



**Karolinska  
Institutet**

*Programme syllabus for*

# **Master's Programme in Bioentrepreneurship, 120 credits**

*Masterprogrammet i bioentreprenörskap, 120 hp*

## **Basic programme information**

|                                   |  |
|-----------------------------------|--|
| Programme code                    | 4BP20  |
| 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 2020.   |
|                                   | Approved revisions of the syllabus are described under the heading Transitional Provisions.  |
| Decision date                     | 2019-05-16   |
| Decided by                        | Committee for Higher Education   |
| Reference number                  | 3-585/2019   |
| 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, pharmaceuticals, chemistry, medicine, biotechnology, or the equivalent. And proficiency in English equivalent to English B/English 6. |
| Main field of study               | Bioentrepreneurship  |
| Qualification                     | Degree of Master of Medical Science (120 credits) with a Major in Bioentrepreneurship<br><i>Medicine masterexamen med huvudområdet bioentreprenörskap</i>  |
|                                   | 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 (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 (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 clearly report 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 (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

The overall purpose of the master's program in bioentrepreneurship is to bridge the knowledge gap

between the scientific and business part of the life science sector.

In addition to the national objectives, for a Degree of Master (120 credits), the following objectives apply for the Master Programme in Bioentrepreneurship at Karolinska Institutet:

#### *Knowledge and understanding*

On completion of the programme the student shall demonstrate:

- in-depth knowledge and understanding of the life science sector and the specific conditions that prevail in the development and market introduction of products in a national as well as international perspective.

#### *Competence and skills*

On completion of the programme the student shall demonstrate:

- ability to critically analyse, clearly communicate and discuss different aspects of entrepreneurship and innovation with both specialists and laymen, and
- the ability to plan, communicate and creatively implement different types of projects and in a qualified manner evaluate how external factors affect life science projects and companies in different stages of maturity.

#### *Judgement and approach*

On completion of the programme the student shall demonstrate:

- in-depth understanding of and develop a reflexive approach to collaborations, relationships and networks in intercultural and interdisciplinary contexts, both locally and globally, and
- a mature approach to the importance of research in the innovation process, and for the development and management of projects and companies in the life science sector.

## **Content and structure**

The master program in bio-entrepreneurship refers to the term "life science" as the main areas of drug development, biotechnology, diagnostics and medical technology (including digital health), with a focus on improved human health. Life science with a focus on agriculture and animals or plants is not part of the program's content or structure.

The programme is based on a number of *subject-specific focus areas* that form the basis of the courses included in the program. The subject-specific focus areas are complemented by a number of *overarching focus areas* that aim to ensure that these areas are clearly included as an important part throughout the program. The overarching focus areas are:

- scientific methods,
- global perspective,
- ethics, and
- equal treatment.

The overarching focus areas are integrated with a clear progression in the learning outcomes at the course level.

During the first term of the program, bioentrepreneurship and the theories and methods included in the subject are introduced. As communication is an important part of the future professional role of a bioentrepreneur, the deepening of this competence begins already during the first semester. The theory behind project management is introduced followed by the students getting to work practically with project management during the following courses. A longer course in market analysis introduces tools and models that are important in the life science context. Two different courses deal with basic business

administration and strategic management control during this semester.

The second semester begins with the introduction of the special conditions that apply to product development in the life science sector. Regulatory requirements and intellectual property rights will be investigated and the process of developing a product will be introduced and practiced with user-centred methods. A second communication course further deepens the communication skills of the students. During this semester, the students have the opportunity to specialize through a number of elective courses. The semester ends with a practical placement where knowledge and experience from the first year of studies are put into practical use in a project at a company or organisation.

During the third semester, the focus is on learning how to market and sell products as well as being able to develop companies and projects in the life science sector. These courses are entirely based on knowledge from the first year. The final practical placement takes place in companies or organisations either in Sweden or internationally.

The program ends with a degree project that runs throughout the fourth semester.

### **Scientific knowledge, competence and approach**

In addition to the courses in Project Management and Degree Project, the programme has an overall focus area aimed at ensuring the content of scientific method. The aim of these parts is to allow the students to continuously reflect on and critically examine scientific literature on specific issues and to practically apply scientific working methods.

### **Practice Integrated Learning**

Practice integrated learning is a generic term for the pedagogical models that are based on interaction and integration between higher education and working life. Practice integrated learning may take the form of placements, study visits, observing teaching activities, staff exchange training schemes or field studies within out-patient and in-patient healthcare, social care or other relevant activities.

Within the master program in bioentrepreneurship, the practice integrated learning takes place through internships at companies or organisations in the life science sector.

### **Internationalisation**

The programme is international in its entirety and all courses are permeated by an international perspective that develops the students' understanding and reflexivity on what it means to be a global citizen, to work in different cultures and in an international labour market. International exchange takes place primarily through internships and degree projects that a large share of the students choose to do in collaboration with international companies and organisations through formal or informal exchange agreements.

### **Elective courses**

During the second semester, the students can choose from several elective courses of 7.5 credits each. All elective courses in the program are interdisciplinary and offered via the Stockholm School of Entrepreneurship. These courses give the students an opportunity to specialise in different aspects of entrepreneurship.

## **Other guidelines**

### **Grading scale**

The grades used are Fail, Pass or Pass with Distinction. Alternative grading scales may apply to the

occasional course. The grading scale is detailed in the course syllabus.

### **Language of instruction**

The language of instruction is English.

### **Specific eligibility requirements within the programme**

There are specific eligibility requirements for the courses within the programme. The eligibility requirements can be found in the syllabi. In cases where the requirements are connected to the admission to a later term, they are described on the programme website. There may also be specific eligibility requirements within a specific term if a course requires certain prior knowledge. The requirements may differ in elective courses, compared to the requirements for other courses during the programme.

## Study plan with constituent courses

| Term | Course name                            | Credits | Main field of study | Cycle  |
|------|--|---------|---------------------|--------|
| 1    | Theory in Bioentrepreneurship          | 4       | Bioentrepreneurship | Second |
| 1    | Industrial Management                  | 6       | Bioentrepreneurship | Second |
| 1    | Communication in Bioentrepreneurship 1 | 3       | Bioentrepreneurship | Second |
| 1    | Project management - Theory            | 3       | Bioentrepreneurship | Second |
| 1    | Market Analysis                        | 8       | Bioentrepreneurship | Second |
| 1    | Strategic Management Control           | 6       | Bioentrepreneurship | Second |
| 2    | Product Development in Life Sciences   | 11      | Bioentrepreneurship | Second |
| 2    | Communication in Bioentrepreneurship 2 | 2.5     | Bioentrepreneurship | Second |
| 2    | Elective Course                        | 7.5     | Bioentrepreneurship | Second |
| 2    | Practical Placement 1                  | 9       | Bioentrepreneurship | Second |
| 3    | Marketing and Sales in Life Sciences   | 6       | Bioentrepreneurship | Second |
| 3    | Business Development                   | 6       | Bioentrepreneurship | Second |
| 3    | Practical Placement 2                  | 18      | Bioentrepreneurship | Second |
| 4    | Degree Project in Bioentrepreneurship  | 30      | Bioentrepreneurship | Second |