



INFORMATION ABOUT THE HOST INSTITUTION

Host institution University of Oslo		
PO Box address Postboks 1032		
Postal code 0315	City Oslo	Place Blindern
Telephone Office phone: (+47) 22854218 / Mobile phone: (+47) 40286574		
E-mail address solveig.kristensen@mn.uio.no		

CONTACT PERSON

Name Truls Erikson	
Title Professor	
Telephone work (+47) 22940928	Mobile (+47) 45404266
E-mail address truls.erikson@sfe.uio.no	

ABOUT THE CENTRE

Name of Centre C3E – Centre for Excellence in Entrepreneurship Education
Is the Centre already established at the time of the application (yes/no)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Please name any consortium partners for the Centre The Norwegian University of Life Sciences (NMBU)



ABSTRACT

Gründerskolen is an *inter-university collaboration* between all the universities in Norway, coordinated by the Centre for Entrepreneurship at the University of Oslo. Gründerskolen exposes the most motivated students to *internship practice in an international entrepreneurial context*. We do so in close collaboration with the trade offices of Norwegian embassies/consulates abroad, embracing global hotspots like Silicon Valley and Singapore as exemplars. However, time has come to direct our practice-based entrepreneurial educational competence to the life science/ICT ecosystems in the Oslo region. The aim for this centre is to establish pedagogy and learning environment (meeting places and arenas) that in the best possible ways prepare and integrate students with the existing and growing initiatives in the ecosystem. It means to raise *awareness*, and develop *entrepreneurial competence* in accordance with the European/Norwegian Qualification Framework. Such a *joint educational centre effort* qualitatively and quantitatively distinguishes the proposed entrepreneurship centre from more independent centre initiatives.



APPLICATION DOCUMENT

1. Existing programme structure and courses

The existing provisions consist of three programmes in entrepreneurship: 1) Gründerskolen, 2) Master programmes in entrepreneurship, and 3) a broadly scoped elective course for BSc students.

1.1 Gründerskolen – A practice based national programme in global entrepreneurship

Gründerskolen is an inter-university collaboration between all the universities in Norway, coordinated by the Centre for Entrepreneurship (SFE) at the University of Oslo (UiO). The programme is open to all students from all disciplines. The aim of the programme is to enhance the employability of students by providing them with real-life entrepreneurial learning and cross-cultural understanding from the world's most vibrant innovation hotspots. The main part of the programme abroad is a 12-week internship, where the students work full time in start-up companies and follow *tailored* entrepreneurship programmes at a local university. Before the internship, the students complete a full introductory course in entrepreneurship at their home university, and a preparatory course on cross-cultural understanding.

The programme has grown considerably in terms of student numbers and national and international partners. Starting out with six students in Silicon Valley in 1999, the programme now includes 170-180 students annually with internships offered at innovation hotspots globally covering San Francisco (UC Berkeley-45), Boston (Boston University-40), Singapore (National University of Singapore-24), Houston (Rice University-22), Cape Town (University of Cape Town-22) and Oslo (University of Oslo - 20); university partner and number of 2015 students shown in brackets.

The programme (30 ETCS) is an integrated part of other high quality master programmes in Norway. It includes faculty collaboration with universities globally, and the programme is well integrated with Innovation Norway's trade offices and their industrial networks abroad. The Norwegian University of Life Sciences (NMBU) is today the largest partner in Gründerskolen and has integrated this programme as part of its dedicated master programme (120 ECTS) in entrepreneurship and innovation.

The Gründerskolen programme has already been awarded three quality prizes. In 2006, GS was named 'Best Learning Environment' at UiO. In 2007, the programme was given a prize by the Norwegian Agency for Quality Assurance in Education, which emphasized the thorough planning and execution of the stay abroad, and the programme won the 'Best Service Provider' award from the Nordic StartUp Awards in 2012. In 2015, 92.6% of responding students found the programme satisfying or highly satisfying, and 94.0% said that they would recommend the programme to other students. Some of the positive outcomes highlighted by former students include the experience of personal growth from having dealt with many challenges in a more entrepreneurial and international



context and the new network of highly competent entrepreneurial people, as stated in the following quotes:

“Can we do this programme twice? / Absolutely fantastic programme. You are doing a great job, keep it up! / Very good teaching programme! A+ / Gründerskolen has changed my life / Excellent, I am very happy I did this! / Gründerskolen is a fantastic programme and is the best way to learn entrepreneurship / Gründerskolen is my best investment ever.”

