsmetoder	6,0 hp	Avancerad nivå
MJ2613	Hållbar utveckling	6,0 hp	Avancerad nivå

Rekommenderade kurser

Kurskod	Namn	Omfattning	Utbildningsnivå
AK2008	Bioteknologins etik	7,5 hp	Avancerad nivå
BB2010	Miljötoxikologi	9,0 hp	Avancerad nivå
BB2420	Glykobiologi och kolhydratsteknologi	7,5 hp	Avancerad nivå
ME2016	Project Management: Leadership and Control	6,0 hp	Avancerad nivå

Kompletterande information

Årskurs 2 består av obligatorisk kurser samt rekommenderade kurser, och avslutas med ett examensarbete på avancerad nivå.



Bilaga 2: Inriktningar

Masterprogram, medicinsk bioteknologi (TMBIM)

Programmet har inga inriktningar.