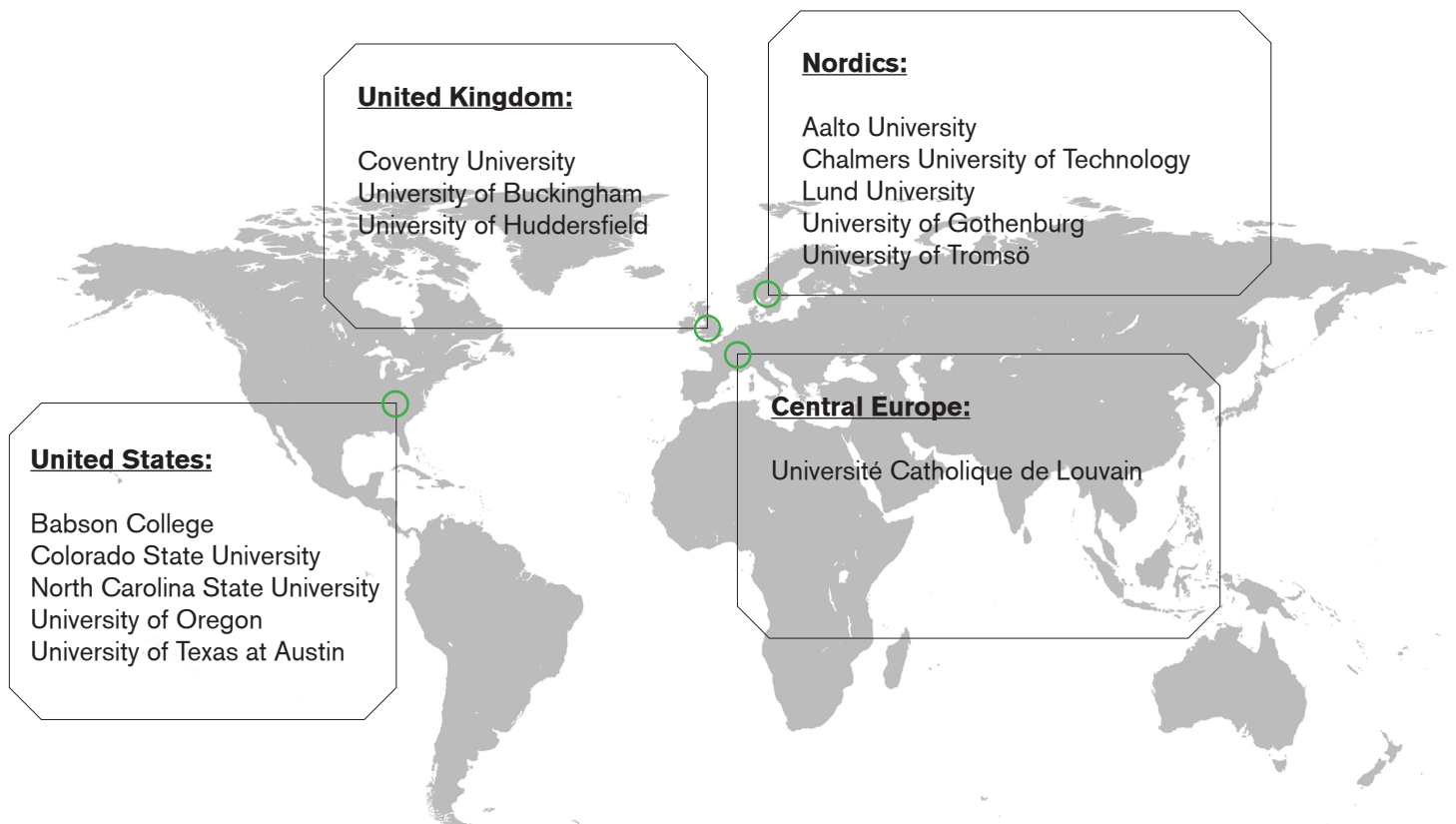


VENTURE CREATION PROGRAMS

14 CASE DESCRIPTIONS

COLLECTED THROUGH A RESEARCH PROJECT AT
CHALMERS IN ENTREPRENEURIAL EDUCATION



CHALMERS

ENTREPRENEURIAL LEARNING FORUM 2012

VENTURE CREATION PROGRAMS

Entrepreneurship programs in which students create real-life ventures as an important part of their education are still uncommon at universities around the world. Nevertheless, there is evidence around the effectiveness of these action-based programs in developing both entrepreneurial competence and creating new economic value. This folder contains a number of short case descriptions of typical venture creation programs from different parts of the world, outlining main characteristics, background, main achievements and key challenges. This material is supplied in connection with the inaugural Entrepreneurial Learning Forum, hosted by Chalmers University of Technology in Gothenburg in June 2012. We hope that these short case descriptions will facilitate discussion, information sharing and sense-making processes among participants during and after the forum.

BACKGROUND

Venture creation programs are advanced examples of entrepreneurial learning processes from which business, educational and other institutions can learn substantially. Numerous students of these programs have transformed their entrepreneurial mindset. Insights gained from championing this kind of transformative pedagogy go beyond educational purposes, and can help increase our understanding of entrepreneurship in general. However, venture creation programs have had to learn entrepreneurially themselves while pioneering a field that only recently is starting to be systematically understood. The questions and issues are still numerous and related research is in an early stage. We are still determining main characteristics and identifying practice that is common across institutional and geographical borders.

OPPORTUNITIES

Venture creation programs could be regarded as a crucial bridge between a knowledge producing academia and value creation processes in society at large, thus blurring the line between formal and non-formal learning environments. An increased understanding of the underlying mechanisms of these programs can give new insights into how and why individuals become more entrepreneurial, and what we can do to increase the scope, frequency and efficiency of these mechanisms. This has potential implications on numerous areas, such as entrepreneurial teaching, entrepreneurial learning, understanding of entrepreneurial competency and its development, teaching practice in general, educational policy and perhaps even learning in general. Keeping in mind the complexity and contextual nature