1.2 MSc Programmes in Innovation and Entrepreneurship at UiO and NMBU - Both NMBU and UiO have master programmes in Innovation and Entrepreneurship (involving approx. 40 students) and both programmes have a ten-year track record.

1.3 Broadly based course modules for BSc students - NMBU and UiO also each have one *elective* course offered to all students. The BSc course components certainly need to be further strengthened – we will address this broad challenge in more detail later.

2. Availability of critical input factors

2.1 Academic faculties with a broad background in entrepreneurship - The Centre for Entrepreneurship (SFE) at UiO, and the School of Business and Economics (SBE) at NMBU have core faculties with both academic and practitioner backgrounds from real-life entrepreneurial practice. SFE has two full time faculty positions, currently four PhD research fellows, and 15 practice-based adjunct professors who cover various industrial fields. SBE has two full time faculty positions, currently one PhD research fellow and one practice-based university lecturer. Both units have close and ongoing collaboration with the pedagogical faculty at their respective institutions. In addition, we may draw on the flexible faculty of the executive education programme at the Department of Informatics, UiO. Moreover, we also collaborate with the Centre for Technology, Innovation and Culture, UiO.

2.2 Extensive experience in entrepreneurship education under very diverse conditions – Gründerskolen (UiO) has for more than 15 years developed pedagogy that facilitates entrepreneurial competence building in a cross cultural context, now covering North America, Europe, Africa and Asia. NMBU has for more than 10 years developed entrepreneurial learning pedagogy that embraces students with a wide variety of disciplinary backgrounds, including veterinary science, food science, biotechnology, renewable energy, nursing and economics. In a national perspective, this track record and experience base is unique.

2.2 Innovation and entrepreneurship - a strong and growing focus at both UiO and NMBU

This is perhaps best illustrated by the fact that the Vice Rector of UiO has taken on the responsibility for innovation, and the emerging innovation focus at the faculty level, best exemplified with twenty-four *newly created* PhD research fellow positions at UiO targeted towards innovation. As part of this, two task



forces on innovation and entrepreneurship have been launched (one at the university level, initiated by Vice Rector Knut Fægri, and the other at the Department of Informatics, initiated by Head of Department Knut Liestøl), both task forces being led by Nils D. Christophersen; SFE is strongly represented and well aligned. We also see significant initiatives within the life sciences and ICT at both UiO and NMBU to improve collaboration across the R&D and commercial interface. The current life sciences initiative represents the largest initiative in the history of UiO. Similarly, NMBU has devised an innovation and value creation strategy that integrates research and education for joint value creation focusing on a greener economy.

2.3 Close vicinity to R&D institutions and industrial clusters of international calibre

The Oslo region hosts both strong research clusters and industrial clusters of international calibre and is the only region in Norway where such milieus are co-located. The Oslo Region is home to Norway's largest research cluster including the University of Oslo, Oslo University Hospital, the Norwegian University of Life Sciences, Simula Research Laboratories, SINTEF and others. Both SFE and NMBU have long term collaboration with these partners with regard to educational design. In total, these institutions host 12 out of the nation's 21 centres of excellence, 10 of them at UiO and one at NMBU. Within life sciences, natural sciences and information technology, the region hosts eight centres of excellence and six centres of research-based innovation. UiO and NMBU have about 3000 and 500 PhD students, respectively. Furthermore, the greater Oslo region also hosts industrial clusters of international quality within several knowledge-based industries such as ICT and life sciences. The Norwegian ICT industry is a global leader within several niches. Of all R&D activity conducted in the Norwegian private sector, 45% is ICT related, counting both the ICT sector itself and ICT investments in other industries. Approximately 80% of all ICT related jobs in Norway are located in the region. The life sciences sector has a significant cluster centred on the research activities at Oslo University and Oslo University Hospital. This health cluster is served by two Norwegian centres of expertise (NCE); NCE Oslo Cancer Cluster is dedicated to accelerate the development of new cancer diagnostics and NCE Oslo Medtech covers all other health related sectors. In total, these two NCEs have more than 260 members from Norway and Northern Europe representing the entire value chain. The Health ICT and eHealth categories are growing, bridging the ICT and life science clusters. What is missing in this ecosystem is a formally recognized centre of excellence in entrepreneurship education ("C3E").

