Self-evaluation report for programme evaluation of Master's Programme in Bioentrepreneurship

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The Assessment Panel's report for the programme evaluation of: Master's Programme in Bioentrepreneurship

2023-06-26

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Self-evaluation and Assessment Panel's report for the programme evaluation of the programme: Master's Programme in Bioentrepreneurship

CONTENT

Introduction

Self-evaluation

The programme's responsible parties, together with representatives from the faculty and students, should conduct a reflective self-evaluation by identifying strengths and areas for improvement in the programme. They should also describe and evaluate how these areas are addressed to ensure high-quality education. The focus of the self-evaluation should be on reflection rather than description. The self-evaluation should be supported with examples if possible. It should be based on the current status of the programme at the time of submission. The self-evaluation should be based on the four assessment areas listed below, which include ten assessment criteria.

1. Preconditions
1.1. Staff
1.2. Learning environment

2. Design, implementation, and outcomes
2.1. Goal attainment
2.2. Equal opportunities
2.3. Sustainable development
2.4. Follow-up, measures, and feedback

3. Student perspective
3.1. Student perspective

4. Work-life and collaboration
4.1. Work-life and collaboration
4.2. Internationalisation
4.3. Interprofessional competence

The self-evaluation should follow the provided headings. The headings, including the assessment criteria in the template, must not be removed. Subheadings may be added if necessary. The template's formatting, such as margins, must not be changed. The programme's text should consist of 1-3 pages per section, with font size 11 points and single spacing. The self-evaluation should provide the assessment panel with a comprehensive overview of the programme without including links to additional information. It should begin with a brief description of the programme's organisation, structure, and overall focus, with justification in relation to the degree regulations. The self-evaluation should also explain how long the education has been provided at KI. In the self-evaluation for the assessment criterion "Follow-up, measures, and feedback" and "Student perspective," an overall description at the KI level should also be included. This description is already prepared centrally by KI in this templet. The self-evaluation should conclude with the section "Other aspects," where the programme can describe relevant areas that are not included in any of the assessment criteria, such as other generic competencies and forward-looking developments to enhance the programme's quality.

The following attachments are to be included in the self-evaluation:

• Teacher table for teacher competence and capacity. The table should provide an overview of the main teacher competence and capacity for the programme. It is not necessary to

report all teachers who teach. The teacher table is compiled in an Excel file that contains additional instructions.

• Mapping of the outcomes of a Master's degree to course learning outcomes, learning activities, and assessments. The mapping should provide an overview of which courses have learning outcomes related to the evaluated outcomes of a Master's degree. The mapping should also indicate which learning activities are used to support student learning to achieve the learning outcomes and how the learning outcomes are assessed. The mapping is compiled in an Excel file that contains additional instructions.

• Programme curriculum.

• Course syllabi for all courses included in the programme.

• Compilation of key figures regarding application numbers per place, number of students starting the programme, number of full-time equivalent students, and number of graduates.

The programme should compile the information in the teacher table and the mapping of outcomes for a Master's degree, while the programme curriculum, course syllabi, and key figures will be provided centrally by KI.

The academic advisor for the programme evaluation round, together with the coordinator for programme evaluations, should review that the programmes' submitted self-evaluations are complete before sending them to the assessment panel.

If necessary, the assessment panel may request additional supporting documents to ensure their assessment of the programme.

The self-evaluation should be approved by the committee responsible for the programme.

The Assessment Panel's Report

The Assessment Panel is required to summarise their assessment in a report that is written in the same document as the self-evaluation. For each assessment criterion, the programme's strengths and areas for improvement, as well as the Assessment Panel´s assessment, should be described under separate headings. Under the "Strengths" heading, the Assessment Panel should highlight the programme's strengths within the assessment criterion and describe them briefly, preferably in bullet points. Under the "Areas for Improvement" heading, the Assessment Panel should identify areas that are deemed in need of improvement and describe them briefly, also preferably in bullet points. Under the "Assessment" heading, the Assessment Panel should explain their assessment and motivate their conclusions.

A summary of the Assessment Panel´s work should be described under the "Assessment Panel´s Summary" heading. It should begin with a reflection on the conditions that the self-evaluation provided for assessing the programme's quality, such as whether the self-evaluation was easy to read, well-structured, provided answers to the questions posed, and followed the instructions. The summary should also briefly summarise the programme's most important strengths and areas for improvement. The Assessment Panel may also include any additional comments they wish to convey.

Once the Assessment Panel´s report has been submitted, the self-evaluation and the report should be published on KI's staff portal.

Self-evaluation

Programme: Master's Programme in Bioentrepreneurship

Degree: Master of Medical Science with a major in Bioentrepreneurship

Description of the programme

The programme's organisation, structure, and overall focus will be outlined in this section, along with a justification in relation to the degree regulations. The programmes should also explain how long the program has been provided at KI.
The description should be between 1-3 pages, using font size 11 and single line spacing.

Programme description:
The Master's Programme in Bioentrepreneurship (MBE) is a two-year global master's programme focused on delivering competent graduates that will act as a bridge between the research and business side of life science companies. The programme spans two years, totalling 120 credits and has a strong emphasis on interdisciplinary education. The programme was started in 2008 and admitted new students every second year until 2013 when yearly admissions started. In 2020, a new curriculum was implemented to update the programme to changes in the life science industry and to align the courses to the innovation process from research idea to sustainable company. As the research intense life science sector is accompanied by strict rules, regulations and conditions that do not necessarily apply to other sectors, it is vital that the students of this programme understand the underlying research of the sector. For that reason, the students must have a bachelor's degree in natural sciences, medicine, health sciences or engineering with a life science focus. The programme builds on the previous life science studies and adds theories and models from entrepreneurship and business research as well as professional skill and competencies to foster graduates that can deal with the intricacies of life science companies and organisations.

The term bioentrepreneurship refers to entrepreneurship in the context of the life sciences. The programme utilizes 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. This is to align with KI being a medical University. Life science with a focus on agriculture and animals or plants is not part of the programme's content or structure. In regard to entrepreneurship, the programme adopts the definition from the European Commission that entrepreneurship "is a dynamic and social process where individuals, alone or in collaboration, identify opportunities for innovation and act upon these by transforming ideas into practical and targeted activities, whether in a social, cultural or economic context". This means that the goal of entrepreneurship is not necessarily to create a new company. Instead, the students of the programme are expected to create value whether at a new company or more likely, in already existing companies that need to grow and further develop.

The programme is offered by the Department of Learning Informatics Management and Ethics (LIME) and, most courses are given by the research group at the Unit for Bioentrepreneurship (UBE) at LIME. The educational committee at LIME is responsible for the programme and the programme management consists of a Programme Director and the

Programme Administrators. During 2024, an assistant Programme Director has been added for additional support. A study counsellor is also part of the programme's organisation.

Around 310 students (average for the last three years) apply to the programmes 30 places each year and the throughput of students is high with an average of 86% graduation rate the last two years. As the programme is unique, focusing on entrepreneurship in the life sciences, the number of applicants having the programme as their top choice is high (59% for both 2022 and 2023).

Programme structure

The programme's structure centres around core courses that are complemented by skills courses as well as three practical courses with work-integrated learning, see Figure 1. The work-integrated learning takes place in companies and organisations within the life science sector.
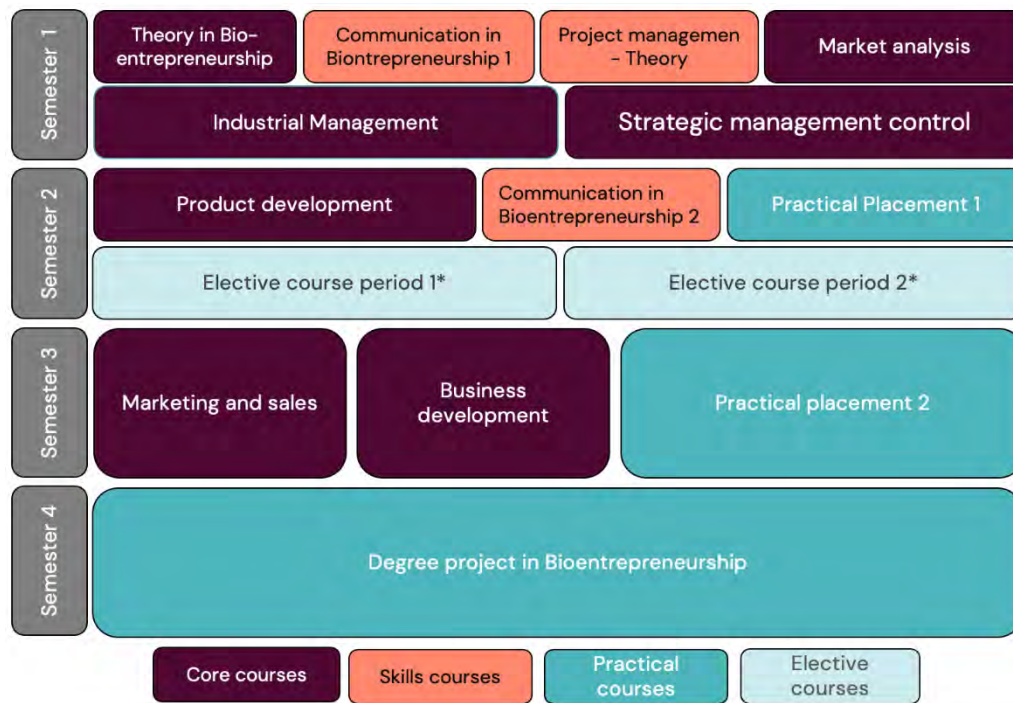
Figure 1 - the structure of the programme. Core courses in dark purple, Skills courses in orange, Practical courses in dark aqua, Elective courses (* can be core or skills course) in light aqua. Students take one elective course but can choose from two course periods. Note that the size of the bubbles does not correspond directly to the length of the course.

The first semester of the programme lay the theoretical foundation of the main subject i.e. bioentrepreneurship. During this semester, courses run in parallel at the KI and KTH campuses respectively. Having the courses in parallel improves the integration of the life science specific courses being taught at KI and business administration courses at KTH. In addition, the students do not loose contact with their home University (KI) during the courses at KTH.

The second semester familiarise the students with the conditions governing product development in the life science sector and enhances the students´ communication skills before entering their first work integrated course. This semester also includes an elective course allowing students to specialize within different aspects of entrepreneurship.

The focus of the third semester is marketing and sales and business development in the life science sector and these courses heavily draw upon knowledge acquired in the first year. The third semester concludes with a second work integrated course, which can be undertaken in collaboration with a domestic or international company or organization.

The program culminates with a degree project spanning the fourth semester, providing students with an opportunity to synthesize and apply the knowledge and skills they have acquired throughout the program as well as deepen their research skills. The degree project is in most cases (91% in 2023) undertaken in collaboration with a company.

In addition to the courses, four overarching areas; scientific methods, global perspective, ethics, and equal treatment, are integrated into the programmes as is visualised in Figure 2. These areas, inspired by Agenda 2030 and the core educational areas in KI Strategy 2030, will be crucial for the future working life of the bioentrepreneur. To allow application of subject specific knowledge as well as progression they are integrated in the relevant courses throughout the program instead of having their own courses. These areas will be further discussed in other sections of this report.
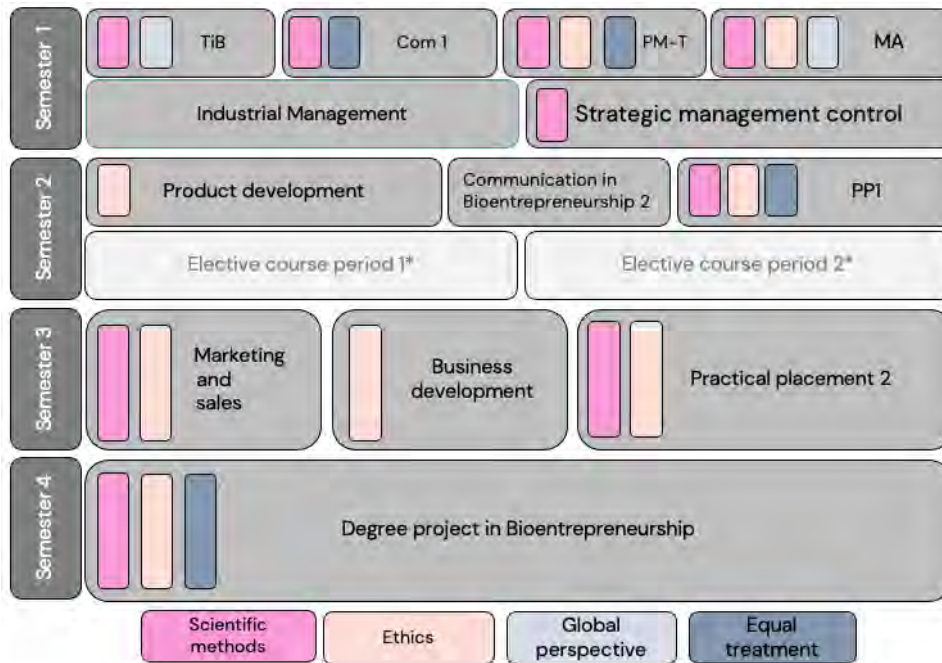
Figure 2 - the integration of the four focus areas in the programme. The coloured boxes indicate that a focus area has a learning outcome, learning activities and examination in the course. Scientific Methods in bright pink, Ethics in light pink, Global perspective in light grey, Equal treatment in blue. *The focus areas of these courses vary and has not been indicated.

Pedagogical Approach

The programmes pedagogical approach is based on the student-centred entrepreneurial learning pedagogy. Entrepreneurial learning can be described as a process where students identify opportunities and use them to transform ideas into goal-oriented activities. Skills that strengthen the ability to meet challenges and create innovation are trained. Most learning activities are designed to activate the students and the teacher acts more as a guide than a traditional lecturer.

The courses of the programme follow a learning cycle inspired by Kolb's experiential learning theory.

- Theory - This is the core of the course and typically contain interactive lectures, seminars and discussions around the theories and scientific research basis of the subject.
- Inspiration - This is where invited lecturers, experts in their subject, share their professional experience of a given topic e.g. growing a company, working with regulations, marketing a product. These lecturers act as a source of inspiration for the students, an opportunity to reflect and a first step towards application of knowledge.
- Practical work – where the students apply the theory they have learnt in the courses, most commonly through projects or in case seminars.

This learning cycle model also applies to the entire programme with theory and inspiration in the campus courses being applied in the work integrated courses.

1 Assessment area: Preconditions

1.1 Assessment criterion Staff

In their education, students should receive high-quality teaching, which requires that the teachers collectively possess the necessary scientific/professional competence. However, teachers must also have pedagogical competence to support student learning. Furthermore, it is important that the teaching capacity is proportional to the scope of the programme, including teaching and assessment. A high-quality teaching resource is characterised by a stable supply of teachers. The department or committee responsible for the programme is responsible for designing and following up on course assignments for each course and allocating the assignments so that the programme's courses are conducted by the department that is best equipped to carry out the assignment with high quality, including strong research connection. The course responsible department is responsible, amongst other things, for staffing the department's courses in accordance with the course assignment and for developing, promoting, and ensuring the teachers' subject competence, research connection, and pedagogical ability. The programme, in collaboration with the course responsible departments, should therefore work long-term on both continuity and competence development among teachers in the specific programme, and there should also be strategies for how staff turnover is managed, for example, in the case of retirements. For a programme leading to a professional qualification, it is important that students have access to supervisors with adequate competence during practice-integrated learning, in order to provide students with high-quality education.

> **Assessment criterion - Staff**
> The number of teachers and their combined expertise (scientific, professional, and pedagogical) is adequate and proportional to the volume, content, and implementation of the education in both the short and long term.

Describe, analyse, and evaluate. Describe strengths and challenges, as well as how they are addressed to ensure high quality in the programme. Illustrate with examples. Refer to the completed and attached teacher table. The description should be between 1-3 pages, using font size 11 and single line spacing.

Programme description:

The faculty responsible for the programme consists of nine course directors (one professor, one adjunct professor, one senior researcher, one associate professor, two assistant senior lecturers, two lecturers and one project coordinator). Two additional teachers are also included in the table depicting the teacher competences in the programme (Appendix 1, Teacher Competence). One of these is affiliated to teaching as well as contracted hourly. Most teachers (eight of the 11 including the adjunct professor) are employed at the Department of LIME and these teachers are together responsible for 11 of the courses within the programme. The department also employs a programme administrator. KTH teaches two of the programmes´ courses and these course directors are employed there. The elective course is given within the Stockholm School of Entrepreneurship (SSES) which is a collaborative effort between KI (medicine), KTH (technology), Stockholm school of economics, University of arts crafts and design and the Royal College of Music and Stockholm University (multi-faculty) We have not included information on the teachers for the elective courses as there are ten courses to choose from and it differs from year to year which courses that the students choose. However, these courses are all taught by highly competent teachers from the different member universities and all course syllabi for these courses are approved at all 6 member Universities.

Another point worth noting is that all teachers are actively involved in not only their own courses but also in the continuous development and improvement of the programme. One of the program's significant strengths is the close alignment of courses and teachers, as they are predominantly situated within the same unit. This fosters a high degree of mutual understanding among the teachers across different courses, promoting a coherent and progressive educational experience. In addition, most of the teaching staff have teaching commitments in other programs at KI, such as the bachelor's and master's programmes in biomedicine, and in doctoral courses as well as at other Universities like the Stockholm School of Economics (Handelshögskolan).