of these issues, it could still be possible to give some guidance in aspects such as what theoretical foundations might be valuable in entrepreneurial teaching, how action-based pedagogy can be delivered in a more cost-effective and still efficient manner, and how formal learning environments could be more involved in society's value creation processes. Some claim that venture creation programs represent an important step in the ongoing paradigmatic change towards a society where more emphasis is placed upon innovative value creation than administration of existing value.

CASE CO-ORDINATOR

Martin Lackéus, PhD Candidate
E-mail: martin.lackeus@chalmers.se
Website: www.chalmers.se/vcplist
Twitter: @mlackeus



"In terms of impact, the MBA reached its zenith in the last century;

Focused business masters, such as the MSTC, will offer the most value add in this century."

*Dr Gary M. Cadenhead
Director MSTC Program
University of Texas at Austin*

CONTENTS

INSTITUTION	PROGRAM NAME	START YEAR	PAGE
AALTO UNIVERSITY	THE VENTURE PROCESS COURSE SERIES	2009	4
BABSON COLLEGE	ENTREPRENEURSHIP INTENSITY TRACK	1999	5
CHALMERS UNIVERSITY OF TECHNOLOGY	CHALMERS SCHOOL OF ENTREPRENEURSHIP	1997	6
COLORADO STATE UNIVERSITY	GLOBAL SOCIAL SUSTAINABLE ENTERPRISE MBA	2007	7
COVENTRY UNIVERSITY	BA ENTERPRISE AND ENTREPRENEURSHIP	2007	8
LUND UNIVERSITY	MASTER PROGRAMME IN ENTREPRENEURSHIP	2006	9
NORTH CAROLINA STATE UNIVERSITY	THE HiTEC PROGRAM	1995	10
UNIVERSITÉ CATHOLIQUE DE LOUVAIN	FORMATION INTERDISCIPLINAIRE EN CRÉATION D'ENTREPRISES	1997	11
UNIVERSITY OF BUCKINGHAM	BSC BUSINESS ENTERPRISE	2006	12
UNIVERSITY OF GOTHENBURG	BUSINESS CREATION AND ENTREPRENEURSHIP IN BIOMEDICINE	2008	13
UNIVERSITY OF HUDDERSFIELD	BA ENTERPRISE DEVELOPMENT (BAED)	2009	14
UNIVERSITY OF OREGON	VENTURE LAUNCH PATHWAY (VLP)	2001	15
UNIVERSITY OF TEXAS AT AUSTIN	MASTER OF SCIENCE IN TECHNOLOGY COMMERCIALIZATION (MSTC)	1996	16
UNIVERSITY OF TROMSØ	BUSINESS CREATION AND ENTREPRENEURSHIP PROGRAM	2008	17
UNIVERSITY OF TEXAS AT AUSTIN	THE IC ² INSTITUTE	1977	18
PARTICIPANTS ON ENTREPRENEURIAL LEARNING FORUM			19
REFERENCES ON VENTURE CREATION PROGRAMS			19