2.4 Close vicinity to critical support services and expertise

The Centre for Entrepreneurship (SFE) has extensive experience in international relations and cross-cultural understanding among students and faculty and thus represents a national node and centre for all



universities in Norway on internationalisation in entrepreneurship education (EE). UiO and NMBU have both close vicinity to critical support services and expertise such as 3-4 incubators, technology transfer offices (TTO), a large investor community, professional legal and financial services and an active community of experienced serial entrepreneurs and professionals, to mention the most important elements. Norway's largest incubator StartupLab is located at UiO's campus.

3. Availability of critical process factors

3.1 A culture of research based education - The consortium consists of a faculty delivering both front end research on real life entrepreneurship and how this translates to EE. Gründerskolen at SFE and NMBU's MSc programme also serve as viable test beds in developing and improving new methods and strategies within EE, and this is necessary for conducting research and to *understand* and *improve* learning in a student setting. As such, SFE attracts top academic entrepreneurship scholars from internationally renowned institutions. However, the strongest evidence for EE development can be found in the emerging EE research literature, including our own (Erikson et al., 2009; 2014; 2015; Kubberød & Pettersen, 2016; Lahn & Erikson, 2016; Blenker, Korsgaard & Neergaard, 2011). A recent external evaluation of the NMBU MSc programme confirms this assumption.

3.2 Pedagogies and learning designs devised to promote students' learning - The current course designs aim to promote strategic thinking in unpredictable environments through situated learning and internship pedagogies. These educational efforts are implemented in close cooperation and support with the best experts in innovation and entrepreneurship nationally and internationally. NMBU is today leading a nationally funded education project initiative aiming at developing mentoring support models in higher EE. This project is supported by a competitive grant from Norgesuniversitetet. At UiO, we will foot all course development in the "Interact manifest" for new programme development, and we will seek 1) "synergies between breadth and depth", make 2) "research based education", develop 3) "integrated professional competence", and always strive for 4) "excellence in learning" (Mørken, 2014).

3.3 Multi-faceted evaluation methods to assess and monitor student learning - The Gründerskolen programme makes use of several formative evaluation methods like longitudinal evaluation through team assignments, oral presentations/examinations, and experiential based process learning reports. Both institutions have developed methods for aligning their pedagogy to real "entrepreneurial learning" in a broad range of contexts and cultures. All of the Gründerskolen classes are highly interactive, and the students receive considerable formative feedback throughout the introductory courses at their respective universities. Interactive sessions are also held at UiO before the students leave for their internships abroad. At UiO, the faculty help the Gründerskolen students in setting their personal learning goals and



reflecting on specific entrepreneurial process dimensions while being *in* practice, and later reflecting *upon* practice. Abroad, the students are given evening classes, and they are assigned a tutor to assist them in the process of project development with feedback sessions. A summative evaluation of learning experiences is the basis for the completion of the Gründerskolen programme. Based on the 2015 survey, 94.2% of the responding students (46%) declared that Gründerskolen improved their competence to launch their own venture; and 97.1% reported personal growth. Through an active alumni network from Gründerskolen, the relevancy of our EE initiatives are continuously evaluated and challenged.

3.4 Student engagement and ownership hardwired into the learning process - The students are confronted with a new learning situation emphasising more student involvement. In particular, exposing the students to lengthy international experience offers an extra dimension and meta-perspective to their own learning. During the international practice, students meet fellow students from other programmes on a regular basis in joint sessions at the university and on social occasions outside the course. These meetings have a vast impact on building companionship between students of different cultural backgrounds and friendships that will last for life. Additionally, employing students as peer-mentors for each other and using the class as a resource pool are important involvement strategies enhancing socio-cultural learning. Our efforts are backed by a growing bottom-up student cultural involvement in the university: examples are Navet (UiO), Eik and Idedrivhuset (NMBU) and Start (National).