Scientific and professional competence

All but one (KTH course) of the course directors hold PhD degrees. The teaching staff as a whole exhibit diverse academic backgrounds, with six teachers having their degrees in the natural sciences or medicine while the other 5 bring expertise in social sciences and business/economics, much in line with the interdisciplinary origin of the subject and the programme objective to integrate science and business. Subject wise the teachers cover a wide range of subject that are important to the programme as can be seen in Appendix 1.

The research field of bioentrepreneurship is still evolving and it is worth mentioning that there are very few PhDs in Sweden within bioentrepreneurship. None of the current teachers with research degrees have specialized in the research subject bioentrepreneurship but all of them have their research degrees from medical or economics/business faculties which aligns well with the main subject of the programme. The lack of active research in bioentrepreneurship initially presented a challenge for the programme when it comes to research opportunities for the teachers (not including the teachers that are employed at KTH). However, this has been changing in recent years. Recently, one professor and one adjunct professor has been added to the programme's faculty and two teachers at UBE currently engage in bioentrepreneurship research and contribute to publications in the field about patient driven innovations. Three other teachers are starting up research projects that they have got funding for (out of these three, two are still marked as N/A in the research

column in appendix 1 as they have not started). In addition, UBE recently recruited a research assistant within bioentrepreneurship to further bolster the programmes research focus. Several teachers also have a long experience with change management projects and EU projects that have not been published academically.

One aspect of having teachers that are very actively involved in teaching is that there is not a lot of time available for research and writing research applications. To secure a future pool of teachers with the necessary research experience, we believe it would be beneficial if KI funded a senior researcher or doctoral position in bioentrepreneurship.

Several teachers in the programme bring professional experience from working in business and other relevant settings which is important for the quality of the programme. One of the teachers have a solid experience from working in sales and in managerial positions in various businesses, including ventures that they have owned and co-founded themselves. Another teacher has many years of experience working at the Swedish Ministry of Finance and yet another has been a Clinical Innovation Fellow, founding their own company based on clinical needs. These are only a few examples, but it underscores the deep and broad experience of the teachers in the programme and the connection to the working life that the programme has at its core.

Pedagogical competences
Six teachers out of the eleven meet the formal criteria of having at least 10 weeks of pedagogical courses with another three teachers that partially meet them. Two of the KI teachers have completed the basic course in university pedagogics in the last couple of years and two more have applied but not been offered a place yet. The programme actively strives for all teachers at KI to attend the basic pedagogy course in the next couple of years. Currently two of the programmes' teachers are also partaking in a pedagogical research course at LIME with the intention to publish the results of their projects.

Using cases in teaching is integral to the program's teaching model and three teachers have completed a course in Harvard case pedagogy, which is a significant asset Two of the teachers also hold certificates in coaching which is relevant given the pedagogical approach of the programme. The programme management actively encourages all teachers to further develop their pedagogical competences, although scheduling constraints of these highly engaged teachers have posed a challenge. For the future, the programme clearly needs to make a detailed plan for each teacher that do not fulfil the criteria of formal pedagogical competence to free up time for them.

There are numerous positive aspects with being a small and tight knit team of teachers. However, one drawback is to find competent academic supervisors that have insight into the subjects that are suitable for a degree project in the programme. According to the KI regulations, all degree project supervisors must be employed or affiliated to KI, automatically disqualifying the KTH teachers. This has resulted in the KI teachers supervising many students each year. To make the most out of the supervision, the programme implemented group supervision a few years ago, where two teachers share a group of about 6 projects and each teacher act as the main supervisors for half of the students. In the cases where one of the teachers does not have a research degree, the other supervisor act as the main supervisor for all students in the group. This model works well and have decreased the

supervision load significantly. The effects of group supervision have been positive for both students and teachers with maintained, if not increased, quality of the degree projects.

Staffing for the future

The programmes' teaching staff enjoys a high degree of stability, with little turnover. Several teachers have been part of the program since its inception in 2008, which contributes to the programme's strengths. The fact that the majority of the courses have a clear connection to the Unit for Bioentrepreneurship makes the staffing very transparent and there is a unique possibility for recruiting top teachers that are aligned with the pedagogical responsibilities at the unit. In addition to the permanent teaching staff at the unit, all courses invite guest lecturers who offer valuable insights and experience from various aspects of the life science sector. This significantly enriches the programme's connections with future employers and provides real-world relevance to students. These guest lecturers share unique, hands-on knowledge that directly relates to the themes of the various courses. Some examples from recent courses would be the Swedish Intellectual Property Office (PRV), The European Medicines Agency and the author of the project management course literature.

As previously mentioned, the research environment hosting the subject is starting develop, both at UBE and within SSES. As part of this, the unit is establishing a closer collaboration with the research group "Entrepreneurship, Organization and Society" at the Department of Business Administration at Stockholm University. A first step is the affiliation of Professor Karin Berglund to lay the foundation for a guest professorship and a future joint research program.

Assessment panel's evaluation

Instruction
For each assessment criterion, the assessment panel should describe their evaluation under the following three headings below: **Under the heading Strengths:** The assessment panel should highlight the programme's strengths within the assessment criterion and briefly describe them, preferably in bullet points.   **Under the heading Areas for improvement:** The assessment panel should identify areas that are assessed to need improvement and briefly describe them, preferably in bullet points.   **Under the heading Evaluation:** The assessment panel should explain their assessment and motivate their conclusion. The evaluation should be specified in one of four levels of fulfilment: *Meets/Meets to a large extent/Meets to some extent/Does not meet*.
Strengths It is the assessment panels impression that the self-evaluation shows good insight into the strengths of the training regarding Staff. The panel would particularly like to highlight the following as strengths to take advantage of in the development of the program: • The number of teachers is adequate and proportional to the needs of the programme. • The combined expertise of teachers is adequate and proportional to the needs of the programme • Stability in the group of teachers engaged in the programme

- Teachers are very supportive and encouraging.
- The teachers are very appreciated by students who are highly engaged about their teachers (quotes like: "we have amazing teachers, supersmart, open to collaborations, open to new ideas")
- Teachers with research connections and the program's collaboration with several strong research groups.
- Teachers have combined employment which brings broad perspective to the program.

The interviews confirmed these strengths.

Areas for improvement:

The status of the teachers and staff with expertise and skills need to be kept and therefore the panel propose a proactive approach to also keep this very high level with a structured and systematic approach also moving forward. The panel have four reflections / proposals that could be considered:

- A more well-defined succession plan for the teacher portfolio to make sure the high level is kept. A more well-defined plan for supporting collaboration and knowledge exchange among teachers in terms of pedagogical support and developments (eg.. Discussion forums, presentation of learning outcomes and activities, peer feedback).
- A more well-defined development plan for the individual teachers in terms of research opportunities and formal pedagogical competence. We did reflect upon if it really is feasible for teachers to join pedagogical courses and that enough time can be spent on this also very important part (timing component)
- Broader involvement of KI in the program for improving availability of relevant supervisors and for mutual support of teachers across disciplines.
- We also considered experience exchange with similar program / courses in Denmark or KTH.

Evaluation: Overall, it is the evaluation that the programme meets to a large extent the requirements of the assessment criterion. The justification for that evaluation is that the number and qualifications of teachers are adequate for the needs of the program with small areas for improvement relating to succession and development plans.

1.2 Assessment criterion - Learning Environment

The learning environment refers to the environment in which the education takes place and where students and teachers operate. A good learning environment is characterised by creativity and conditions for development, as well as a close connection between research and education. Guiding principles for KI's research-related education at first and second cycle are as follows: 1) students are involved in ongoing research, which means that they gain knowledge about ongoing research in both theoretical and practical contexts, and have the opportunity to participate in it during their education, 2) teachers are research-active and convey a scientific approach through appropriate pedagogical methods, 3) the main field and content of the education is grounded in scientific methods and updated research findings, and active research is conducted within the relevant field at the university and 4) the teaching is based on research in teaching and learning and is built on learning activities that contribute to the student's ability to understand, evaluate, and utilize the processes through

which scientifically based knowledge is generated and constantly reassessed (the research process). For a programme leading to a professional qualification, it is also important that students have access to a suitable practice-integrated learning environment.

> **Assessment criterion - Learning Environment**
> There is a scientific and profession-oriented environment for the education, and the activities are conducted in a way that establishes a close connection between research and education.

Describe, analyse, and evaluate. Outline the strengths and challenges, as well as how these are addressed to ensure high quality in the programme. Illustrate with examples. The description should be between 1-3 pages, using font size 11 and single line spacing.

Programme description:

For the Master's Programme in Bioentrepreneurship, the primary goal is for the graduates to, based on their solid education and training, work in life science companies in functions related to business (in the broad sense of the word). With that said, there is a natural link throughout the programme and the courses to research since life science companies and their business are built on scientific breakthroughs and knowledge of the scientific research process is important for their success.

Students gain knowledge about research theoretically and practically
The programme structure aims to encourage the students' creativity, independence, and the ability to work in teams. The pedagogical approach starts with the students being introduced to the theoretical underpinnings of their course material i.e. relevant theories and models, influential research etc. The first course of the programme for example, includes an assignment where the students are asked to present their understanding of bioentrepreneurship based on a number of key entrepreneurship research papers provided to them by the teacher and contemporary life science research papers that they must search for themselves adding the "bio" aspect of their analysis. The students present their results to the other students in a peer review session and finally submit a report of their analysis and conclusions. The opportunity to practically use the knowledge is most prominent in the work integrated courses or in other types of assignments e.g. case studies.

Although the students in general are not active in academic research groups during the programme, there are always a few students that work with projects at UBE. An example of this is the KI wide "Innovation Day" and the yearly annual event Biotech Builders. Some students have also done their work integrated learning in research projects at UBE. Working on projects that are not primarily situated in research groups is aligned with the focus of the programme, still a few students undertake their degree project in research groups e.g. two of the degree projects (out of 21) in 2023 were done in collaboration with research groups e.g. one at the University of Oxford and the other with University College London. All other projects have an academic supervisor with a research education that is well trained in the scientific research process.

Concerning the research activity of the teachers, 7 of the 9 listed course directors (78%) are actively doing research although varying in extent, from 5-50%. In addition, most teachers have a research degree and are trained to work with a scientific approach and all teachers,

regardless of research background or not, use academic research as the basis of their courses and keep up to date with their subjects.

All courses in the programme builds on scientific methods and current research and include aspects of the research process and scientific methods. For example, the course Theory in Bioentrepreneurship introduces the use of aim and research questions and the project management course introduces data collection through interviews. The scientific methods that the students are introduced to are then used in the work integrated courses and the degree project where the entire research process is included (identify a problem, build background knowledge, collect data and analyse to come up with a final conclusion). The introduction of different methodologies is integrated throughout the programme through the focus area "scientific methods".

Regarding the students' own evaluation of the research connection in their education, the exit polls (see Table 1) indicate that the graduates perceive that the education's content is based on current research (mean 5,0 and 5,1 on a scale of 1-6 with 6 being "to a very high degree"). Although this value was slightly lower than the average for the other KI global programmes in 2022, the value was higher than the mean for the other global programmes in 2023. The integration of current research in the courses is actively discussed among the teachers and discussed during the programmes' quality councils. The mean value in the exit poll concerning "learning about research in theoretical activities" was lower than the other global KI programmes however, with a slightly higher value in 2023. The theoretical research content is still a weak spot of the programme, but we hope that this trend towards higher values will continue, reflecting the efforts to visualise the research connection that the programme has worked with since the implementation of the new programme curriculum in 2020. One reason for these results might be that the students do not perceive social science research to be as rigid as the natural science research that they are trained in and therefore do not recognise the theoretical content as being based on research. One of the teachers in the programme is currently doing a research study on what the students at KI perceive to be research and the results from that study are in line with the indications above. The programme has started to implement activities to work with this e.g. introduce how to read and analyse social science research papers and seminars to get familiar with the methodologies and theories of this discipline. As indicated in the exit poll results from 2023, this seems to be working although it is too early to draw any major conclusions of this recent trend.

Table 1 – Answers to the Exit Polls 2022 and 2023 (response rate 43% and 62% respectively) on a 6-point scale: To a very small degree (1) – To a very high degree (6). SEM = Standard error of mean. Green or red colour indicates

that the mean value is higher or lower than the KI mean +/- SEM for the other global programmes at KI.

Question	MBE mean value		KI mean value (+/- SEM)	
	2022	2023	2022	2023
The education's content was based on current research	5,0	5,1	5,4 (+/-0,2)	4,3 (+/-0,2)
I learnt about ongoing research during:				
Theoretical learning activities	4,1	4,4	5,0 (+/-0,3)	4,9 (+/-0,2)
Practical and/or clinical learning activities	4,8	4,8	4,7 (+/-0,3)	4,5 (+/-0,3)
A variety of teaching methods were used during the education in a way which encouraged me to be active in my learning (for example, lectures, seminars, practical skills training, e-learning).	5,7	5,7	5,2 (+/-0,2)	5,0 (+/-0,2)
I feel well-prepared for my future role's requirements to:				
critically review information	5,5	5,2	5,3 (+/-0,2)	5,3 (+/-0,2)
being able to use scientific methods	5,2	5,3	5,1 (+/-0,2)	5,1 (+/-0,2)
apply research-based evidence in my work	5,4	5,1	5,3 (+/-0,2)	5,3 (+/-0,2)
apply practical skills	5,6	5,2	4,9 (+/-0,2)	4,8 (+/-0,3)

The content of the programme builds on scientific methods and current research
As previously stated in the section about "Staff", there has been little active research in the main subject for a few years. From January 2024, the unit has however, employed a research assistant that will enable the teachers to pursue active research along their teaching engagements. Many of the teachers of the programme (see Appendix 1 and the section 1.1 "Staff)", are already actively engaged in research.

An additional aspect of research connection is that the teachers use appropriate pedagogical methods to convey a scientific approach. The programme contains a variety of pedagogical methods to encourage the students to be active in their learning e.g by using flipped classroom, reflections and active participation through discussions and workshops. Overall, the competence and interest among the teachers in engaging in the pedagogical strategy of the programme is high and new teaching and learning methods are incorporated on a regular basis to add to the students learning experience. Some of the most recent additions to the teaching and learning activities is a gamification day in the market analysis course where the students play an interactive game called "Fish Banks". The game is set up as a board game linked to an online platform where students are grouped in teams and engage in a rapid decision-making process with a sustainability focus. The response from the students has been positive and they have valued the novel pedagogical setup. This approach to sustain a varied learning environment, seem to be appreciated by the students as indicated by the consistently high values to this question in the exit poll (See Table 1).

Another strong point when it comes to the pedagogical engagement of the teachers is that all the staff of the programme are active teachers and course directors for at least one course each. In addition, the KI teachers are engaged in other programmes at KI as well showing their dedication to education. In addition, two teachers are involved in the overall educational assignment of the department as members of the educational committee and as assistant director of studies (biträdande GUA). The KI centre director for SSES teaches in the programme and another teacher is engaged in the Learning lab at SSES, a platform specifically designed by and for educators in the field of entrepreneurship.

When it comes to supporting the student's ability to understand and evaluate the research process, one illustrative example is from the Market analysis course in the first semester. In this course, the students get introduced to a clinical need (a problem in healthcare that does not have a good solution currently) and are tasked to understand and evaluate the market landscape of this clinical need. At the end of the market analysis course (semester 1), these needs are brought to the Product development course (semester 2) where the focus instead is to work on possible solutions to the need in a series of lectures and workshops using the Stanford Biodesign Process. The regulatory and intellectual property landscape of the proposed solution are also investigated, and the solution is stepwise refined with the help of feedback from expert panels and their deepened subject knowledge as the course proceeds. In the business development course (semester 3) the needs and solutions are revisited from the perceptive of business development. Combined, these courses guide the students through the research process and a progressive reassessment of their knowledge and of the solution that they have developed.

Concerning the graduates perceived ability to critically review information, being able to use scientific methods and apply-research based methods, the values from the exit poll are all on par with the other global programmes. When it comes to applying practical skills, which is a core feature of the programme, the value is consistently high for the graduates of the programme (Table 1). This indicates that overall, the students are well-prepared to work research based in their future career.

Practice integrated learning environment
The students in the MBE programme take three courses that establish a direct link to the life science sector through work integrated learning (similar to the clinical placements in KI's clinical programs). The students engage in two work integrated learning courses (practical placement 1 and 2) as well as having the opportunity to collaborate with a company or organisation during the degree project. During these courses, the students benefit from having an academic teacher or supervisor from the programme and a project-specific supervisor from the company or organisation. The course director for the work-integrated courses is also the external relations officer (ERO) of the programme and responsible for all work integrated collaborations with the companies and organisations. This setup ensures that the projects are aligned with the programme's objectives and that the company supervisors are well-qualified for their task.

The companies that the students work with are different in character and span from e.g. large multinational, medium sized companies to start ups. Pharmaceutical, medical technology, biotechnology, health tech companies as well as venture capital companies and industry trade organisations (such as Sweden Bio) are all potential collaborators for the students. This breadth of options ensures that students are exposed to a wide variety of environments where different types of knowledge are needed to carry out the specific projects. In return, the students get professional experience and a deeper understanding of their course content as visioned in the programmes pedagogical approach. The work integrated courses are further discussed under 4.1 Working life and collaboration.

