Programme syllabus for

Master's Programme in Bioentrepreneurship, 120 credits

Masterprogrammet i bioentreprenörskap, 120 hp

Basic programme information

Programme code	4BP10
Name of the programme	Master's Programme in Bioentrepreneurship
Number of credits	120.0 credits (120.0 ECTS credits)
Starting date	The syllabus applies to students who commence their studies in or after autumn 2010. Approved revisions of the syllabus are described under the heading Transitional Provisions.
Decision date	2009-11-24
Decided by	Board of Higher Education
Last revision	2025-03-04
Revised by	Committee for Higher Education
Reference number	3-1138/2025
Specific eligibility requirements	A Bachelor's degree or a professional degree equivalent to a Swedish Bachelor's degree of at least 180 credits in health care, biomedicine, biology, cellular and molecular biology, pharmaceutics, chemistry, medicine, biotechnology, or the equivalent. And proficiency in English equivalent to English B/English 6.
Main field of study	Bioentrepreneurship
Qualification	Medicine masterexamen med huvudområdet bioentrenörskap *Degree of Master of Medical Science (120 credits) with a Major in Bioentrepreneurship* A student who fulfils the requirements for the award of a qualification shall, upon request, be provided with a certificate.

Outcomes

Outcomes of second cycle education according to the Higher Education Act

Second-cycle courses and study programmes shall be based fundamentally on the knowledge acquired by students during first-cycle courses and study programmes, or its equivalent.

Second-cycle courses and study programmes shall involve the acquisition of specialist knowledge, competence and skills in relation to first-cycle courses and study programmes, and in addition to the requirements for first-cycle courses and study programmes shall:

- further develop the ability of students to integrate and make autonomous use of their knowledge,
- develop the students' ability to deal with complex phenomena, issues and situations, and
- develop the students' potential for professional activities that demand considerable autonomy, or for research and development work.

Outcomes of the Degree of Master (120 credits) according to the Higher Education Ordinance

Knowledge and understanding
For a Degree of Master of Science (120 credits) the student shall

- demonstrate knowledge and understanding in the main field of study, including both broad knowledge of the field and a considerable degree of specialised knowledge in certain areas of the field as well as insight into current research and development work, and
- demonstrate specialised methodological knowledge in the main field of study.

Competence and skills
For a Degree of Master of Science (120 credits) the student shall

- demonstrate the ability to critically and systematically integrate knowledge and analyse, assess and deal with complex phenomena, issues and situations even with limited information
- demonstrate the ability to identify and formulate issues critically, autonomously and creatively as well as to plan and, using appropriate methods, undertake advanced tasks within predetermined time frames and so contribute to the formation of knowledge as well as the ability to evaluate this work
- demonstrate the ability in speech and writing both nationally and internationally to report clearly and discuss his or her conclusions and the knowledge and arguments on which they are based in dialogue with different audiences, and
- demonstrate the skills required for participation in research and development work or autonomous employment in some other qualified capacity.

Judgment and approach
For a Degree of Master of Science (120 credits) the student shall

- demonstrate the ability to make assessments in the main field of study informed by relevant disciplinary, social and ethical issues and also to demonstrate awareness of ethical aspects of research and development work
- demonstrate insight into the possibilities and limitations of research, its role in society and the responsibility of the individual for how it is used, and
- demonstrate the ability to identify the personal need for further knowledge and take responsibility for his or her ongoing learning.

Outcomes of the study programme at Karolinska Institutet

Knowledge and understanding

Students must:

- demonstrate deeper knowledge and understanding of processes and mechanisms when developing products and services within the field of biomedicine;
- demonstrate knowledge and understanding of the way in which the biomedical industry is organised and operates;
- demonstrate knowledge and understanding of intellectual property rights (IPR) issues and strategies from an international perspective;
- demonstrate deeper knowledge and understanding of market and payment mechanisms within the field of biomedicine;
- demonstrate knowledge of specific characteristics of the field of biomedicine, such as the definition of the customer, the importance of patients and patient associations, companies' relationships with (and dependence on) health and medical care, health insurance models, and the significance of politics and various ideologies for the organisation of healthcare;
- demonstrate in-depth knowledge and an understanding of regulatory issues and the requirements of authorities from an international perspective;
- be able to analyse, clearly communicate and discuss the relationship between the areas of entrepreneurship and innovation;
- be able to demonstrate an understanding of relationships and networks;
- be able to express knowledge of the importance of biomedical research within the innovation process.

Competence and skills
Students must:

- demonstrate sound skills and an ability to assess the market for a product;
- demonstrate sound skills and an ability to carry out evaluations (due diligence) of projects at various stages;
- demonstrate sound skills and an ability to formulate a business plan;
- demonstrate sound skills and an ability to make calculations where economic and financial factors form part of a project's decision-making data and evaluation;
- be able to argue for and against various types of financial sources at different stages of a project;
- demonstrate skills and an ability to develop and propose an intellectual property rights (patent, etc.) strategy for a project;
- demonstrate sound skills and an ability to analyse a regulatory strategy for a project;
- demonstrate sound skills and an ability to participate in an expert manner in the development of an organisation for projects at various stages.

Judgment and approach
Students must:

- demonstrate sound abilities and a sound attitude in relation to the financial evaluation of projects at various stages;
- know the technical, practical and ethical foundations of developing and using management and analysis tools within biomedical companies (business plan, inter-company cooperation and cooperation between companies and academia, business intelligence, the management role, building organisations, staff issues, ethical issues, the environment, etc.); and
- demonstrate sound abilities and a mature approach in terms of the importance of networking and cooperation.