4. Outcome factors

4.1 Students learn to tackle and cope with entrepreneurial insecurity and uncertainty and are exposed to how to drive entrepreneurial initiatives through to fruition - The students are exposed to real-life practices, and forced to step out of their comfort zone and develop their internal mental models through transformational learning, which in the end build entrepreneurial competence and contribute to personal growth. Former students have highlighted these positive outcomes in 652 newspaper articles (Retriever, 2016) featuring Gründerskolen since its inception. Gründerskolen has a completion rate of 99.8%, and an approval rating of 92.6%.

4.2 Such entrepreneurial skills are critical for growing existing companies and launching new firms - International and practice based experience are highly appreciated by employers and Gründerskolen delivers both these qualities and in addition motivates for future international mobility in the labour market. For the partner institutions, Gründerskolen makes their students stand out from others as first time job applicants. To sum up, the acquired entrepreneurial competence helps to create what we may label early polymaths, candidates that are multidisciplinary in orientation and nature and can handle complex cross disciplinary tasks even in their first jobs.



THE PLAN FOR THE CENTRE

5. Vision

Entrepreneurship is regarded as one of the most important driving forces for change and development of the economy and society as a whole. Entrepreneurial expertise is defined by the EU as one of eight key competences and should be encouraged at all levels of education (Kunnskapsdepartementet, 2009). In the “Norwegian Qualification Framework” (NQF) *familiarity* with innovation processes (bachelor level) and the *ability to contribute to and practice innovation* (masters level) are described as targeted learning outcomes for all students at a *general competence level* (Kunnskapsdepartementet, 2014), empowering students with the necessary entrepreneurial capability needed in a rapid changing labour market.

While EE at primary and secondary levels reaches large parts of the student population, recent evaluation of EE in Norwegian higher education points to limited and fragmented results targeting these general competencies (Spilling et al., 2015). Higher education institutions are found to lag far behind in delivering on the specified NQF ambitions.

The motivation to establish this Centre of Excellence in Entrepreneurship Education is to meet this challenge at a regional level, followed by the national level. *The aim for the Centre is to establish pedagogy and learning environment that in the best possible ways prepares students for and integrates them with the existing and growing initiatives in the ecosystem.* Thus, in contrast to other EE programmes where students take the role as action-based commercialization agents starting their own ventures (Rasmussen and Sørheim, 2005), the Centre does not aspire to be a source of new ventures in its own right. Rather, the Centre seeks to leverage all the external resources to build robust entrepreneurial competencies for future employability, positioned prior to any form of value creation in the region and the society as a whole. Following this principle, the Centre has adopted the vision:

Transforming higher education – bridging insightful scholarship with entrepreneurial capability

6. Strategic Direction

Our ambitious vision will be achieved through three closely related strategies:

1. *Empowering students with entrepreneurial curiosity, understanding and executional capability.*
Traditionally, most students are security oriented but we are now moving towards a more global and dynamic labour market. Our aim is to prepare the students for a future professional life where the ability to cope with unknowable uncertainties and to drive new initiatives through to fruition will be much more important than in the past.
2. *Nurturing an entrepreneurial curiosity and understanding among the academic staff and their*



management. The attitude of the academic staff is a key enabler in the long term. The strategy is initially targeted to focus on those who through self-selection are most inclined to be motivated by involvement in our vision.

3. *Driving an entrepreneurial cultural development in the university and beyond*. Students graduate for the most part never to return. Our strategy is focused towards over time developing a much broader, continuous and vibrant relationship between industry and academia, and between current and graduated students.

This strategy is fully in line with what we see at similar centres internationally. Traditionally, Stanford and MIT have been the universities to learn from, but these institutions have different ecosystems, and the Nordic (collaboration) model points to the collaboration based Stockholm School of Entrepreneurship as the next generation of entrepreneurship centres - devising diverse entrepreneurship activities to all students in an effective manner.

Below we outline our work packages for operationalising our strategy. We emphasise that Work Packages 1 and 2 are closely linked. By matching actors in the ecosystem in the Oslo region with students in a variety of forms of entrepreneurial practices, the Centre will provide both interactive and tailored learning arenas as well as creating a much more efficient value creation process hardwiring the external ecosystem into higher education.