Assessment panel's evaluation

Strengths:

The assessment panel recognize that the self-evaluation report demonstrates a good understanding of the educational strengths related to the learning environment, a view corroborated by the interviews. The panel emphasizes the following strengths to be leveraged in the program's development:

- The program shows a well-planned structure with a logical progression of courses, ensuring a coherent educational journey for students.
- Courses are intricately linked to the life-science sector, providing students with practical, industry-relevant experiences.
- A variety of teaching methods are employed to support students' learning, enhancing the overall educational experience.
- There is a strong collaboration between teachers and students, fostering a supporting learning environment.
- The diverse student group brings varied backgrounds, enriching peer interactions and collaborative learning.
- Extensive collaborations with companies and organizations provide students with practical insights and opportunities.
- Multiple practical placements offer students hands-on experience, bridging the gap between theory and practice.
- The integration of life science and business is a distinctive feature of the program, offering a holistic perspective.
- All courses incorporate industry perspectives, ensuring students are attuned to real-world applications
- Students are exposed to research environments and current pedagogical research, keeping the abreast of the latest development.

Areas for improvement:

The assessment panel acknowledges the program's awareness of areas needing improvement and agrees with the proposed measures. The panel would particularly like to highlight the need to develop the following areas:

- A clearer definition and distinction between natural and social science methodologies in research-based teaching.

- The exit poll indicates low scores in theoretical research content, highlighting the need for better support in reading and analyzing social science, particularly since business is a new subject for many students.
- Increasing international events can provide students with context-sensitive industry knowledge.
- More case solving activities with other KI-programs or other entrepreneur programs can enrich the learning environment.
- The program should continuously evolve to align with industry trends such as drug development, MedTech, digitalisation, and AI.
- A need for ongoing development of teachers' research and pedagogical skills to maintain high standards.
- Better guidance for students towards industries focused on hope, justice, sustainability, and global issues.

Evaluation: Overall, it is the evaluation that the program meets to a large extent the requirements of the assessment criterion, demonstrating significant strengths and identifying key areas for improvements. The program is well-structured with a logical progression of courses, integrating life-science and business through work integrated learning and diverse pedagogical approaches. The diverse student body enhances peer learning, while strong teacher-student collaboration and extensive industry partnerships provide practical and research-oriented experiences. Notable strengths include practical placements and industry interactions in all courses. However, improvements are needed in defining research-based teaching methodologies, supporting students in theoretical research, increasing international events, and incorporating interdisciplinary case-solving activities. Additionally, the program should continuously adapt to industry trends, focus on developing teachers' skills, and guiding students towards addressing global issues. Overall, the program effectively creates a scientific and profession-oriented learning environment with a close connection between research and education.

2. Assessment area: Design, implementation and outcomes

2.1 Assessment criterion Goal attainment

For each degree, there are a number of formulated qualitative targets (outcomes for the degree) in the System of Qualifications (Appendix 2 to the Higher Education Ordinance). In addition to the national outcomes, programmes may also have local outcomes, which are described in the programme's curriculum. In order to delimit the scope of the evaluation, KI makes a selection of outcomes prior to each programme evaluation. The principle of selection is that at least one outcome per form of knowledge is included in the selection. For programmes that provide both a general qualification and a professional qualification, at least one outcome from each degree must be included. For programmes with local outcomes, at least one local outcome must be included. The total number of outcomes chosen should not exceed six.

The qualitative targets (outcomes for the degree) define what the student should have achieved when the degree is issued. The programme must describe how the education ensures that the student is given the opportunity to achieve the outcomes when the degree is issued. Such a report may include, for example, the nature of the progression, the link between outcomes for the degree, intended learning outcomes in course syllabi, learning activities and assessments, grading criteria and how they are used, appropriate teaching methods and activities and the way in which student learning is promoted, and how the student's conditions and needs are considered.

Assessment criterion: Goal fulfilment, the form of knowledge and understanding

Assessment criterion for Goal Fulfilment – Knowledge and understanding
Through design and implementation, the programme enables, and ensures through assessment, that the student, when the degree is issued, can achieve the selected outcomes within the knowledge form knowledge and understanding in the system of qualifications.

Target
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.

Describe, analyse, and evaluate. Outline the strengths and challenges, as well as how these are addressed to ensure high quality in the programme. Illustrate with examples. The description should be between 1-3 pages, using font size 11 and single line spacing.

Programme description:

Bioentrepreneurship is a subject stemming from several disciplines. It combines the natural- and social sciences and studies in bioentrepreneurship primarily develops knowledge about how new products and services are developed, marketed, and sold within the life science area, for example, pharmaceuticals and medical technology. The programme strives to instill an entrepreneurial mindset in the students. An overview of all the courses and learning outcomes show that together, the courses of the programme cover all the general examination goals well. What is particular about the courses is that most of them (all courses offered at KI) have a distinct "bio" focus that many times is also where the deepening of the subject occurs. The "bio" aspect is also why the programme is well situated at a medical university like KI where entrepreneurship skills can be added to students that already understand the research forming the basis for the life science sector.

Given that the students have their BSc qualification in another subject area (no students with a business degree are admitted) the first part of the programme is dedicated to introducing entrepreneurship, business as well as social science research and methods. The programme is structured with a natural progression in knowledge and understanding of how a life science company evolve from idea to growing company.

Broad knowledge of the field
The knowledge of this main subject is inherently broad, and the core courses of the programme (see Figure 1) cover a wide range of subjects. The first course of the programme, "Theory in Bioentrepreneurship", introduce the students to their main subject and ensure that they have a broad knowledge and understanding about entrepreneurship theory. It also introduces entrepreneurial learning to set the tone and the pedagogical approach for the programme. Following this course, the students are introduced to concepts and models to understand and handle economic, organisational and management issues (industrial management), models and tools for market analysis, financial control in industrial enterprises (strategic management control), prototyping (product development), principles in marketing and sales as well as business development.

As an example of how the students can gain broad knowledge and understanding in their field of study is the first course where the intended learning outcome "Demonstrate an understanding of the emerging research of entrepreneurship within life science, i.e. bioentrepreneurship, in a responsible manner supported by relevant literature" is explored through lectures (both face to face and pre-recorded on canvas), seminars and practical applications. The examination is an individual written learning journal that is submitted several times during the course. The final report is based on key studies in the field and reflecting the student´s developing knowledge and understanding of the bio component of the main subject. Another example is the course "Project Management – Theory" that has the intended learning outcome "describe the principles of project management models in use today". This outcome is explored through lectures about traditional as well as SCRUM project management and through a workshop where the theories of project management are tested practically. The learning outcome is then assessed through a written examination where the questions are directed at both theoretical knowledge and practical application in shorter essay questions. The knowledge and understanding about project management is used in progressive courses throughout the programme with the complexity of the project increasing from e.g. the first placement course where the students are assigned a project, to the second project course where the students are to find and define the projects themselves to the degree project where the students find, define, plan and execute the projects independently. Overall, aspects of this examination target are covered in all courses of the programme (See Appendix 2 – Curriculum Alignment). Upon reflection, the progression between course could be better visualised in some areas e.g. global perspective and ethics. This will be in focus for the programmes' quality council during the spring of 2024. Overall, though, the graduates perceive that there is a clear alignment between learning outcomes and examination and that there is progression in broadening and advancing the subjects of the programme (See Table 2).

Table 2 – Answers to the Exit Polls 2022 and 2023 (response rate 43% and 62% respectively) on a 6-point scale: To a very small degree (1) – To a very high degree (6). SEM = Standard error of mean. Green or red colour indicates that the mean value is higher or lower than the KI mean +/- SEM for the other global programmes at KI.

Question	MBE mean value		KI mean value (+/- SEM)	
	2022	2023	2022	2023
There is a clear common thread from learning outcomes to examination in the education.	5,8	5,2	5,2 (+/-0,2)	5,0 (+/-0,2)
The education was structured with a clear progression (i.e. the content was broadened and became more advanced over the course of the education).	5,5	5,2	5,0 (+/-0,2)	4,8 (+/-0,3)

Considerable degree of specialised knowledge in certain areas of the field

In the Master's Programme in Bioentrepreneurship, specialised knowledge is often connected to adding the specific conditions that applies to companies in the life science sector. One examples of specialised knowledge is from the Product Development course and the intended learning outcome "demonstrate the basics of product development in the life science sector" that has a number of teaching and learning activities connected to it e.g. lectures, visits from life science companies and study visits to hospital clinics to get a deeper understanding of what is needed in terms of new products and services. In addition, experts on life science rules and regulations as well as intellectual properties are invited to not only lecture but also to give feedback on the students´ assignment. The examination is in the form of a case report describing a technical solution to a clinical need including regulatory, ethical,

and intellectual property considerations particular to the life sciences. Overall, the students get a deep, specialised knowledge about product development in the life sciences both for medical technology and pharmaceutical products.

Another way of specialising and deepening knowledge in their main subject are the elective courses offered by SSES. There are ten different courses to choose from allowing for a specialisation in a topic that appeals to the students and their ambitions for their future career. In addition, the two work-integrated learning courses and the degree project course offer the students a broad range of project areas to deepen their knowledge and understanding of their main area of study. These courses also allow the students to seek experiences abroad, furthering opening up to specialisations e.g. about particular markets or regulatory areas. Insight into current research and development work is provided in every part of the programme e.g. through the use of research articles and the addition of references in all lectures and on Canvas. One way of exemplifying how the students actively work on obtaining insights on current research is through the work-integrated courses that all entail performing literature studies on the selected project topic and combining that with the practical work of the projects. As the projects are focused on current challenges for the companies, the students have to ensure that they have insight into the subject at hand. Another example is of course the degree project where the learning outcome "search and critically assess relevant scientific literature in support of both broadening and deepening their knowledge within the scope of the current project" is s prominent part of their course and this literature review constitute a major part of their final degree report.

Assessment panel's evaluation

Instruction
For each assessment criterion, the assessment panel should describe their evaluation under the following three headings below: **Under the heading Strengths:** The assessment panel should highlight the programme's strengths within the assessment criterion and briefly describe them, preferably in bullet points.   **Under the heading Areas for improvement:** The assessment panel should identify areas that are assessed to need improvement and briefly describe them, preferably in bullet points.   **Under the heading Evaluation:** The assessment panel should explain their assessment and motivate their conclusion. The evaluation should be specified in one of four levels of fulfilment: *Meets/Meets to a large extent/Meets to some extent/Does not meet*.
Strengths: It is the assessment panels impression that the self-evaluation deals with goal attainment in a very strong and convincing way and the panel want to highlight the following strengths.   - A clear common thread from learning outcomes to examination.   - The diversity of course forms and educational methodologies.   - Progression in broadening and advancing the subjects of the programme.

- Clear goals and expectations set in the beginning of the semester and transparent communication about which evaluations will come (projects, exams etc.), thus no surprises for the students.

Areas for improvement:

It is the assessment panels impression that the self-evaluation does address below areas for improvement to some extent, but the panel is suggesting the following improvements.

- Better description of life science company evaluations of student reports and theses would be good. It could place in questionnaires to the companies or by invitations to companies to join advisory board meetings and provide feedback.
- A clearer description of entrepreneurial learning methodology as a pedagogical approach, and how it promotes the development of entrepreneurial mindsets of students could be outlined in the self-assessment report and in descriptions of the programme.
- Better description of how the students' conditions and needs are considered in the learning activities and in the programme assessments to ensure that activities achieve the intended outcomes. These activities should take place in dialogue with the students.

Evaluation: Overall, it is the evaluation that the programme meets the requirements of the assessment criterion. The justification for that evaluation is that the good logical structure, diversity of educational offers and their sequence (outlined under strengths of the programme) leads to the proposed goal fulfilment.

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Assessment criterion: goal fulfilment, the form of competence and skills

Assessment criterion: Achievement of objectives – competence and skills
Through design and implementation, the programme enables, and ensures through assessment, that the student, when the degree is issued, can achieve the selected outcomes within the knowledge form of competence and skills in the System of Qualifications.

Target
Degree of Master (120 credits) the student shall 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.

Describe, analyse, and evaluate. Outline the strengths and challenges, as well as how these are addressed to ensure high quality in the programme. Illustrate with examples. The description should be between 1-3 pages, using font size 11 and single line spacing.

Programme description:
The skills and competences of the students in the programme is the focus of several courses, not least the work-integrated courses. The students work to formulate issues critically, creatively, and independently in most courses as the programme envisions the graduates

need these skills in order to work with not only managing but also developing companies within the life science sector. The graduates are expected to enable these companies to tackle e.g. global and sustainability challenges that are facing the sector. Several courses use written reports of different kinds as examination and in these courses, the students are trained how to formulate relevant problem statements and corresponding aims. Both work-integrated courses and naturally the degree project focus on how to identify an issue or problem and formulate a plan for how to independently research this issue.

Several courses work on training the students to critically and creatively identify issues to work with. One example would be in the second communication course where the student writes a communication plan around a challenge supplied by an external "client". A more detailed example of how the students work with identifying and creatively formulating issues would be the "Project Management – Theory" course where one intended learning outcome is to "independently select a project management approach appropriate for the content and context of a project, carried out within a predetermined timeframe, and justify that choice". This intended learning outcome covers several aspects of this examination target. The corresponding teaching and learning activities are lectures, self-studies like reading the course literature, looking at pre-recorded video lectures with the author of the course literature and group work. Finally, the examination is a written exam where essay questions are directed to assess if the students have met this learning outcome. As the project management course is a theoretical course, the practical application of these skills and competences are further assessed in coming courses, most notably the market analysis and product development courses. A project is initiated in the market analysis course and then continued in the product development course training the students to project manage a longer project spanning more than12 weeks. Another example would be the "Strategic Management Control" course where the intended learning outcome is to "with overall view critically, independently and creatively formulate and handle complex issues, analyse, quantitatively and qualitatively evaluate the financial and non-financial situation of an industrial corporation and based on research identify improvement measures". The teaching and learning activities are lectures and self-studies of the course literature. The exam is a longer analytical open book exam where the exam questions require the student to use the literature to reason about their solution to the questions. For the degree project, the students have to identify a knowledge gap based on literature and independently formulate aim and research questions to establish a relevant and realistic research plan for the degree project.

The students' own evaluation of their ability to work independently is illustrated in Table 3.

Table 3 – Answers to the Exit Polls 2022 and 2023 (response rate 43% and 62% respectively) on a 6-point scale: To a very small degree (1) – To a very high degree (6). SEM = Standard error of mean. Green or red colour indicates that the mean value is higher or lower than the KI mean +/- SEM for the other global programmes at KI.

Question	MBE mean value		KI mean value (+/- SEM)	
	2022	2023	2022	2023
The structure of the education encouraged independence in my learning.	5,8	5,4	5,2 (+/-0,2)	5,1 (+/-0,3)
I feel well-prepared for my future role's requirements to:				
work independently	5,8	5,5	5,5 (+/-0,2)	5,4 (+/-0,2)
solve problems independently	5,8	5,2	5,3 (+/-0,2)	5,1 (+/-0,2)

The work-integrated courses (one at the end of the second semester and one at the end of semester three) are good examples of how the programme collaborate with life science companies where the students get to work on advanced tasks. Through these courses, value is created for the companies in the form of solutions to their issue and for the students as they get to apply and integrate their skill and knowledge on a "real" situation mimicking their future workplace. The students independently formulate a project plan, clearly identifying the problem and the aim of the project and there after choosing appropriate scientific methods to work with. Which methods that are appropriate will of course vary from project to project which is why scientific methods are introduced continuously throughout the programme. How to read research articles and build a literature review is introduced in the first course of the programme and interviews are introduced in the project management course. The market analysis course deepens the interview skills of the students and also introduce surveys and observation as useful methods etc.

The degree project is the culmination of the programme and the longest project, 20 weeks compared to the 6 and 12 weeks of the first and second work-integrated course respectively. The three courses are all progressively more demanding regarding the independence and creativity of the students:

- The first placement is assigned to the students by the ERO[1] that have pre-approved the companies' suggested projects. In this first work-integrated course the students work in pairs for further support.
- In the second work-integrated learning course the students are encouraged to independently find and negotiate a proper project. They have to write a project plan to be approved by the ERO before the course start.
- For the degree project, the students are expected to be even more independent in finding and planning a research project that is suitable for the main topic of their studies. The level of autonomy is very high. Part of the project plan examination is a detailed GANTT chart for the duration of the course to make sure that the students have made a feasible plan for their project.

The expectations on the students' ability to reason about their methodological choices are also progressively higher between these courses as well as their ability to work within predetermined timeframes.

When it comes to the skills and competences pertaining to working under predetermined timelines, the programme works with this in several ways. In the first semester, the "Project Management – Theory" course introduce project management tools like the above-mentioned GANTT charts to support the students in their time planning. In semester two, the "Product Development in the Life Sciences" course has the intended learning outcome "carry out advanced tasks within specified time limits" that progresses this skill through workshops and a report and presentation of a project. These two courses are strategically placed before the work-integrated courses in the programme. In this way, the students have time to practice their time management skills before starting to work under the strict timelines of the work-integrates courses. In the cases of students working in groups or pairs, contracts are always written to encourage the students to plan their time well while considering the needs and time schedules of the other collaborators in the group.