Description of the main field of study

The field of biomedicine is characterised by intensive research, a constant search for inventions which can be patented, and the development of innovative products which meet the public's demands in terms of safety, effectiveness and ethics. Studying bioentrepreneurship should primarily develop knowledge of

how new products and services are developed/ marketed and sold within various areas within the life sciences, such as pharmaceuticals and medical technology. The subject therefore makes a natural contribution in terms of new knowledge about innovation processes.

The aim is to combine students' prior basic knowledge of medicine, natural sciences and technology with knowledge from the fields of business administration and other social sciences. The subject of entrepreneurship has existed internationally for many years and is recognized by many scientific disciplines, and studies within the field are published in respected journals. The scientific basis for the subject of bioentrepreneurship is business administration.

Business administration processes are studied, which are characterised by being irreversible (they cannot be reversed without incurring significant costs) and unstable. This is a result of internal and external conditions, and there are always products or services being planned, or in production and for sale. The hallmark of this process is one of constant choices and assessments under multifaceted conditions which are hard to control, and which are different in character to biomedical and natural sciences research. Bioentrepreneurship therefore deals largely with learning new concepts and new approaches in order to gain new insight and make prior basic knowledge more applicable.

Content and structure

The Master's Programme in Bioentrepreneurship focuses on strategic and operational issues within the life science industry field.

Courses during the first two semesters
The programme begins with a course in basic industrial management which aims to provide an overview of the field. This is followed by a course in project management and one in financial control. The other courses during the first year provide students with basic skills based in theory and practice within core areas such as entrepreneurship, product development, and marketing. During the second semester, the students also have an elective period where they can choose from several courses in the field of entrepreneurship. Using the knowledge from the courses during the first semesters as a tool, they are then prepared for their first practical placement.

Semester three
The third semester begins with a course in business development. The students also follow a course in scientific methods, designed to prepare the students for their master thesis project. The second practical placement course is given in this semester. The practical placements, which can be carried out either individually or in groups, are organised as two separate courses, and thus two different practical placements (the first of which takes place at the end of the second semester). The practical work is carried out in collaboration with life science companies, regulatory authorities, patents offices, university-based technology transfer units, venture capital companies or other relevant organisations in Sweden or abroad. The practical placements are linked to the areas of knowledge from the previous courses.

Degree project
The programme concludes with a degree project, worth 30 credits, in an area of specialisation.

The project work can be carried out in cooperation with external parties such as life science companies, regulatory authorities, patents offices, university-based technology transfer units, venture capital companies or other relevant organisations in Sweden or abroad. The overall aim is that the theoretical and practical knowledge gained during the previous parts of the programme should be put into a relevant context within the field of bioentrepreneurship.

Transitional provisions

This programme syllabus has been discontinued. The last programme instance was in the autumn semester 2010.

Other guidelines

Grading scale

The grades used are Fail, Pass or Pass with Distinction. Alternative grading scales may apply to courses with practical placement, elective courses or courses in addition to the programme. The grading scale is detailed in the course syllabus.

Language of instruction

The teaching language is English.

Specific eligibility requirements within the programme

See respective course syllabus for course-specific entry requirements.

Study plan with constituent courses

For students starting the programme in 2013 or later:

Semester	Name of the course	Credits	Cycle	Depth of the course
1	Industrial Management	6	First	G2
1	Project Management: Leadership and Control	6	Second	AV
1	Behavioural Management Control	6	Second	AV
1	Entrepreneurship in the Life Sciences	6	Second	AV
1 and 2	Development of Products in the Biomedical Industry	12	Second	AV
2	Market Analysis	7,5	Second	AV
2	Practical Placement 1	9	Second	AV
2	Elective courses	7,5	Second	AV
3	Scientific Methods	4,5	Second	AV
3	Business Development	7,5	Second	AV
3	Practical Placement 2 *	18	Second	AV
4	Degree Project in Bioentrepreneurship	30	Second	AV

For students starting the programme in 2012:

Semester	Name of the course	Credits	Cycle	Depth of the course
1	Industrial Management	6	First	G2
1	Project Management: Leadership and Control	6	Second	AV
1	Behavioural Management Control	6	Second	AV
1	Entrepreneurship in the Life Sciences	6	Second	AV
1 and 2	Development of Products in the Biomedical Industry	12	Second	AV
2	Market Analysis	9	Second	AV
2	Business Development	6	Second	AV
2	Practical Placement 1	9	Second	AV
3	Management Consulting	6	Second	AV
3	Integration of Science, Technology and Business	6	Second	AV
3	Practical Placement 2 *	18	Second	AV
4	Degree Project in Bioentrepreneurship	20	Second	AV

For students starting the programme in 2010:

Semester	Name of the course	Credits	Cycle	Depth of the course
1	Industrial Management	6	First	G2
1	Project Management: Leadership and Control	6	Second	Av
1	Behavioural Management Control	6	Second	Av
1	Entrepreneurship in the Life Sciences	12	Second	Av
2	Development of Products in the Biomedical Industry	12	Second	Av
2	Market Analysis	6	Second	Av
2	Business Development	6	Second	Av
2	Practical Placement 1	6	Second	Av
3	Management Consulting	6	Second	Av
3	Integration of Science, Technology and Business	9	Second	Av
3	Practical Placement 2 *	15	Second	Av
4	Degree Project in Bioentrepreneurship	30	Second	Av

** Within the context of exchange studies, this course may be replaced – by agreement – with another course of relevance to bioentrepreneurship.*