7. Operational Plan

7.1 Leadership and coordination

We will establish a dynamic and operative management team that effectively manages and facilitates the Centre's activities and resources in the respective institutions as well as creating synergies between institutions. **The management team** will consist of equal partnership and involve a balanced representation from both institutions. The management team will consist of the Centre Director (Elin Kubberød) with Jens Petter Falck and Truls Erikson as co-directors. The activities are organized in two work packages, each being led by separate **WP management teams** comprised of student and faculty representatives from each institution, constituting a *management quartet* for each WP and therefore enabled for local adjustments as well as synergies between institutions on the activity level. The WP management team will each establish a resource team in the respective institutions. **The advisory board** for the Centre will comprise members from industry, the public sector and the innovation system, international top scholars, students, alumni, and be governed by the Vice Dean Solveig Kristensen. **Leadership and management activities** are briefly shown in the Action Plan (see A1-A3).

7.2 Work Package 1 - Pedagogical activities and development

7.2.1 Scalable and tailored course modules and programmes - Effective implementation of our strategy requires innovation on several levels. The learning outcome of exposing the students to our entrepreneurial practices is a two-fold meta-competence of entrepreneurial learning that can be defined as the students' ability to:

- *Cope with complexity.* To act entrepreneurially is a highly emotional experience. The ability to deal with the insecurity and uncertainty involved is a critical learning outcome of the entrepreneurial learning process. The pedagogical methods to achieve this are an active area of research (Kubberød & Pettersen, 2016; Lahn, Kubberød et al., 2016).
- *See and develop attractive opportunities of value to others.* It takes a lot of practice and experience to spot attractive opportunities. To successfully develop an opportunity (and develop entrepreneurial capability) is a craft, which can be learned through advanced methods and techniques that significantly improve the success rate.

Based upon these learning outcomes, the Centre seeks to attain breadth in dissemination of the tools as well as depth through a scaling strategy in line with the NQF, see Figure 1.

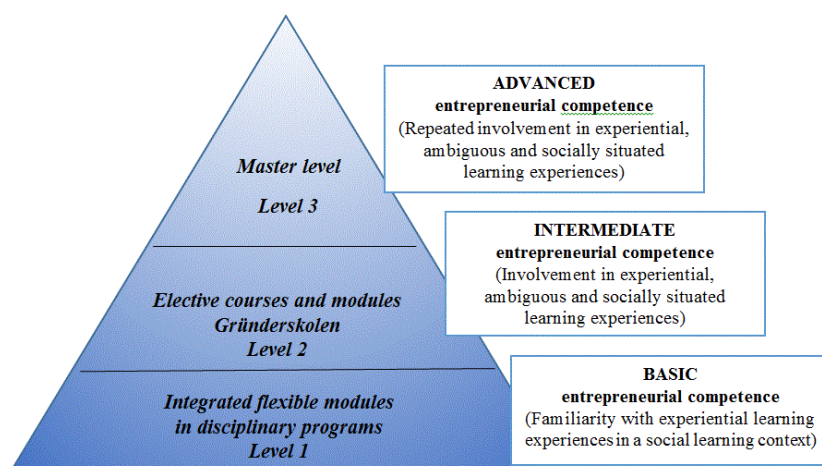


Figure 1. Three tier innovation strategy

These offerings and activities are organized in the following three-level structure:

Level 1 - Provides BSc students at UiO and NMBU with basic entrepreneurial *awareness* through integrated coursework and modules. These activities will focus on building awareness and motivation for innovation and entrepreneurship.

Level 2 - Provides BSc students with *entrepreneurial competence* through more lengthy elective courses and programmes targeting students interested in a continuous learning process of entrepreneurship.

Level 3 - Provides MSc students with *advanced entrepreneurial competence* through separate mentor programmes, and elective courses in innovation and entrepreneurship. Such mentoring programmes and courses aim to facilitate advanced practice-based knowledge. We will focus on developing repeated



learning experiences among multiple actors, between students, and between students and the ecosystem.