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[1] ERO = External Relations Officer

Most oral presentations through the programme assess the students' time planning as well, and a too long or too short presentation results in a re-examination of the presentation. This is to underscore the importance of planning your work and practicing how to make most of the timeframes that you have available for each task. In addition, most courses have a sentence in the course syllabus stating that "Submission of written examinations after the deadline will result in the student missing the chance to get the grade "Pass with distinction"." This policy is implemented to encourage students to plan their work well and to prepare them for a future working environment that is largely deadline driven. However, the policy might contribute to feelings of stress and pressure on the students and the programme will evaluate if the benefits outweigh the possible negative aspects of this by adding a targeted question in the course survey.

Contribute to the formation of knowledge as well as the ability to evaluate this work
As stated already, the students are trained to meet the first parts of the examination goal, most notably the market analysis and product development courses, and the work-integrated and degree project courses. The later parts of the examination goal "to contribute to the formation of knowledge as well as the ability to evaluate this work" will be described in this section.

For the students to be able to evaluate their own work as well as that of others, the students are trained in how to give and receive feedback. The first communication course introduces this subject in depth with the intended learning outcome "Explain and apply the concept of feedback and how to give and receive it". The accompanying teaching and learning activities are recorded as well as live lectures and workshops presenting different tools and theories about how to give and receive feedback. The students get introduced to the "Feedback ladder", a structured way of giving feedback that we then encourage the students to use throughout the programme. They are also introduced to a structured way of actively reflecting on the feedback that they have been given and how to act on it. The examination is an individual written reflection where one aspect is to reflect on their experience of working with this intended learning outcome how to incorporate this skill in their future career. This skill is further trained in other courses in the programme through peer–review and opposition on other students' performance.

When it comes to the work-integrated courses, the students contribute to knowledge formation in their examinations. In the first work-integrated course, the examination is a more scientific type of consultancy report with a clear problem formulation, aim and methods section, all backed up by relevant references. The second part of the examination for this course is a essay where the students reflect on the management structure of the company. The second work-integrated course is examined by a report where the students first describe the project including aim, methods and results and then write a reflection on the value that the student has gained themselves and the value they perceive has been created at the company. A second examination is a critical incident report where the students make a structured reflection on an incident at the company (positive or negative) and how they have handled that. There is progression in the expectation on the students´ ability to evaluate their own work during these courses. The first course asks the students to present but not evaluate their work. The second course though have learning outcomes to both "reflect over one's own personal experience and individual contribution to the project and to "Methodically analyse, review and evaluate other students' projects and be able to

present and discuss one's own work". The students present their own project as well as deliver an oral opposition on another student's project.

Assessment panel's evaluation

Instruction
For each assessment criterion, the assessment panel should describe their evaluation under the following three headings below: **Under the heading Strengths:** The assessment panel should highlight the programme's strengths within the assessment criterion and briefly describe them, preferably in bullet points.   **Under the heading Areas for improvement:** The assessment panel should identify areas that are assessed to need improvement and briefly describe them, preferably in bullet points.   **Under the heading Evaluation:** The assessment panel should explain their assessment and motivate their conclusion. The evaluation should be specified in one of four levels of fulfilment: *Meets/Meets to a large extent/Meets to some extent/Does not meet*.

Strengths:

It is the assessment panels impression that the self-evaluation deals with goal attainment in a very strong and convincing way. The panel want to highlight the following strengths.

- Course activities support students in doing independent work.
- Strong link and progression between theoretical and practical courses.
- Varied scientific methods are introduced throughout the programme.

Areas for improvement:

It is the assessment panels impression that the self-evaluation does address below areas for improvement to some extent, but the panel is suggesting the following minor improvements for consideration:

- Create opportunities for pitching activities providing students with oral feedback to their work.
- Better description of which student activities in a life science company that may be regarded as an appropriate research project for the students.

Evaluation: Overall, it is the evaluation that the programme meets the requirements of the assessment criterion. The justification for that evaluation is that the nature of course activities and methodologies lead to the proposed goal fulfilment in the form of competence and skills building of the students.

Assessment criterion: Goal fulfilment, the form of judgement and approach

Describe, analyze, and evaluate. Outline the strengths and challenges, as well as how these are addressed to ensure high quality in the programme. Illustrate with examples. The description should be between 1-3 pages, using font size 11 and single line spacing.

Programme description:
NOTE: We have chosen to interpret disciplinary and social aspects as scientific and societal aspects respectively as that is closer to the Swedish wording of this target (vetenskapliga och samhälleliga aspekter).

Make assessments informed by relevant disciplinary, social and ethical issues
The ability to make scientific assessment has been described to some extent in the targets above i.e. skills and competences and knowledge and understanding where progression in scientific methodology and skills has been described. When targeting the ability to make assessments based on scientific aspects, the first course of the programme includes the learning outcome "Explain the entrepreneurial process and approach and critically analyse its core concepts and theories". The teaching and learning activities accompanying this outcome are lectures, seminars and work in groups that is then examined with an individual report illustrating the complexities in the main area of study through an analysis of key scientific studies. This course also introduces the students to how to read and analyse social science research, a skill that is further used throughout the programme. Another example of a learning outcome about the student's ability to make scientific assessment is in the "Strategic Management Control" course where the intended learning outcome is to "based on scientific studies give an account of and justify different types of performance measures, standards, budgets and rewards". This learning outcome require the students to use literature as a basis for a scientific assessment of different types of performance and the learning activities is lectures. The exam is an individual open book written exam where the students are asked to answer the exam questions using the scientific literature that is part of the course. There are other examples of how this examination goal is met in Appendix 2, however, the most pertinent example of this is the degree project where the ability to make sound assessments of scientific aspects is a key throughout the entire course, not least the literature review and methods part of the degree report. One area that needs further analysis is the progression of the ability to make assessment based on scientific aspects and if that is well aligned through the programme.

The analysis of learning outcomes for the programme shows that the social and societal aspects are not that well covered in intended learning outcomes although there are learning

activities around this area in several courses. This is an area for improvement for the programme and we will discuss how we can incorporate societal aspects better at the coming quality council. One course that has a learning outcome is the market analysis course where global aspects, which can be seen as societal aspects, are covered through the intended learning outcome to "Identify and compare global market environments and reflect on their sustainability". The teaching and learning activities for this goal is self-studies of material on canvas and a discussion in an interactive workshop. This learning outcome is then part of the written examination. The degree project has several intended learning outcomes focused on societal aspects. First, the students are asked to "analyse and critically evaluate the results of their scientific study in the specific research field of the project as well as from a broader scientific, societal and ethical perspective". Learning activities are included in the group supervision sessions and lectures at the beginning of the course. This aspect is tightly connected to the ethical aspects and part of an ethical declaration that is submitted with the project plan. In the final report, the students need to include how their research is connected to the United Nations' sustainable development goals and reason about equal opportunities and how that has been considered in their study e.g. in their sampling strategy. Another learning outcome in the same course is to "present their work, its conclusions and the knowledge and arguments on which they are based in written and oral form both in an academic context, for a possible collaborative partner and from a broader popular science perspective". A popular science summary is part of the final examination and needs to be directed at a non-expert audience to facilitate the spread of the results through society.

The analysis of this examination goal has made it clear that although the programme takes social, societal and global aspects into account in many courses through the focus on inequities in health care, global markets, social entrepreneurship etc, specific intended learning outcomes and examinations are missing. The results of the exit poll about global health questions however indicate that the graduates feel prepared to work with a global health perspective (see Table 4).

Table 4 – Answers to the Exit Polls 2022 and 2023 (response rate 43% and 62% respectively) on a 6-point scale: To a very small degree (1) – To a very high degree (6). SEM = Standard error of mean. Green or red colour indicates that the mean value is higher or lower than the KI mean +/- SEM for the other global programmes at KI.

Question	MBE mean value		KI mean value (+/- SEM)	
	2022	2023	2022	2023
I feel well-prepared for my future role's requirements to:				
apply a global health perspective on a variety of issues	5,2	5,1	5,0 (+/-0,2)	5,1 (+/-0,3)
have a broad understanding of international events shaping the world	5,2	4,9	4,8 (+/-0,3)	4,8 (+/-0,3)
be able to deal with the ethical considerations I face	5,5	4,9	5,2 (+/-0,2)	5,1 (+/-0,2)

One yearly event in the programme that combines social and ethical issues is the interdisciplinary day "Getting down to business" that has been initiated and developed by the teachers from the Master's Programmes in Bioentrepreneurship, Biomedicine and Toxicology. The aim of this day is for the students of each programme to collaborate on a case involving drug development and academic research using their respective professions as a basis for their reasoning. The case touches upon both ethical and societal aspects of drug development and the survey of this annual event is usually very positive.

Different types of ethical aspects e.g. research ethics but also responsible innovation etc, are covered well in the programme and is first introduced in the project management course in the first semester (introduction to ethics) and further introduced with focus on the particular aspects governing ethics in the market analysis (research ethics concerning data collection for market research purposes), product development (research ethics) and marketing and sales (ethics in marketing of life science products) courses. Ethics in research and business (ethical behaviour in the workplace) is the focus in the work-integrated courses (see Appendix 2 for all learning outcomes related to ethics). Furthermore, in the degree project, (intended learning outcome discussed already under social aspects) the students must fill in an ethical declaration together with the project plan where any potential ethical issue with their research is discussed and reasoned about. In the final degree report, there is a mandatory section about the research ethical considerations that the students have taken into account during the project e.g. informed consent, data storage, researcher bias etc.

One example of an intended learning outcome is from Project Management –Theory where the students are asked to "discuss the basic concepts in ethics and the ethical considerations that need to be addressed in project management". They go through a video from the "Project Management Institute" and in addition have an interactive workshop with a Professor from the Centre for Healthcare Ethics. In this workshop, theory is mixed with cases and discussions around ethical dilemmas. The learning outcome is then assessed through a written exam. There is progression in the ethical judgement and approach of the student throughout the programme and one example of this can be seen between the work-integrated learning courses. In the first course the students are asked to "Carry out project work in a research- and corporate-ethical manner." while the second course has a more complex intended learning outcome to "critically reflect on and carry out project work in a scientific and business ethical correct manner". The first course includes a lecture on ethics and one on the ethical aspects of work culture e.g. how to reason if something unethical was discovered while on their work-placement. These aspects are part of the examination in a separate section of the project report. In the second work-integrated course, there is a workshop around different ethically challenging cases related to professional behaviour in a workplace. These aspects are examined in the final presentation as well as the final project report.

As seen in the exit poll (Table 4) the graduates feel prepared to deal with ethical considerations that they might come across in their future roles. Two questions in the programme specific survey questions are also directed to ethical aspects. The mean value for these questions in courses that have intended learning outcomes on ethics is 3,6 for both questions (on a 5-grade scale) while courses that do not have learning outcomes on ethics had a mean score of 3,3 and 3,1 respectively (for the courses during the academic year 22/23). This indicate that the courses that have intended learning outcomes on ethics are valuable to the students. However, the mean values are fairly low in comparison the grading scale 1-5. One reason might be that the programme does not have specific course literature on ethics. Adding this might be a good way to align the teaching and progression of this aspect and will be considered as an improvement for the future.

When it comes to showing awareness of ethical aspects of research and development work, that is, as exemplified already, part of several courses. The best examples being the work-integrated courses and their learning outcomes as well as the degree project course that has the explicit learning outcome to "show awareness of the ethical aspects that may result from

conducting a scientific study". This goal is introduced through the course in presentations and supervision discussions and assessed both in the project plan and the final report.

Assessment panel's evaluation

Instruction
For each assessment criterion, the assessment panel should describe their evaluation under the following three headings below: **Under the heading Strengths:** The assessment panel should highlight the programme's strengths within the assessment criterion and briefly describe them, preferably in bullet points. **Under the heading Areas for improvement:** The assessment panel should identify areas that are assessed to need improvement and briefly describe them, preferably in bullet points. **Under the heading Evaluation:** The assessment panel should explain their assessment and motivate their conclusion. The evaluation should be specified in one of four levels of fulfilment: *Meets/Meets to a large extent/Meets to some extent/Does not meet*.
Strengths: It is the assessment panels impression that the self-evaluation deals with forms of judgement in a good and convincing way. The assessment panel want to highlight the following strengths. • Global health perspectives seem to be covered sufficiently. • Positive aspirations and exploratory educational activities with the aspiration of covering ethical and societal topics. • The ability to make sound assessments of scientific aspects is covered by the degree project. **Areas for improvement:** It is the assessment panels impression that the self-evaluation does address relevant topics in relation to the form of judgement, but the panel is suggesting the following improvements for consideration: • Ethical and societal topic are missing in the intended learning outcomes and in the content of examinations of the courses. • A stronger educational structure supporting social and ethical issues is needed and may be reflected in more specific time allocations for the topics. • Inclusion of course literature on ethics in course descriptions may support the teaching and progression of this aspect within the programme. **Evaluation:** Overall, it is the evaluation that the programme meets to some extent the requirements of the assessment criterion. The justification for that evaluation is that the self-assessment report and interviews indicate awareness of relevant judgement parameters, but more specific learning outcomes needs to be defined in relation to ethical and societal topics.

Assessment criterion for goal fulfilment, local outcome

Assessment criterion Goal fulfilment – local outcome
The education enables through design and implementation and ensures through assessment that the student, when the degree is issued, can achieve the selected local outcome.

Target

Master's Programme in Bioentrepreneurship
The student will demonstrate an in-depth understanding of and develop a reflexive approach to collaborations, relationships and networks in intercultural and interdisciplinary contexts, both locally and globally.

Describe, analyse, and evaluate. Outline the strengths and challenges, as well as how these are addressed to ensure high quality in the programme. Illustrate with examples. The description should be between 1-3 pages, using font size 11 and single line spacing.

Programme description:

One of the objectives of the bioentrepreneurship programme is for the graduates to be able to act as a bridge between the research and business of a life science company. To do this, one skill that needs to be trained is to collaborate and network with a diversity of professions, cultures and disciplines. The collaboration with not only companies and organisations in the life science sector but also other disciplines is at the core of the programme. Transferable skills like communication, project management and the ability to give and receive feedback contribute to shaping graduates that can collaborate, build relationships and networks.

In depth understanding collaborations, relationships and networks in intercultural and interdisciplinary contexts

The importance of understanding how to collaborate and network can be illustrated with a few examples. One inherent part of managing a project is to understand how to get the project group to work well together. Therefore, one intended learning outcome of the project management course is to "describe and evaluate theories on group dynamics and leadership". The students learn about this in two half day interactive workshops on group dynamics and psychological safety of teams respectively. As the course is short, there is no time to work on an actual project, so these workshops are then examined in the written exam. However, the skills are examined in other courses of the programme where the students work on projects ranging from a few weeks to 20 weeks for the degree project. Most courses in the programme include group assignment e.g. a market analysis projects based on a need from healthcare (Market Analysis) that is continued in the Product Development course. The Business Development course has the learning outcome "describe the essential elements for successful alliances between companies and external organisations active in the life science industry". Lectures and seminar discussion help the teams collaborate to analyse different company cases that the groups are assigned to work with. These examinations are a few examples of how different contextual (local/global) or interdisciplinary aspects (like the market analysis/product development project) are included in the programme. Another aspect of building professional relationships and networks is communication. The two communication courses in the programme are both directed at

effective communication, the first one with a focus on interpersonal communication (presenting, writing, giving and receiving feedback) and the other on more strategic, external communication. Both courses have learning outcomes directed at being able to communicate with different types of audiences, in alignment with the local examination goal of interdisciplinary, intercultural, local and global context. The intended learning outcome for the second course is to "Demonstrate different types of communication methods when communicating with external parties" and this is taught through lectures and self-studies of material available on canvas. The exam is a written communication strategy.

Again, the work-integrated courses further builds the understanding of different types of collaborations through the learning outcome "show skills such as cooperation, individual responsibility, project management and oral as well as written communication" where the project plan and midterm presentations are learning activities and the exam is in the form of an individual reflection on a critical incident as well as a report on the value that has been created by the student in the company.

As pictured in Table 5, the graduates perceive that they feel prepared to cooperate to a very high extent.

Table 5 – Answers to the Exit Polls 2022 and 2023 (response rate 43% and 62% respectively) on a 6-point scale: To a very small degree (1) – To a very high degree (6). SEM = Standard error of mean. Green or red colour indicates that the mean value is higher or lower than the KI mean +/- SEM for the other global programmes at KI.

Question	MBE mean value		KI mean value (+/- SEM)	
	2022	2023	2022	2023
I feel well-prepared for my future role's requirements to:				
cooperate	5,8	5,4	5,3 (+/-0,2)	5,4 (+/-0,2)
work with other professions	5,9	5,6	5,0 (+/-0,2)	5,1 (+/-0,2)
cooperate in diverse cultural environments	5,9	5,7	5,6 (+/-0,2)	5,5 (+/-0,2)

Reflexive approach to collaborations, relationships and networks in intercultural and interdisciplinary contexts

As future managers promoting a sustainable life science sector, the students should be able to reflect on their work and the impact is has on the company and employees. The practice of reflection (when the students reflect on what they have learnt and what that means) and reflexivity (where the students consider implications on what they have learnt and the wider impact on the context) are integrated into the whole programme. Reflective practice is introduced already in the first course through the learning outcome "Apply reflective and reflexive practices to learning in intercultural and interdisciplinary contexts". One of this course's five themes is "Entrepreneuring and reflexive practises" and the students are introduced to how to think and write reflectively through pre-recorded lectures, short exercises, discussions, and a theoretical self-study material. The context is worked on in a workshop on intercultural communication and through building on the students' interdisciplinary backgrounds. All these aspects are then integrated in a reflective learning journal that is written and submitted for formative feedback throughout the course before the final examining submission. Another course that has a reflective learning outcome is the second practical placement that asks the students to "reflect over one's own personal experience and individual contribution to the project" as well as to "reflect on the life science scene as a future workplace". The students have to reflect on their experience during the course. The exam is a reflection on a critical incident and also included in their project

report. Finally, the intended learning outcome "Reflect on the aim and use of different types of communication" in the first communication course also help assess this local examination goal. The learning activities are lectures and self-studies of material available on canvas. The exam is a written reflective learning journal based on what has been taught in the course.

Locally and globally

The programme starts with a workshop based on the book "The Culture Map" by Erin Meyer, professor at INSEAD, that focuses on intercultural communication from a business perspective. The experience of the programme management is that this workshop helps the students to form a common language and an understanding of the challenges they can meet regarding communication in their group and team projects. Given that both the students and teachers constitute a global and interdisciplinary group, this is an important workshop to set the tone for the programme. We want the students to know about and appreciate the diversity in the classroom and the opportunities for learning that they have. The faculty of the programme aims to facilitate for the students to learn from and with each other. The interdisciplinary aspects are clear from both the different backgrounds of the students (natural science, medicine, health sciences, engineering) and the fact that they take courses at a technical University (KTH) as well as one of the other university disciplines in the SSES collaboration (economics, design, music etc). The SSES courses also include students from all the six partner Universities.

Overall, a strength of the programme is that the major life science markets in the world are covered in the programme and not only the local context. For example, both markets and regulations in the EU and USA are used as examples during the programme for several reasons. These are the major markets in terms of value in the life science sector and represents the most likely labour market for the graduates. In addition, companies are more likely to launch their products on these markets. However, more focus on the broader global context including emerging markets is relevant. How to best incorporate this context needs to be further discussed to ensure a logical introduction and progression in knowledge.

Assessment panel's evaluation

Instruction
For each assessment criterion, the assessment panel should describe their evaluation under the following three headings below: **Under the heading Strengths:** The assessment panel should highlight the programme's strengths within the assessment criterion and briefly describe them, preferably in bullet points. **Under the heading Areas for improvement:** The assessment panel should identify areas that are assessed to need improvement and briefly describe them, preferably in bullet points. **Under the heading Evaluation:** The assessment panel should explain their assessment and motivate their conclusion. The evaluation should be specified in one of four levels of fulfilment: *Meets/Meets to a large extent/Meets to some extent/Does not meet*.
Strengths: The assessment panel recognizes that the self-evaluation provides good insight into the strengths related to the goal fulfilment of the local outcome. The committee highlights the following strengths that should be leveraged in the program's development: • Numerous educational activities are designed to support the goal. • There is a coherent and logical structure of activities that underpin the goal. • The interdisciplinary aspect is evident in the diverse pool of students, teachers, and course content. **Areas for improvement:** The assessment panel acknowledges that the self-evaluation shows awareness of the areas needed for improvement and emphasize the following areas for development: • There is a need for more specific learning goals related to collaborations and networks, as much of the learning currently depends on the student's approach in work integrated courses. • The program should place more focus on the broader global context, including emerging markets. • There should be a clearer progression in how students are supported to achieve the goal throughout the program. • Encouraging the development of cultural and language skills can increase students' employment prospects. **Evaluation:** Overall, it is the evaluation that the programme meets the requirements of the assessment criterion. The program effectively implements a wide range of activities supporting the goal, with reflection and reflexivity introduced in the first course and integrated throughout the entire program. While the program covers major life science markets, there is room for greater emphasis on the broader global context, including emerging markets. Additionally, ensuring a clearer progression in supporting students to achieve the goal will enhance the program's quality in terms of goal fulfillment. The local outcome is distinguished from other learning outcomes by its focus on reflexivity and

reflective practice in intercultural and interdisciplinary collaborations, relationships, and networks.

2.2 Assessment criterion Equal opportunities

Integrating equal opportunities into all levels of the education is a natural part of how KI should work in accordance with applicable laws and regulations. The goal of KI's courses and programmes is as expressed in Strategy 2030: "It must be ensured that the programmes provide the knowledge about gender, power and equal opportunities required to provide the conditions for equal health and social care".

Equal opportunities is an umbrella term for KI's work to promote equal rights, opportunities and obligations, and to counteract all forms of discrimination, harassment, sexual harassment, victimisation and exclusion. The Equal Opportunities area includes the seven grounds of discrimination established in the Discrimination Act (2008:567): sex, transgender identity or expression, ethnicity, disability, sexual orientation, religion or other belief, and age. In addition, the area of socio-economic background is also included in the equal opportunities work. Broadened participation, i.e. a student's opportunity to complete their studies regardless of their background and their circumstances, is also part of the equal opportunities work.

The integration of equal opportunities in KI's education will take place at three levels:

- Content – which means that equal opportunities is an area of knowledge that is taught and examined.
- Implementation – which means that equal opportunities characterise the pedagogy so that the teaching becomes inclusive and accessible.
- Design – which means that there is a structure for how and where equal opportunities are to be integrated, and that there is progression.

Assessment criterion Equal opportunities

An equal opportunities perspective is taken into account, communicated and anchored in the content, design and implementation of the education.

Describe, analyse, and evaluate. Outline the strengths and challenges, as well as how these are addressed to ensure high quality in the programme. Illustrate with examples. The description should be between 1-3 pages, using font size 11 and single line spacing.

Programme description:

Equal treatment if one of the focus areas of the programme and as such is integrated into the programme on different levels (see Figure 2). The programme management acknowledge that it is important for the students to have an awareness of equal opportunities and be confident in their professional attitude towards each other and towards future colleagues and collaborators.

Concerning content and design, there are several learning outcomes in the programme that are directed towards equal opportunities. The first course, as exemplified already, includes the learning outcome "Apply reflective and reflexive practices to learning in intercultural and interdisciplinary contexts" in which the intercultural aspect is taught partly through an intercultural communication workshop and the examination is a reflective learning journal.

As communication is a skill that is tightly connected to the ability to treat your peers and fellow citizens equal, the two communication courses have learning outcomes that touch upon equal treatment. The first communication course will be used as an example here as it focuses on interpersonal communication. The intended learning outcome "Reflect on the aim and use of different types of communication" is covered among other activities with lectures on different communication models and how to adapt your presentation to different audiences. The learning activities focus on the impact of the student's own communication and how that impact is dependent on several factors like age, gender, religion, socioeconomic factors and health status. The examination is a reflection on the specific weaknesses they have identified in their individual communication skills and an action plan on how they will work on improving using the models, theories and practical training that they have received during the course.

In the project management course, being able to work in teams and to value each team member's input is taught under the learning outcome "describe and evaluate theories on group dynamics and leadership". Multicultural aspects of team formation as well as differences in personal values are discussed. During a workshop about psychological safety, differences in demographic and cognitive aspects are discussed as well as how to work with and build on the strengths of different forms of neurodiversity that might exist in the team. In market analysis, one workshop centres around how to perform research observations and this workshop also address how gender and power differences might affect your data collection.

The work-integrated courses include the ability to have a professional attitude and in the first placement course the students are asked to "Reflect on personal experiences such as own responsibility and cooperation as well as the individual contribution to the project". One of the teaching activities is a seminar on discrimination and equal opportunities that is given by the coordinator for equal opportunities at KI. The seminar touches upon the student's professional behaviour as well as what and how to report any form of discrimination in their studies or during their practical courses. The final example is the degree project course that require the students to add a reflection in their final degree project on the equal opportunity aspect of their research projects and how they have considered gender and sex aspects in the sampling and analysis of their research data.

Although there are several examples where equal opportunities are integrated through content or design, this analysis reveals that there is no clear progression in this aspect. A first step to improves this is to invite all course directors to a discussion on the best logical order of equal opportunity knowledge. Another area for improvement is for all teachers to attend the Canvas KI course on Equal opportunities. The programme encouraged all teachers to attend the course during the quality council in 2023 and some but not all teachers have since completed this course.

With that said, the results from the exit poll (Table 6) show that the graduates perceive themselves to be well prepared for their future roles requirements to deal with aspects of equal treatment.

Table 6 – Answers to the Exit Polls 2022 and 2023 (response rate 43% and 62% respectively) on a 6-point scale: To a very small degree (1) – To a very high degree (6). SEM = Standard error of mean. Green or red colour indicates that the mean value is higher or lower than the KI mean +/- SEM for the other global programmes at KI.

Question	MBE mean value		KI mean value (+/- SEM)	
	2022	2023	2022	2023
I feel well-prepared for my future role's requirements to:				
Gender equality (female, male, non-binary) issues	5,8	5,4	5,3 (+/-0,3)	5,3 (+/-0,2)
Equal treatment based on ethnic background, religion, social class, age etc. shaping the world	5,8	5,3	5,3 (+/-0,2)	5,4 (+/-0,2)
Equal rights from LGBTQIA+ perspectives (Lesbian, Gay, Bisexual, Transgender, Queer, Intersex and	5,4	5,2	5,1 (+/-0,3)	5,3 (+/-0,2)
Equal treatment of people with functional variations (sensory, physical and cognitive abilities).	5,5	5,1	5,1 (+/-0,3)	5,2 (+/-0,2)

Implementation – equal opportunities characterise the pedagogy so that the teaching becomes inclusive and accessible.

Teaching in an inclusive way is a natural and important part of the pedagogical efforts in the programme and this is evident in many ways. First of all, KIs code of conduct is introduced and discussed during the first day of the programme. In addition, the studentombuds-persons and the study counsellor are invited to present themselves and information about support if you study with disabilities is included. The first day of the programme is rich in information so there is a Canvas activity dedicated to general programme activities and the presentation from this day is made available there for students to revisit if they want.

The teachers in the programme work according to KIs zero tolerance policy for any type of discrimination or harassment and the programme management act immediately on any ill conditions that we note or are made aware of. The teachers work actively to create an open and inclusive atmosphere in the classroom and are often available for discussion and input from the students. The programme management maintains an active dialogue with the different support functions at KI, most notably the study counsellor and the student wellbeing centre when there are signals that students or teachers are not treated well. The teachers also engage in active discussions on preventive actions to avoid any mistreatments to occur. In support of this, all teachers of the programme have been encouraged at the quality council in 2023 to take the canvas courses on student rights and how to make teaching accessible to everyone and at least one teacher has finished both courses. Before the end of 2024, all teachers are expected to have taken these courses.

To create an accessible learning environment, instructions and grading criteria are always made available on Canvas at the course start and are also presented during the course introduction. The students are encouraged to look at the grading criteria as an additional support for their learning. The teachers also use a number of different teaching and learning activities to accommodate to different learning styles e.g. gamification in the market analysis course, storytelling in the communications course and projects building on the Biodesign methods in the product development course. The aim is to adapt to different learning styles as well as to prepare the students for how they might work in the future. These efforts are reflected in the exit poll where graduates perceive that these aspects are met (see Table 7).

Table 7 – Answers to the Exit Polls 2022 and 2023 (response rate 43% and 62% respectively) on a 6-point scale: To a very small degree (1) – To a very high degree (6). SEM = Standard error of mean. Green or red colour indicates that the mean value is higher or lower than the KI mean +/- SEM for the other global programmes at KI.

Question	MBE mean value		KI mean value (+/- SEM)	
	2022	2023	2022	2023
Criteria for assessment of examinations were provided in advance.	5,5	5,8	5,3 (+/-0,2)	5,2 (+/-0,2)
A variety of teaching methods were used during the education in a way which encouraged me to be active in my learning (for example, lectures, seminars, practical skills training, e-learning).	5,7	5,8	5,2 (+/-0,2)	5,0 (+/-0,2)
I regularly received useful feedback on:				
Theoretical activities (lectures, group work, seminars, oral presentations / presentations, etc.)	5,9	5,6	5,3 (+/-0,2)	5,0 (+/-0,2)
Practical activities (e.g. on-site training, interprofessional learning).	5,5	5,1	4,7 (+/-0,3)	4,5 (+/-0,3)

The programme strives to streamline a lot of the structures and instructions throughout the programme to assure an inclusive and dependable context. All courses Canvas pages for example should have the same basic set up with numbered modules and accessible content according to the KI recommendations. This is however an area that can be improved as some courses are perceived to be less accessible than others according to student feedback. To make sure that the students have the same conditions with regards to instructions for assignments, the teachers have together developed a "students guide" to the programme. The guide instructs how all courses in the programme should structure their assignments e.g. have the same report formats and use the same reference system. The student guide also lists important resources at KI and have a section about academic writing and how to use sources effectively. Both students and teachers know that all courses have the same basic requirements for assignments and examinations creating a more inclusive environment. In addition, there is a "teachers guide" for the programmes' teachers to streamline the students' experiences regarding some practical issues like e.g. Canvas structure, policy on extra assignments for missed mandatory sessions, grading guidelines and feedback to students. In the case of feedback to the graduates in the exit poll perceive that they get useful feedback from the teachers as seen in Table 7.

Another way to encourage an equal learning environment is through the use of group contracts in learning activities and examinations that involve a group or team of students. The aim of the contracts is to encourage the students to consider each other needs and create a healthy collaborative environment. This is also why the students, during the first semester, learn how to give and receive constructive and structured feedback.

To visualise equal opportunities through the programme, we make a conscious effort to include examples of women since good examples in teaching as both medicine and entrepreneurship and with those also medical innovations, has traditionally been male focused. In the market analysis and product development courses, we have chosen to include e.g. femtech products and companies and other aspect of female health as examples of projects and products to consider in addition to the predominating ones.

Assessment panel's evaluation

Instruction
For each assessment criterion, the assessment panel should describe their evaluation under the following three headings below: **Under the heading Strengths:** The assessment panel should highlight the programme's strengths within the assessment criterion and briefly describe them, preferably in bullet points. **Under the heading Areas for improvement:** The assessment panel should identify areas that are assessed to need improvement and briefly describe them, preferably in bullet points. **Under the heading Evaluation:** The assessment panel should explain their assessment and motivate their conclusion. The evaluation should be specified in one of four levels of fulfilment: *Meets/Meets to a large extent/Meets to some extent/Does not meet*.

Strengths

The assessment panel recognize that the self-evaluation report demonstrates a good understanding of the educational strengths related to the equal opportunities, a view supported by the interviews. The panel emphasizes the following strengths to be leveraged in the program's development:

- Clear attention to the topic of equal opportunities
- Variety of teaching methods to accommodate to different learning styles of students.
- Lots of support and interaction with students to individualize support
- High availability of teachers if/when students need extra support (acknowledged also in interview with students)
- Clarity on criteria of exam assessments

The interviews confirmed these strengths.

Areas for improvement:

- No clear progression in this aspect of equal opportunities and there is a need to better understand the Why behind this to improve this score
- One consideration is to personalize the placement even more to secure equal opportunity
- Considering the variety in background and culture of the student – consider how to have conversations / support the students not asking for help
- Slow pace in ensuring teacher qualifications on the topic.
- Streamlined course structures and instructions throughout the program to ensure that the teaching becomes more inclusive and accessible.
- Feedback, follow up on language skills, cultural feedback – increase rate of employability in Swedish/Nordic life science sector.

Evaluation: Overall, it is the evaluation that the program meets to a large extent the requirements of the assessment criterion. The justification for that evaluation is that the program is clearly paying attention to equal opportunities and are planning improvements on the topic.

2.3 Assessment criterion Sustainable development

In their activities, higher education institutions must promote sustainable development, which means that present and future generations are ensured a healthy and good environment, economic and social well-being and justice.

Education conducted at KI should aim to contribute to improved health for all, which is an important prerequisite for sustainable social development. It is of particular importance that educational activities highlight the link between health, socio-economic factors and human environmental impact. In accordance with KI's climate strategy, by 2024 there will be intended learning outcomes in courses in all programmes at first and second cycle, which means that students will gain knowledge and skills about climate and sustainable development.

Students who graduate from KI must have worked with issues related to sustainable development and the UN's global goals during their education. It requires that the teachers have good knowledge in the area. Teachers need to teach about the goals and the underlying challenges. Students should also be challenged to develop an ability to create visions, use critical thinking, reflect on their own role in the development of society, apply systems thinking, create partnerships and be prepared to act.

> **Assessment criterion Sustainable development**
> Through design and implementation, the programme enables the student to have worked with issues related to sustainable development and the UN's Sustainable Development Goals (SDGs).

Describe, analyse, and evaluate. Outline the strengths and challenges, as well as how these are addressed to ensure high quality in the programme. Illustrate with examples. The description should be between 1-3 pages, using font size 11 and single line spacing.

Programme description:

The Master's Programme in Bioentrepreneurship includes aspects of sustainability, sustainable development and the UN Sustainable Development goals in several of the courses in the programme. There are three courses that have intended learning outcomes associated with sustainable development. In the market analysis course, the intended learning outcome is to "identify and compare global market environments and reflect on their sustainability". This is taught through a mandatory immersive gamification workshop where the students are led through a series of events where they are forced to make decisions that will ultimately affect the sustainability of the market they are working in. In this workshop the students get to practice handling complex systems, simulate decision making and experience the effects of "the tragedy of the commons". The workshop ends with a debriefing session in which the students get to reflect on the experience and their learning. The learning outcome is also examined in the written examination in the course. The business development course includes the learning outcome "identify factors that affect the conditions for a sustainable business". In the realm of bioentrepreneurship, sustainability of the businesses that the graduates are going to work in is key and the course includes lectures on corporate social responsibility and sustainability. The examination is an individual assignment where the students are asked to discuss either diversity or corporate

sustainability based on two scientific articles of their choice and reflect on how the chosen aspect can be applied in the context of business development. Finally, in the second work-integrated course, the learning outcome to "systematically and independently evaluate factors for sustainable business" is explored at the host company where the students interview a company representative regarding the company's sustainability approach. The examination is an individual report on value creation, where they reflect on the company's relation to at least one of the UN SDGs.