The internal balance between the three levels is important for the overall impact and execution. Volume exposure is secured through Level 1 activities. Level 2 offers motivated and engaged students additional competence and learning. Level 3 offerings are critical to NMBU in order to educate enough students with advanced competence in entrepreneurship to help facilitate Level 1 activities, and over time to nurture and build an entrepreneurial culture in the research community. Level 3 packages at UiO will mainly support and back the Research Council's FORNY2020 Student scheme (Action Plan B1-B3).

7.2.2 Research based pedagogical development activities - We will design and tailor the curricula through a robust development process at each level, designing content from learning outcomes (Mørken, 2014). It is essential to develop new learning based tools and pedagogies that leverage students' disciplinary knowledge and interests into entrepreneurial competence development. These will allow students to engage creatively with their own ideas and initiatives and involve learning with relevant others in a socially situated learning environment. While there is a demand for innovation in pedagogical content, it is also evident that there is less consistency in how entrepreneurial learning can adequately be approached from the teacher's perspective (Haase and Lautenschläger, 2010), and therefore we need to address this issue through innovating how entrepreneurial learning can be managed. The general established view is that the essence of entrepreneurial competence cannot be taught in a traditional sense, but we can *work with learning*. Hence, there is a need for developing *learning systems* for how to balance between supporting and securing students' learning on the one hand and pushing students to act and experiment on the other (Kubberød and Hagen, 2015). The proposed centre will focus on developing new and innovative ways to stimulate learning processes and focus on collaboration to document how learning outcomes can be secured through these efforts (see Action Plan C1-C4).

7.3 Work Package 2 - Ecosystem enabling activities

Developing successful activities in Work Package 1 requires access to a well-developed ecosystem to function properly. Thus, in addition to course work, a set of ecosystem enabling events, activities and services will be required in order to meet the strategic objectives. Those are:

1. Support and build *interest* in entrepreneurship among students through student initiated events.
2. Give students access to critical infrastructure and services to help student-initiated start-up companies.
3. Develop concepts to attract alumni and senior professionals to student initiated start-ups.
4. Develop matchmaking arenas for effective exchange and identification of unsolved problems that are both commercially important and academically attractive
5. Incentives to drive a stronger commercial orientation among the academic staff and management.



6. Identify, document and market commercial successes with links to the universities.

Such activities are today not undertaken in a systematic way. The centre will take on the role as overriding initiator and coordinator, continuously develop, orchestrate and organize such activities in close collaboration with all members of the ecosystem (see Action Plan D1-D6).

8. Dissemination strategy and plan

Being a CEE in innovation and entrepreneurship, with close collaboration with all partners in the ecosystem from the academic community to business community, is a core function for the Centre and as such a focal point for the CEE's management team. Thus, dissemination is hardwired into the activity plan. The entire centre project is in its own rights an entrepreneurial dissemination towards students, the academic community and relevant stakeholders in the ecosystem. As laid out in the Action Plan (E1-E3), the development of targeted activities for the different audiences is a continuous activity. Collaboration with other universities will be channelled through the Gründerskolen network, especially with regards to Work Package 1 and pedagogical development.

9. Framework for evaluation and influence

9.1 Framework for contributing to and stimulating institutional development over time – A core strategy for the Centre is to drive an entrepreneurial cultural development in the university and beyond. To this end, the Centre has devised Work Package 2 which targets students, faculty and the broader ecosystem players.

9.2 Framework for measuring impact - The impact of the Centre will be measured qualitatively and quantitatively in the following way as seen from the different stakeholders:

- *Students* – Number of students taking relevant courses or participating in relevant activities and workshops. Number of entrepreneurial situated practice-learning encounters among external actors by UiO and NMBU students and possible long-term value creation effects.
- *Faculty* – Faculty participation in events and activities. Number of PhD research fellows and postdoctoral fellows working on projects in collaboration with the business community.
- *Infrastructure* – Number of co-activities together with the supporting ecosystem actors.
- *Relevant business community* – Participation in relevant workshops, events and projects.
- *Toolkit and new methods development* – Number of new simulations and exercises.

9.3 Securing sustainability post funding – Long term funding will be secured through the internal revenue stream generated from study point production, and through external soft funding (e.g. Regional Development Funds, Norgesuniversitetet, Research Council Funds, and collaborative EU funds).