In addition to these courses that have directed learning outcomes towards sustainability, the students are required to reflect on how the research they perform for the degree project relate to the SDGs. This is part of the examination of societal effects in the learning outcome "analyse and critically evaluate the results of their scientific study in the specific research field of the project as well as from a broader scientific, societal and ethical perspective". This reflection is a mandatory part of the final degree report.

The programme has worked to better include content about sustainability in the courses over the last years. However, there is no clear progression in the way sustainable development is taught in the programme and this is an area for improvement. This is reflected in the exit poll results where the programme was on par with the other international programmes in 2021 but had a slightly lower value than the other international programmes in 2022 (See Table 8). The learning outcomes that have been included since these students graduated will hopefully lead to a better understanding of sustainable development among the programmes' graduates in the next coming exit polls.

When it comes to how the programme work to link health, socio-economic factors and the environment, this is weaker. Corporate sustainability in the life science sector inherently includes this but there are no learning activities directed at environmental or socio-economic factors. There are learning activities and assignments dealing with aspects of health equity though but the full alignment from learning outcome to examination is not as strong as it could be.

One strength is that sustainable development as a wider concept is examined in different ways throughout the programme. The different courses use the specific core content of the course and apply a sustainability perspective on this which makes it relevant to the students. If adding the wide KI definition including that the "students should also be challenged to develop an ability to create visions, use critical thinking, reflect on their own role in the development of society, apply systems thinking, create partnerships and be prepared to act" the programme is much stronger. These aspects are part of the pedagogical profile of entrepreneurial learning throughout the programme. How the programme works with these aspects have been reported in previous sections. The ability to use critical thinking is trained and examined in business case discussions and projects for example. Reflections on the students' role in society and systems thinking is required in several courses as part of their project work and individual reflections. The abilities to create partnerships and being prepared to act is trained through several different types of examinations, not least in the work-integrated learning.

The questions in the exit poll about critical thinking and the ability to work independently are included in Table 8. One reflection is though if the students perceive these abilities as being

part of the concept sustainable development and if so, if their perception are included in their response to the questions about being able to promote sustainability.

Table 8 – Answers to the Exit Polls 2022 and 2023 (response rate 43% and 62% respectively) on a 6-point scale: To a very small degree (1) – To a very high degree (6). SEM = Standard error of mean. Green or red colour indicates that the mean value is higher or lower than the KI mean +/- SEM for the other global programmes at KI.

Question	MBE mean value		KI mean value (+/- SEM)	
	2022	2023	2022	2023
I feel well-prepared for my future role's requirements to:				
critically review information	5,5	5,2	5,3 (+/-0,2)	5,3 (+/-0,2)
work independently	5,8	5,5	5,5 (+/-0,2)	5,4 (+/-0,2)
solve problems independently	5,8	5,2	5,3 (+/-0,2)	5,1 (+/-0,2)
promote sustainable development	4,6	4,3	4,7 (+/-0,3)	4,7 (+/-0,3)

When it comes to the teacher's preparation to teach sustainable development, one teacher has completed the KI Canvas course on how to get started teaching the SDGs and Sustainable development. Another teacher attended a workshop at KI in the fall of –23 called "Teaching Planetary health and Sustainable Healthcare in Higher Education". In addition to working on the implementation of sustainability as mentioned at the beginning of this section, all teachers in the programme will be expected to take the canvas course on how to get started with teaching the SDGs. Given that there is plenty of material available at the KI website that can be integrated in the programme, a plan will be made on what to use and where it should be implemented. This needs to be done in a way that promotes progression and the programme will ask for support from the KI group on sustainability on how to best go about doing this.

Assessment panel's evaluation

Instruction
For each assessment criterion, the assessment panel should describe their evaluation under the following three headings below: **Under the heading Strengths:** The assessment panel should highlight the programme's strengths within the assessment criterion and briefly describe them, preferably in bullet points.   **Under the heading Areas for improvement:** The assessment panel should identify areas that are assessed to need improvement and briefly describe them, preferably in bullet points.   **Under the heading Evaluation:** The assessment panel should explain their assessment and motivate their conclusion. The evaluation should be specified in one of four levels of fulfilment: *Meets/Meets to a large extent/Meets to some extent/Does not meet*.
Strengths: It is the assessment panels impression that the self-evaluation deals with sustainability in a good and convincing way. The assessment committee want to highlight the following strengths. • Sustainable development as a wider concept is examined in different ways throughout the programme. • Educational tools on sustainable development are available.

- Varied aspects of sustainability are included in several courses.

Areas for improvement:

It is the impression of the assessment panel that the self-evaluation does address below areas for improvement to some extent, but the panel is suggesting the following improvement

- There is no clear progression in the way sustainable development is taught in the programme. This may be achieved through a more focused coordination of the contents of the individual courses.
- Need for more learning objectives relating to sustainable development in the individual course descriptions.
- Relatively weak student scores on promoting sustainable development reflect the need for more coordinated activities.
- Knowledge about teaching sustainable development appear limited to some extent among teachers.
- More learning activities directed at environment and socio-economic factors may improve the programme.

Evaluation: Overall, it is the evaluation that the programme meets to a large extent the requirements of the assessment criterion. The justification for that evaluation is that the self-evaluation and the conducted educational activities addresses the sustainable development topics in multiple ways, but more specific learning outcomes may be defined in relation to ethical and societal topics.

2.4 Assessment criterion Follow-up, measures and feedback

In order to ensure that an education is of high quality in both the short and long term, follow-up of the education's design, implementation and results is required. It concerns how follow-up, action and feedback routines in the systematic quality work at the educational level contribute in a systematic way to ensuring and developing the quality of the programme. The self-evaluation must describe how the various parts of the programme are continuously followed up and how the results are taken care of. An important part of taking care of results from follow-ups is to inform interested parties such as teachers, supervisors and students about any measures and changes to strengthen the quality and the continuous learning.

The assessment criterion for follow-up, measures and feedback also includes how those responsible for the programme work with student completion. The programme should therefore describe its analysis of student completion of the programme and the drop-outs that occur. The programme must also describe the measures taken and the support provided, if necessary, to create the conditions for students to complete the education within the planned study time.

> **Assessment criterion Follow-up, measures and feedback**
>
> The content, design, implementation and examination of the programme are systematically monitored. The results of the follow-up are translated into quality development measures as necessary, and feedback is given to relevant stakeholders.
>
> The programme works to ensure that the student completes the education within the planned study time.

Describe, analyse, and evaluate. Outline the strengths and challenges, as well as how these are addressed to ensure high quality in the programme. Illustrate with examples. The description should be between 1-3 pages, using font size 11 and single line spacing.

Please note that the assessment criterion has two parts, quality work and student completion, and both must be included in the programme's report.

Presentation of Quality Assurance of first and second cycle education at KI – central level
The quality assurance system for first and second cycle education at KI runs in annual cycles, with some components included each year while others are implemented at longer intervals. The system thus also allows for flexibility in question formulations, themes and priorities between years. Overall, the system's components for quality assurance routines, regulations, follow-ups, reviews, feedback and improvement, ensure continuous improvement of the education. In order to improve and develop the programmes, the education assignment at the departments is followed up annually. The feedback forms the basis for development and ensures that KI's educational activities are of high quality. The feedback consists of a number of questions within a strategic selection of the areas that the Committee for Higher Education identifies as important for the quality of education. The questions vary from year to year and over time new areas may be added. The purpose of the questions is to stimulate the quality development process locally and to provide KI's management with a basis for following up, developing and assuring KI's educational activities.

The reporting of the education assignment is supplemented by quality plans at department level and programme level according to established templates, which is a tool for quality development at each level.

In order to clarify what the committee responsible for the programme expects from the department responsible for the course in terms of implementation and quality development of courses, course assignments within programmes must be established. After each course occasion, the department responsible for the course must carry out a final course evaluation. Based on the results of the course evaluation, the course coordinator must carry out a course analysis.

Perceived quality – Recurring surveys
1.   **A survey** is conducted every two years among students who are just starting their studies on one of KI's programmes
2.   **Course evaluations** consists of five mandatory questions, which provides an opportunity to follow the quality development over time and make comparisons between different courses and programmes. It is also possible to add programme- and department-specific questions.
3.   **Practical placement (VFU) survey**, measures student experience of the learning environment, supervision and work with patients (clients in clinical education) in health care.
4.   **The student barometer** is conducted every four years through focus panel interviews. The aim is to provide strategic guidance to build student' engagement in studies and for KI.
5.   **A graduate questionnaire (exit poll)** is sent to all programme students in connection with the completion of their education.
6.   **Alumni survey** is conducted every four years among alumni who graduated three years earlier.

7. **Stakeholder survey**, conducted by the programmes every four years. The purpose is to investigate whether KI's educational programmes correspond to the needs of the labour market, i.e. whether recent graduates have developed useful skills.

8. **The "Equal Opportunities" survey** is planned to be carried out every four years from 2022, the aim is to measure student experience of risks of discrimination, harassment, sexual harassment, reprisals and victimisation in order to obtain a basis for following up and evaluating KI's work to prevent discrimination and work for an inclusive and good work environment for students.

Peer review and learning

1. In addition to our own analyses, peer review and learning is an important component of improvement and development work. Peer review and learning concerning quality plans is carried out every spring.

Programme description:

The Master's Programme in Bioentrepreneurship belongs to the Department of LIME and its educational committee and it is to this committee that the programme reports all quality measures and progression of education. Follow up is initiated on many different levels throughout the programme, the most frequent ones being the course evaluations. In addition to the five mandatory KI questions, the programme has added another 8 questions that have been developed together with the evaluation unit at KI (See Table 9).

Table 9 – The eight programme specific questions in the course evaluation and the reasoning to why the programme management has chosen to monitor these questions.

Programme specific question	Reasoning
I was given the opportunity to reflect on what I have learned during the course	This question aims to see if the programme meets its vision of giving the students time to reflect during their studies to promote personal development.
The course developed my ability to search for data and scientific evidence	These two questions investigate if the students perceive that they get taught scientific methods (one of the focus areas of the programme). These questions are very important as there is no dedicated course teaching scientific methods in the programme but rather that we have a continuous focus on these aspects throughout the programme.
The course developed my ability to use scientific methods	
There was a good atmosphere during the course	These two questions are added to monitor the student's health and wellbeing in the courses. For this reason, these questions are not only rated 1.5 but also have free text options to encourage the students to share their thoughts with the programme management.
The psychosocial environment during the course was good (psychosocial environment includes among other things well-being, support, stress, equal treatment and discrimination)	
Relevant ethical issues were discussed during the course	Ethics is another focus area of the programme and these two questions aim to assess if the students perceive that they get to learn and practise ethical issues.
The course helped me prepare to deal with the ethical considerations I might face	
Please describe how the course could be improved. Be as constructive as possible	This question only has free text answers and is very informative for the teachers and programme management as it gives an indication of what areas of each course that could be improved.

All course evaluations are analysed by the course director and uploaded to the course webpage. In addition, the results of the evaluation and the course director's analysis are shared with the students in the class as well as reported at the beginning of next year's course together with any changes that have been made based on the evaluation. Reporting the results from previous years course and any changes that have been made in response to the student feedback is important as a tool to encourage the students to answer the surveys. The response rate varies between courses, for the academic year between 41-89% with a mean response rate of 63%. The programme strives for a response rate of at least 70% on average to have results reflecting most of the students in the class and avoid response bias. One way of encouraging the students to respond to the surveys is to report how we use their feedback. Another way that the programme finds effective is for the course directors to send out personalised reminders in addition to the automatic reminders from the survey system. The addition of a personalised message seems to affect the repose rate positively. In summary, the programme works hard to get the response rate to a more consistent high level, but it has proven to be somewhat challenging.

In general, courses include a course council where the students' feedback is collected and discussed in the classroom. Some courses are very short though (less than 4 credits) and for these courses, there is no requirement to have a course council as it has been indicated that this lowers the response rate to the course survey. It is fair to assume that the students do not see the need to add more feedback only days after a course council.

Twice a semester, the programme management calls to programme councils. One of these meetings is devoted to discussing the course evaluations of the previous semester. The student representative and the class representative from each class (one form the first year and one from the second year) are members of the programme councils. These students are responsible for summarizing and reporting their view on the courses based on the course evaluations and the teacher's analysis as well as additional comments from the students. The second programme council is dedicated to revisions of course syllabi and analysis of exit polls and other evaluations. Both meetings have a point on the agenda for the student and class representatives to add any other student input that they have collected. All course directors as well as the study counsellor and the programme administrator are invited to the programme councils. The discussions at the programme councils serve as a basis for the development of the courses and the programme. They also serve as important input for the yearly quality plan in addition to course evaluations, the exit poll and other general feedback meetings with students, alumni and stakeholders.

Two times a year, all teachers of the programme as well as the programme administrator and the study counsellor are invited to quality councils. The primary aim of these meetings is to have pedagogic discussions on proposed course and programme improvements based on the material collected at programme councils, surveys and general discussions. Sometimes, guests are invited to add expertise into the subject that is discussed. For the most part, these meetings also involve working on action points from the yearly quality plan. One of the quality councils is a lunch-to-lunch meeting and the other a full-day meeting. These meetings provide an important opportunity for the teachers in the programme to build a connection between their courses and contributions to the programme. The close working relationships between the teachers is a strong positive aspect of the programme.

Given the focus on work integrated learning, the programme has developed a survey specifically directed to the companies that host students during the work-integrated courses. The survey includes five questions that have been designed together with the evaluation unit at KI. The questions concern the company's expectations on the students, if the expectations were fulfilled and why/why not, strengths and areas for improvement of the students and if they would recommend other companies to host students in work-integrated courses. The result from the survey is not shared with the students directly but serve as a basis for the course director to collect information on how to further develop and strengthen the course and the process for collaboration with the companies.

The results of the alumni survey will be discussed in section 4.4 - working life and collaboration.

Student completion rates
Looking back at the completion rates for students that start the programme, the average over the last five years is 87% (see Table 10). In general, there are two main reasons why students do not complete the programme (defined as they are not eligible to apply for their diploma). The most common reason is that they do not complete their degree project course i.e. they do not submit a final report assessed as the grade Pass or higher. This is mainly due to the student getting a job offer or to personal reasons mostly related to their psychological wellbeing. Fortunately, the rate of students that does not finish the degree project due to personal reasons has decreased after the implementation of the new programme curriculum. The focus area "scientific methods" was added to better prepare the students for the degree project and this seems to have had a positive effect. The second most common reason is that the student is not eligible to continue the programme. When this happens, there is always an active dialogue with the student, the programme management and the course counsellor. Efforts are always made to refer the students to the support functions that are available for the students at KI e.g. the student wellbeing centre, support for students with disabilities etc. During the analysis of the completion rate, there were two reasons that were found to cause the problems with continuing the programme. Half the students did not complete the courses due to issues with their psychological wellbeing and the other half, due to problems with passing examinations. Out of these students, one will be returning to their studies in the fall of 2024.

For two classes of students, the dropout rate was slightly higher than previous years due to the Covid pandemic. The students that started in 2018 had an unusual high rate of students that did not complete the degree project (spring 2020) and the class that started in the fall of 2020, during the close-down, had a high dropout rate in the first semester due to Covid affecting both the students and their families.

Table 10 – The completion rate of students during the last 5 years. The new programme curriculum was implemented in 2020. *Intends to take degree project course in 2025

Year of start	Nr. that started programme	Nr. eligible to apply for diploma	Reason for not completing programme
2021	29	27 (93%)	1 not eligible to continue the programme 1 started working after third semester* 1 did not complete degree project
2020	35	29 (83%)	4 due to Covid related issues 1 pregnant 1 did not complete degree project
2019	38	33 (87%)	1 pregnant 2 not eligible to continue the programme 2 did not complete degree project
2018	30	25 (83%)	2 started working after third semester 3 did not complete degree project
2017	29	26 (87%)	1 not eligible to continue the programme 2 did not complete degree project

Assessment panel's evaluation

Instruction
For each assessment criterion, the assessment panel should describe their evaluation under the following three headings below: **Under the heading Strengths:** The assessment panel should highlight the programme's strengths within the assessment criterion and briefly describe them, preferably in bullet points. **Under the heading Areas for improvement:** The assessment panel should identify areas that are assessed to need improvement and briefly describe them, preferably in bullet points. **Under the heading Evaluation:** The assessment panel should explain their assessment and motivate their conclusion. The evaluation should be specified in one of four levels of fulfilment: *Meets/Meets to a large extent/Meets to some extent/Does not meet*.
Strengths: The assessment committee acknowledges that the self-evaluation demonstrates good insight into the strengths related to the assessment criterion: follow up, measures, and feedback, an observation corroborated with the interviews. The panel emphasizes the following strengths to be leveraged in the program's development: • The programme employs a very systematic approach to evaluations, ensuring a comprehensive and structured assessment of educational activities. • A practical placement survey that collects detailed feedback on company expectations, fulfilment of those expectations, strengths and areas for improvements of students, and recommendations for other companies. This proactive approach ensures alignment with industry needs and provides valuable

data to further develop and strengthen the course and collaboration protocols with companies.
- The results of the evaluation are regularly shared with students, promoting transparency and continuous improvement.

Areas for improvement:

The assessment panel notes that the self-evaluation report shows awareness of areas needing improvement, as confirmed by the interviews. The panel highlights the following areas for improvement:

- There are inconsistent time intervals for follow ups, with some surveys occurring every four year and others annually. Regular and timely feedback is important for improving and assuring the quality of educational activities.
- Providing information on survey response rates is needed to gauge the reliability and validity of the feedback collected.
- A better description of the purpose and content of the alumni survey is needed.
- Conducting interviews with company mentors (in practice placements and the master thesis) can help ensure the educational programme aligns with the needs of the life science market.

Evaluation: Overall, it is the evaluation that the programme meets to a large extent the requirements of the assessment criterion. The justification for that evaluation is the that the programme undertakes an ambitious evaluation effort, systematically monitoring and sharing results to drive continuous quality improvements. However, ensuring consistent follow-up intervals, detailing survey response rates, clarifying the alumni survey survey's purpose, and regularly engaging with company mentors will further strengthen the program's quality work and support student completion.

3 Assessment area: Student perspective

3.1 Assessment criterion: Student perspective

The student perspective concerns the actual student influence in their education, both formally and informally. Formal influence means, amongst other things, student representation in various bodies and platforms. It is relevant how students participate in decision-making processes, including the preparation of issues related to the education, and what the information channels look like to reach out to students so that they can take an active role in the work of developing the education.

Student influence is also about individual influence, that which is more informal and that concerns the individual student, e.g. what the work looks like so that a student can take an active part in developing their education and their learning processes. The programme should describe a student's opportunities to participate in the quality work of the programme and in the development of the programme, as well as describe the information channels available to pick up and take student views into account.

> **Assessment criterion: Student perspective**
> The student is given the opportunity to take an active role in the work of developing the content and implementation of the education.

Describe, analyse, and evaluate. Outline the strengths and challenges, as well as how these are addressed to ensure high quality in the programme. Illustrate with examples. The description should be between 1-3 pages, using font size 11 and single line spacing.

Presentation of the organisation of student influence at KI
The students are co-actors in the university's QA-activities and thus also have a shared responsibility in influencing and developing the education. In order for student influence to be realised, students are expected to take an active and committed role both as individuals and as a collective. A prerequisite for this is that the students' views, opinions and suggestions are asked for and met with respect. KI has a responsibility to facilitate and encourage the students' involvement in the development work.

KI's management meets regularly with the student unions for information exchange and consultation. At these meetings, it is discussed how student influence and collaboration with the student union works formally and in practice. In order to create a good study environment, it is required that the students' views on the education and the study environment are taken into account. The Academic Vice President for first and second cycle education meets regularly with representatives of the student unions for information exchange and consultation on these issues.

To ensure that student influence is realised at all levels, an agreement is reached annually between KI and the student unions on how student influence is to be secured in the bodies that deal with issues relating to education or the students' situation. The student unions are responsible for allocating places between the unions, conducting elections/appointing student representatives and that a gender equality perspective is taken into account. The student representatives who are appointed represent all students regardless of level of education, programme affiliation or union membership.

Programme description:
The contribution and influence of students are an important part of the quality work of the programme as already described to some extent in chapter 2.4 - follow up measures and feedback.

Formal influence
The formal student influence consists of the student representatives in the LIME educational committee. The Educational Committee at LIME has the responsibility for all education at the department, including three global M's programmes, free-standing courses and executive education. The committee includes three student representatives that are elected by the Medical Union. The student representatives have voting rights at the educational committee meetings. and they are tasked to represent all education at the department regardless of programme or course. The representatives have a standing information point on the agenda for the committee meetings where they can raise questions on student issue on a more overarching level. Problems pertaining to specific courses or programmes should be dealt with by the responsible course director or programme director as a first instance and only if the students fail to get a result from that contact, should they be brought to the committee. For many reasons, it is beneficial to have students representing all three global master's programmes in the committee. However, this has not always been the case. To encourage the students of the bioentrepreneurship programme to apply for the position as student representative, the public health section of the student union is invited on the first day of the programme to inform about routes of influence and how to get involved in the union work.

In addition to the student representative one class representative is always elected from each class. The class representatives are focused on issues in the bio entrepreneurship programme specifically and are responsible for their class respectively. The previous class representative is responsible for the election of the next class representative without involvement of any staff. These class representatives, and if applicable the student representative from the programme, meet with the programme director regularly over the semester to discuss any issues or feedback from students that can be helpful for the programme director to act upon. The class representatives and student representative are also part of the programme councils twice a semester. In the programme council, the students are included in the planning and decisions about revision of course plans and the analysis of course surveys, exit polls and other relevant quality measurements. In addition, work with the yearly quality plans and other student-initiated issues are also discussed.

Individual influence
There are a multitude of routes for individual student influence in the programme. The most structured way of gathering individual student feedback is through the course evaluations. As described in Table 9, one of the eight programme-specific questions is "Please describe how the course could be improved. Be as constructive as possible". This question aims to give the students the opportunity to describe suggestions for improvements in free text with their own words, which is very valuable to the course directors and programme management. All course surveys (without free text answers) are published on the open course web pages for open access.

The teachers in the programme work to promote a safe and inclusive environment for the students and include to the students in the development of the courses. One way of promoting individual influence is the course council that is held about mid-course for all longer courses (more than 4 credits), to be able to collect the students feedback on the current course and if possible, adapt to feedback. The programme management and the teachers all strive to encourage the students to share feedback, weather through individual meetings, emails, contact with course administration or through the programme counsellor. All routes of contact are welcomed as long as the dialogue is mutually constructive and respectful. Overall, the students of the programme are active and engaged in their studies as well as extracurricular activities in the student union and other types of boards and committees. Their engagement and drive are inspirational, and the programme regularly receives positive praise on the students' efforts from companies and organisation.

In all course surveys, one of the common KI questions is "In my view, during the course, the teachers have been open to ideas and opinions about the course's structure and content.". For the 22/23 academic year, the average answer to this question was 4,0 on a 5-grade scale (values ranging from 3,5 to 4,8 in individual courses) when the values were compiled for all courses in the programme. This indicates that the students perceive that they are able to give feedback to the teachers and that they are listen to. This result is further supported by the results of the exit polls in Table 11.

 Table 11 – Answers to the Exit Polls 2022 and 2023 (response rate 43% and 62% respectively) on a 6-point scale: To a very small degree (1) – To a very high degree (6). SEM = Standard error of mean. Green or red colour indicates that the mean value is higher or lower than the KI mean +/- SEM for the other global programmes at KI.

Question	MBE mean value		KI mean value (+/- SEM)	
	2022	2023	2022	2023
Over the course of the education, I received information on my opportunities to influence the programme's courses.	5,2	5,3	4,8 (+/-0,3)	4,7 (+/-0,3)
I was encouraged by the teachers to participate in the development of the courses in the programme.	5,3	4,9	4,7 (+/-0,3)	4,6 (+/-0,3)

Assessment panel's evaluation

Instruction

For each assessment criterion, the assessment panel should describe their evaluation under the following three headings below:

Under the heading Strengths: The assessment panel should highlight the programme's strengths within the assessment criterion and briefly describe them, preferably in bullet points.

Under the heading Areas for improvement: The assessment panel should identify areas that are assessed to need improvement and briefly describe them, preferably in bullet points.

Under the heading Evaluation: The assessment panel should explain their assessment and motivate their conclusion. The evaluation should be specified in one of four levels of fulfilment: *Meets/Meets to a large extent/Meets to some extent/Does not meet*.

Strengths

The assessment panel recognize that the self-evaluation report demonstrates a good understanding of the educational strengths related to the student perspective, a view supported by the interviews and by the student interviews.
The panel emphasizes the following strengths to be leveraged in the program's development:

- Systematic approach for getting student feedback.
- A gender equality perspective is considered in appointing student representatives.
- Active encouragement among students to apply for positions as student representatives in the student union
- Active encouragement among students to apply for positions in the educational committee.
- Sufficient feedback opportunities to teachers and the feedback are taken in and have an impact. The students really felt that the teachers are very open, much dialogue and really listens
- Students highlighted that their teachers are very available and always take the time to listen and support

The interviews confirmed these strengths.

Areas for improvement:

- Perhaps organize a program strategy meeting with the participation of student representatives

- Formative feedback from students through mid-term evaluation.
- Contacts with companies could be broader and regular meetings with teachers and companies to evaluate and reflect together to improve
- The assessment panel have a consideration around having more career advice and encourage students / support them in building network. The students should be encouraged to invest in this last year. Important to have a systematic approach and invite companies and other placement mentors to actively participate in this (coaching, network, and sharing job opportunities) .

Evaluation: Overall, it is the evaluation that the programme meets the requirements of the assessment criterion. The justification for that evaluation is that programme in different ways is active in obtaining student feedback.

4 Assessment area: Working life and collaboration
4.1 Assessment criterion Working life and collaboration

Working life and collaboration concerns whether the education is useful in the labour market and in what way the education prepares the student for a changing working life. This means that after graduation, a student should be able to use the knowledge and skills that the student has gained through their education and develop them throughout their professional life and in different work contexts. This requires that the student acquires both subject-specific knowledge and general skills and abilities during the education. Within this assessment area, the programme shall describe the way in which the education is updated and adapted to working life, and in what way information is obtained that is relevant to the quality assurance and development of the education regarding the education's usability and preparation for working life. The programme should also describe how collaboration with the surrounding society takes place in order to ensure high quality in the education. This assessment area also includes how the programme works to utilise alumni's experiences in the development of the programme.

> **Assessment criterion Working life and collaboration**
> The programme is designed and implemented in such a way that it is useful and develops the student's preparedness to meet changes in working life. Relevant collaboration takes place with the surrounding community.

Describe, analyse, and evaluate. Outline the strengths and challenges, as well as how these are addressed to ensure high quality in the programme. Illustrate with examples. The description should be between 1-3 pages, using font size 11 and single line spacing.

Programme description:
The fact that the programme was initiated as a response to an industry need for people with a competence in natural science coupled with skills and knowledge about the specific conditions that prevail in the life science sector is a good testimony to the relevance the programme has for working life. Since its inception, the programme has been designed and developed to ensure that the graduates are relevant, something that has also resulted in changing the programme's focus in response to the changing market needs. At the start, the

major focus of the life science sector was small molecule pharmaceuticals which has since changed into orphan drugs, biologics and further into a bigger focus on medical technology and digitalisation of health solutions. Given that the students engage with the surrounding life science sector through courses and work-integrated learning, the programme gets insight into what the current focus of the sector is. The subjects of projects during the programme are a good indication of what is going on in the sector e.g. changing regulations, new technological break throughs and the overall market focus of the life sciences.

The programme has built a strong and valuable connection to the stakeholders in the life science sector. In more or less all the courses, external actors are invited to share their perspectives in the form of lectures and workshops. For example, in the market analysis course an experienced marketeer from the MedTech industry shares their knowledge on market research for the life sciences, a market access expert shares know how from the pharmaceutical industry etc. Another example is from the product development course where relevant stakeholders give expert feedback to the students as they pitch their projects. These types of connections between the academic programme and the life science sector ensure that the theoretical components are relevant within the areas that the students will be employed.

The curriculum is designed with core and skills courses tailored to equip the graduates with the specific abilities to understand how to manage and develop companies or projects in their future working life. The strong network of companies in the sector grants the students' relevant professional experiences through the mandatory work-integrated courses.

In the work integrated courses there is a structured process for the collaboration with companies and organisations. This set-up ensures that students can apply their theoretical knowledge in a practical environment. One of the teachers in the program holds the role of External Relations Officer (ERO) and maintains a robust relationship with companies and organisations in the life science sector, not only in the Stockholm Uppsala region but also other parts of Sweden as well as internationally. The ERO is in contact with all companies and organisations in preparation for the first placement to make sure that the projects are suitable and that the external supervisors are well-qualified for their task and aligned with the programme's objectives. In addition, all students have a meeting with the ERO to discuss expectations and preferences e.g. if the student prefers to have an office place in the company or if it is ok to work remotely, if they have a preferred sector of the life sciences that they want to work in. The network of companies and organisations is large and the ERO estimates to have been in contact with 250 companies in the last couple of years, both locally and globally, However, the global connections are quite few, and this is an area of improvement that the programme will work on.

For the second placement and the degree project, the students are expected to be confident enough to reach out to companies themselves. However, many companies choose to submit project ideas to the ERO for distribution to the students after an initial scan of the appropriateness of the projects. If the student finds company that is not known to the programme, the ERO contacts them to assure that they align with the programme objectives and expectations. The students are also doing their degree projects in collaboration with companies or organisations and in those cases, the course director scans all projects to assure that they are suitable for a research project.

The examination of the work integrated learning courses focuses on the student's ability to use their knowledge and skills from the courses in the programme and therefor it is an assignment that is graded and not the performance in the placement. For that reason, these courses are only graded Pass/Fail while all other courses in the programme have a three-grade scale. (Pass with Distinction/Pass/Fail). Although the project specific supervisor in the company does not grade the students, they evaluate the student's contribution to the company in relation to the company's expectations and reflects on the value brought to the company.

During the years 2020-2023, the students have collaborated with 125 companies or organisations. A small sample of anonymised projects that the students have worked with on their two work-integrated courses (not degree project) are:

- Medical need analysis and new product positioning of diverticulitis treatment and its business potential for "small company"
- Understanding access models in low- and middle-income countries
- Understanding the cost on society for untreated postpartum health issues for "Start-up company"
- Horizon scanning for "big MedTech company" – unmet medical needs and interventions in cancer care
- Market analysis for "big pharma company´s" new product for disease x

A quote from a collaboration during the fall semester 2023 is indicative to the satisfaction by our industry partners "*We are also very satisfied and always impressed by the high quality of the students' work and how quickly they familiarize themselves with complex areas. They are stars!*"

To give a brief idea of the rate of employment of the students from the last two years, the LinkedIn profiles of the graduates were analysed for when they posted their first employment, counting from the semester they started their degree project. The results can be seen in Table 12. The turbulent situation in the world might have affected the numbers which will be further discussed in the "other aspects" section.

Table 12 – Table of rate of employment (in relevant positions) after graduation for graduates from 2022 and 2023. The numbers have been sourced from the LinkedIn updates of the graduates. NOTE that 2 graduates from 2022 could not be found on LinkedIn and have been excluded.

Graduate year	Graduates	Pre-graduation	within 3 months post grad	within 6 months post grad	Within 8 months post grad	No LinkedIn update
2022	25	4,3%	43,5%	52,2%	N/A	N/A
2023	26	11,5%	34,6%	30,8%	7,7%	15,4%

Alumni connection

The programme has a strong connection with the alumni, and every year alumni are invited as guest lecturers, inspirational speakers as well as supervisors for work-integrated projects within companies. The programme also manages an active alumni LinkedIn page (with 346 members) as well as other social media channels in order to uphold relations with alumni. The alumni network also serves as a venue where alumni and teachers share job ads and other opportunities from companies looking for talents. Several alumni have employed new graduates in their companies.

In the KI alumni survey that was conducted in 2021, graduates from 2016 were targeted (5 years after graduation). One third of the programmes graduates from that year were included in the survey population (N=10 but 30 students graduated) probably due to lack of contact information. Out of the 10 who got the survey, 100% answered. According to the results, they all worked in an area relevant to their degree in bioentrepreneurship. 22% got employed before graduation and another 56% had gotten employed within 3 months. The last 22% were all employed within 6 months.

Assessment panel's evaluation

Instruction
For each assessment criterion, the assessment panel should describe their evaluation under the following three headings below: **Under the heading Strengths:** The assessment panel should highlight the programme's strengths within the assessment criterion and briefly describe them, preferably in bullet points.   **Under the heading Areas for improvement:** The assessment panel should identify areas that are assessed to need improvement and briefly describe them, preferably in bullet points.   **Under the heading Evaluation:** The assessment panel should explain their assessment and motivate their conclusion. The evaluation should be specified in one of four levels of fulfilment: *Meets/Meets to a large extent/Meets to some extent/Does not meet*.

Strengths:
The assessment panel recognizes that the self-evaluation provides good insight into the strengths related to working life and collaboration, which is also confirmed by the interviews. The panel emphasizes the following strengths to be leveraged in the program's development:

- There is a robust connection and engagement with the life science industry within the programme. This ensures that the program remains relevant and provides students with practical insights and opportunities that align with current industry needs.
- The programme has an External Relations Officer System in place to ensure well-functioning placements for students.
- The programme maintains a strong connection with its alumni. A strong alumni network supports ongoing professional development and provides students with networking opportunities and mentorship.

Areas for improvement:

The assessment panel notes that the self-evaluation shows good insight into areas needing improvement, as confirmed by the interviews. The panel particularly would like to highlight the following areas for development:

- There needs to be a more systematic approach to obtaining information about graduate positions in companies from alumni data. Systematically collecting and analyzing data will provide valuable insights into graduates' career paths and the program's effectiveness in preparing students for the job market. The assessment

panel therefore propose the program to consider doing this for the program as a complement to the central KI survey/data collection.

- Better description of how collaborations are assessed to ensure high quality and a good fit. Clearer assessment criteria for collaborations will help ensure that partnerships remain beneficial and aligned with educational goals.
- Developing long-term plans for how to utilize alumni experience in the program's development. Leveraging alumni experience can provide insights for continuous improvement and help adapt the curriculum to meet evolving industry standards.
- Increasing the number of global connections with life science companies will enhance students' international perspectives and better prepare them for a globalized job market.

Evaluation: Overall, it is the evaluation that the programme meets to a large extent the requirements of the assessment criterion. The justification for that evaluation is that the programme engages strongly with the industry and alumni, providing students with valuable connections and practical experiences. However, improving the systematic collection of alumni job data, clearer collaboration assessments, long-term alumni engagement strategies, and increasing global industry connections will further enhance the program's relevance and effectiveness in preparing students for a dynamic working life.

4.2 Assessment criterion Internationalisation

According to Chapter 1 § 5 of the Higher Education Act, the overall international activities at each university shall contribute to strengthening the quality of education and research, as well as promoting sustainable development both nationally and globally in the areas of higher education. The challenges of the future are global and must be solved in collaboration across national borders. Working in healthcare, in business or in academia requires intercultural competences. KI therefore has a responsibility to prepare all students for global citizenship, i.e. a global social responsibility and an ability and willingness to contribute. This requires a well-integrated education in global health and training in intercultural competences.

Internationalisation at home (IaH), which involves integrating intercultural and global perspectives into education, provides good conditions for sustainable and integrated internationalisation that reaches everyone. This can be done, for example, by utilising and sharing the experiences of students and teaching staff from different international contexts. The environment at KI is international and this in itself can be used as a resource. The rapid development of digitalisation offers great opportunities for international teaching without physical travel, for example through guest lectures digitally or group work online with students from partner universities. However, mobility remains an important part of internationalisation and programmes should actively create opportunities for this. Teaching in English provides an opportunity to receive and integrate exchange students and local students, but above all it strengthens students in their profession, prepares them for research, a global job market and a professional life in a multicultural society.

Assessment criterion: Internationalisation
The programme is designed and implemented in such a way that it develops the student's intercultural competence and the student's readiness to work in a global labour market.

Describe, analyse, and evaluate. Outline the strengths and challenges, as well as how these are addressed to ensure high quality in the programme. Illustrate with examples. The description should be between 1-3 pages, using font size 11 and single line spacing.

Programme description:

The program is given in English with a global student base, making the classroom inherently international. Still, the first day of the programme is devoted to a workshop focusing on how to communicate interculturally. The programme also works actively to maintain an international orientation, with courses designed to cultivate a global perspective. This is in part done by the choice of examples and cases that illustrate different contexts as well as building on the plethora of intercultural experiences that the students in the classroom have. Among other things, an interactive quiz is used at the beginning of the programme to illustrate all the languages that are spoken among the members of the class and where in the world the students feel "local". Bringing an awareness to the diversities and similarities in class enhances the students' understanding of being a global citizen in an international job market. To further stress the importance of fostering a sense of global citizenship, one of the programmes local examination goals is to demonstrate "in-depth understanding of and develop a reflexive approach to collaborations, relationships and networks in intercultural and interdisciplinary contexts, both locally and globally". This goal has already been discussed in depth in section 2 and will not be further discussed here.

The programme also collaborates with many multinational and international businesses when it comes to contributing with lecturers, for example the recent lecture from the European medicines' agency to the students in the product development course. The students' international experiences often occur through their work integrated learning courses and the degree project course. For the second work integrated course and the degree project, the students can choose to study anywhere in the world as long as the project suggested is approved by the programme. These internships are not through formal exchange agreements but rather the student goes as free movers (often on ERASMUS training scholarships). The degree project course has one formal exchange agreement though, with the University of Auckland in New Zeeland where two students per year can go to New Zeeland and we in turn accept two New Zeeland students to do their degree thesis in Sweden. This exchange works very well and the students on each side are well integrated with the programme in their exchange country. Given that this exchange works well, there are thoughts to add more universities through formal exchange agreements. The biggest obstacle is to find other similar programmes to do the exchange with. However, one university that would be interesting is Copenhagen business school that has a program that in many respects is similar to the MBE program.

When it comes to teachers exchange, the programme is not as strong, in part due to the heavy teaching assignment that the teachers in the programme has. One teacher when on a teaching exchange to Iceland in 2023 but that is the only exchange in the last couple of years. There is an opportunity to encourage the teachers to go on teacher exchanges to get inspiration from good entrepreneurship education in other countries. The programme will work actively to encourage the teachers to apply for teacher exchange funding and to alleviate the teaching assignment to make this possible.

The programme strives to include examples in the courses that introduces an international context. For example, the European and US markets are heavily represented in both the market analysis course and the product development course where for example the specifics in different regions laws and regulations are examined. Emerging markets are under less focus. The rationale behind this has been that the students are more likely to work within the European or US markets after graduation since they are the largest pharmaceutical and medical device markets. It is however not uncommon that the students themselves chose to study emerging markets in their work-integrated learning courses and in the research for their degree project. The programme acknowledges that the lesser focus on emerging and often fast-growing markets leaves room for improvement as these markets are interesting from other perspectives that are also valuable for the students to know about. In summary, there is an opportunity to look further into these areas and see how the programme can strengthen its focus on emerging markets.

Assessment panel's evaluation

Instruction
For each assessment criterion, the assessment panel should describe their evaluation under the following three headings below: **Under the heading Strengths:** The assessment panel should highlight the programme's strengths within the assessment criterion and briefly describe them, preferably in bullet points.   **Under the heading Areas for improvement:** The assessment panel should identify areas that are assessed to need improvement and briefly describe them, preferably in bullet points.   **Under the heading Evaluation:** The assessment panel should explain their assessment and motivate their conclusion. The evaluation should be specified in one of four levels of fulfilment: *Meets/Meets to a large extent/Meets to some extent/Does not meet*.
Strengths: It is the assessment panels impression that the self-evaluation address internationalization and the importance thereof in a good way. The panel want to highlight the following strengths. • The programme pays attention to the international dimension. • The composition of students and teaching staff coming from different international contexts. • Collaboration with many multinational and international life science companies. **Areas for improvement:** It is the assessment panels impression that the self-evaluation does address some of the below areas for improvement to some extent, but the panel is suggesting the following improvements: • Establish (or make available) statistics on the national origin of students. • Deal with the very limited teacher exchange in international environments, which could potentially bring more international inspirations to the programme.

> - A broader internationalization perspective including emerging market seems to be needed in some of the course activities.
> - Clarify and address barriers to international students in getting jobs and establishing a career in the Stockholm region
>
> **Evaluation:** Overall, it is the evaluation that the programme meets to a large extent the assessment criterion. The justification for that evaluation is that the programme appears to take a less systematic approach to the internationalization aspiration, but the programme may address the perspective on international students in a more systematic way.

4.3 Assessment criterion: Interprofessional competence

Interprofessional competence is part of the generic competence that is necessary for employees, not only in current and future health and medical care, but also in other areas of employment relevant to KI's education. KI's vision is that the education is designed and implemented in such a way that the student, after completing the education, has the best possible conditions to work within and continuously develop an activity in close collaboration with other professions and disciplines. Intended learning outcomes and educational activities to achieve interprofessional knowledge, competence and approach must therefore be included and assessed within KI's programmes at first and second cycle.

Interprofessional competencies include: Communication, collaboration, teamwork, roles and responsibilities, conflict resolution, patient safety and patient/client centeredness.

> **Assessment criterion: Interprofessional competence**
>
> The programme is designed and carried out in such a way that it develops the student's competence to work within and continuously develop an activity in close collaboration with other professions and disciplines.

Describe, analyse, and evaluate. Outline the strengths and challenges, as well as how these are addressed to ensure high quality in the programme. Illustrate with examples. The description should be between 1-3 pages, using font size 11 and single line spacing.

Programme description:

The programme is acting in an interdisciplinary/interprofessional basis, if looking at interprofessional competence as something bigger than the interactions between the different professions in a care team. The students themselves have diverse disciplinary backgrounds (natural science, engineering, medicine, health care) and they take courses in many disciplines, with students that study other disciplines at universities focusing on other discipline than KI (2 courses as KTH and an elective from SSES). In addition, they have a one-day interprofessional ethics day with the M's programmes in biomedicine and toxicology where the students have to act as their respective profession when working together on a case on research and drug development. Currently, another interprofessional case is being developed between the three master's programmes at the department ("health economics, policy and management and "health informatics") with a sustainability focus. The interdisciplinary/interprofessional mix of students is seen as an advantage when working in projects as the contribution of knowledge in an interdisciplinary team exceeds that of a homogenous team. As group and teamwork are an integral part of the programme,

One interprofessional competence is communication and to work with strengthening the student's communication skills, there are two courses in communication embedded in the programme where the first course is focused on interpersonal communication and feedback and the second on more external communication and communication strategies. The students take both communication courses (one during semester one and the other during semester two) before heading out on their first placement to ensure that the students can communicate well both inside and outside the organisation/company.

Collaboration, teamwork, roles and responsibilities, conflict management
With regards to collaboration and teamwork most of the courses in the programme has incorporated this as learning activities and examinations. To facilitate the team and group work, the students not only have the mandatory cultural workshop focusing on intercultural communication, but the programme also work actively with team contracts in all courses. The student group formulate the contract together and tit is aimed at helping the teams to agree on common rules for the collaboration e.g. some students have extra work, some have children, some commute etc and to also establish any differences in ambition or needs between the participants. This is also a document they can go back to in case of conflict within the group to see what the group initially agreed on, in order to try to resolve the conflict. The course in project management includes a workshop on psychological safety, where the students acquire knowledge on how this leads to better wellbeing and ultimately better performance by the team. The same course also includes a learning objective related to group work i.e. "describe and evaluate theories on group dynamics and leadership".

Although 11 of the 14 courses of the programme is given by the UBE on-site at the KI Solna campus, two courses are offered at the Royal Institute of Technology (KTH) through an agreement with the programme and the elective course is given by the Stockholm School of Entrepreneurship (SSES) which is a collaborative effort between KI (medicine), KTH (technology), Stockholm school of economics, University of arts crafts and design and the Royal College of Music and Stockholm University (multi-faculty).There are ten different interdisciplinary elective courses that the students can choose from e.g. "Ideation – creating your own business idea", "Social entrepreneurship", "Trendspotting" and "Finance for Start-ups".

The teaching staff as a whole exhibit diverse academic backgrounds, with six teachers having their degrees in the natural sciences or medicine while the other 5 bring expertise in social sciences and business/economics, much in line with the interdisciplinary origin of the subject and the programme objective to integrate science and business.

Assessment panel's evaluation

Instruction
For each assessment criterion, the assessment panel should describe their evaluation under the following three headings below: **Under the heading Strengths:** The assessment panel should highlight the programme's strengths within the assessment criterion and briefly describe them, preferably in bullet points. **Under the heading Areas for improvement:** The assessment panel should identify areas that are assessed to need improvement and briefly describe them, preferably in bullet points. **Under the heading Evaluation:** The assessment panel should explain their assessment and motivate their conclusion. The evaluation should be specified in one of four levels of fulfilment: *Meets/Meets to a large extent/Meets to some extent/Does not meet*.

Strengths

It is the assessment panels impression that the self-evaluation shows good insight into the strengths of the training around Interprofessional competence. The panel would particularly like to highlight the following as strengths to take advantage of in the development of the program:

- Cross-disciplinary student composition is a great strength
- Cross-disciplinary courses are very impressive
- Communication courses are important

The interviews confirmed these strengths.

Areas for improvement:

It is the impression of the assessment panel that the self-evaluation does address some of the below areas for improvement to some extent, but the panel is suggesting the following improvements:

- Personal development activities should be considered for engagement in a cross-disciplinary environment.
- Build knowledge of cross-functional work (departments) in life science sector. Could support them in career planning and navigating within companies (PP2 and master).
- Even more interactions / events with other universities (KTH and other KI programs)
- Consider Nordic and international events, as they would be great learning opportunities. One proposal from students was to have more Joint days with other KI programs – and solve cases together.
- Collaborations with Lund and other Bioentrepreneur programs (for example in Denmark and US) could also be something to consider.

Evaluation: Overall, it is the evaluation that the program meets the requirements of the assessment criterion. The justification for that evaluation is that the backbone of the program relates to interprofessional competence.

Other aspects

The programme can describe areas that are relevant to highlight but are not included in any of the assessment criterion, such as other generic competencies and forward-looking development work to increase the quality of the programme. Scope 1-3 pages with font size 11 points and single line spacing.

Programme description of other aspects:

There are a few aspects that have not been covered in the other parts of this self-evaluation that the programme would like to address here.

Firstly, the technological advancements in generative AI that has been introduced recently has come with opportunities and challenges for the students and the teachers in the programme. The programme has put in place a policy for the use of Generative AI within the courses which makes it accepted for the students to use these tools but with limitations. The programme has invites lecturers to discuss with the students how to use the technology responsibly and pros and cons with these tools. For any written work that the student turns in they also have to acknowledge any use of generative AI and in what way it has been used. The programme will continue to monitor the development in this area in order to be prepared to be able to support the students in the best way.

The downturn in the economy, as well as the unrest in the world in recent years, has also had an effect on the on the programme and the students. One effect is on the ability of applicants to pay the tuition fee. We encourage KI to establish more scholarship opportunities to respond to this problem. might be that it takes the graduates longer to find an employment after graduation than it did previously. From the programme management and the teachers side we try to be supportive to any student that is struggling, as well as guide the student to any assistance that they might need.

The assessment panel's reflection

Instruction
Under the heading *Reflection*, the assessment panel shall present the assessment panel's reflections on the programme's description of other aspects.
Reflections: Swedish healthcare is moving rapidly and politics, access system and EU legislation is changing more and faster than ever before. **Areas for improvement:** • Many students are aiming for pharma and / or governmental bodies or jobs in other bodies engaged in healthcare. As healthcare is rapidly changing, teachers and students could potential participate in public meetings, have better Competitive intelligence and invite companies and stakeholders even more often. • Health data, insight generation and AI are here to stay and their importance is increasing. Consideration to include policy making in relation to AI and Data in the program, as it is needed. Competence around this area would be highly appreciated.

Summary of the assessment panel

Instruction
The assessment panel's summary should begin with a reflection on the conditions provided by the self-evaluation to assess the quality of the programme, i.e. whether the self-evaluation was easy to read, well-structured, provided answers to the questions asked and followed the instructions. The summary should also briefly summarize the program's key strengths and areas for improvement. The assessment panel can also add other points of view that the assessment panel wishes to present.

Summary of the assessment panel:

The self-evaluation was easy to read, well-structured and provided relevant information for the review. The assessment panel would particularly like to highlight the following **overall** strengths to take advantage of in the development of the program:

- The program benefits from a faculty whose combined expertise is well-matched to the needs of the programme.
- Stability within the group of teachers involved in the programme. This stability helps in maintaining a consistent educational approach that fosters long-term relationships between students and faculty and contributing to a supportive learning environment.
- The teaching staff is noted for being very supportive and encouraging, which is important for student motivation and performance.
- Teachers with research connections and the program's collaboration with several strong research groups provide students with opportunities to engage in cutting-edge research.
- The program is characterized by a well-planned structure with a logical progression of courses, ensuring a coherent educational journey for students.
- Courses are intricately linked to the life-science sector, providing students with practical, industry-relevant experiences.
- The use of a variety of teaching methods supports students' learning by catering different learning styles and needs, thus enhancing the overall educational experience.
- A distinctive feature of the program is its integration of life science and business, offering a holistic perspective that allows students to understand the interplay between scientific innovation and business practices within the life-science sector.

Most of the interviews conducted by the assessment group focused on Staff and Learning environment. The interviews confirmed overall the strengths listed above.

The assessment panel also identified some **overall** areas and topics which the programme management may consider as areas of improvement as follows:

- The committee suggests integrating ethical and societal issues more thoroughly into the curriculum. This can be achieved by explicitly including these topics in the intended learning outcomes and allocating specific time within the courses to discuss and analyse these issues. This will help students develop a deeper understanding of the ethical and societal implications of their work.
- While the current level of expertise among teachers is high, there is a need to for a proactive and structured approach to ensure this standard is maintained. Therefore, we suggest to implement a well-defined succession plan to ensure

continuity in teaching quality. This could include career development plans for teachers, focusing on research opportunities and formal pedagogical training.

- Develop clearer guidelines that differentiate between natural and social science methodologies in research-based teaching. The exit poll indicates low scores in theoretical research content, highlighting the need for better support in reading and analyzing social science, particularly since business is a new subject for many students. This can be achieved through dedicated workshops, reading materials, and practical assignments that emphasise social science research techniques.

- Finally, the assessment panel suggests that the programme or Karolinska more overall clarify and address barriers to international students in getting jobs and establishing a career in the Stockholm region. There needs to be a more systematic approach to obtaining information about graduate positions in companies from alumni data. Systematically collecting and analyzing alumni data will provide valuable insights into graduates' career paths and the program's effectiveness in preparing students for the job market.

    Addressing these areas for improvement, the program can enhance its overall quality and effectiveness, ensuring that students are well-prepared for their careers and equipped to handle ethical, societal, and professional challenges.

Overall, it is the assessment panels evaluation, that the programme meets or meets to a large extent the requirements of the assessment criterion within most of the assessed topics.