These programs represent a majority of the venture creation programs found so far. For a complete list of programs identified so far, see www.chalmers.se/vcplist

AALTO UNIVERSITY, FINLAND:

THE VENTURE PROCESS COURSE SERIES

Twenty years of research on entrepreneurship education resulted in the launch of a two year 'venture process master' program in 2010. At the heart is a course series of three venture creation courses during which multidisciplinary student teams create own ventures and integrate them into the business world. It is Aalto's philosophy to be an entrepreneurial university. In our first two years we experienced students from over 30 nations and at least five disciplines from Biomedicine to Entrepreneurship.

AIMS AND METHODS

The aim of the course series is to develop student's entrepreneurial competencies, not just skills, to be able to contribute responsibly to a changing environment. It intends to build on social challenges and to work with high-growth ideas. The venture process at Aalto University School of Economics takes an action-based learning approach. It goes beyond acquiring knowledge about entrepreneurship and the venture process, and knowledge for the practice of venture creation, towards building up entrepreneurial capabilities through a series of three different courses. The idea is that students move from a student identity to an entrepreneurial identity that results in entrepreneurial action. Students work on their own ventures all the time. A cohort consists of 40 students coming from various disciplines – mainly business, arts and technology – who experience the venture process over 1.5 years. It is administrated by the Entrepreneurship Unit, part of the International Business Department.

BACKGROUND

Since 1994, entrepreneurship is a national principle and part of the national curriculum. Entrepreneurship education at all ages has started at that time. Based on knowledge of 20 years of entrepreneurial learning research, Paula Kyrö has designed the venture process master. The existing entrepreneurship master has been adapted three years ago to integrate the findings from research. No additional funding was necessary.

KEY PARTNERS

The key partners for the students are within the university environment – the Aalto Center for Entrepreneurship (ACE), the Venture Garage, the Design Factory. The latter two are key to have an action-based pedagogy. ACE extensive network connects students to successful entrepreneurs and venture capitalist. The Stanford Ventures Program is a key partner in actively running parts of the courses and integrating the Silicon Valley eco-system.

ACHIEVEMENTS

In two years, we have seen 60 students from over 30 nations, resulting in truly international student teams. The long term success cannot yet be judged, though, several groups have managed to become profitable. In less than two years, TAEL has generated a turnover of more than EUR 1 mill and opened three offices abroad. Several students are directing the activities of the Aalto Entrepreneurship Society, e.g. the current president, which runs the Startup Sauna – the biggest seed accelerator in Finland and the Baltics.

KEY CHALLENGES

Challenges are related to the new structure of the university which is a 2010 merger of three specialized universities. While the master program at the School of Economics has a long history, Aalto level entrepreneurship courses are offered additionally. The task is to connect our offer with the university's venture program – a separate initiative.

FUNDING

The venture process is funded by the university as any other master degree program. The funding instrument has not changed when the degree structure changed, and no external funding is triggered.

CONTACT

Paula Kyrö, Program Director
E-mail: paula.kyro@aalto.fi
Website: <http://management.aalto.fi/en/disciplines/entrepreneurship/>

BABSON COLLEGE, USA:

ENTREPRENEURSHIP INTENSITY TRACK

The Entrepreneurship Intensity Track course at Babson College was offered for the first time in 2000, in response to the dotcom boom that was causing many business students to forgo education to start new companies. The faculty recognized the opportunity and responsibility to help students launch new businesses while they were learning the skills they would need to start and run these companies. Designed and taught by a team of leading entrepreneurial scholars who were also entrepreneurs, this MBA course has evolved as a key element in Babson's constellation of curricular and extra-curricular resources for fostering new venture creation, in both the graduate and undergraduate programs.

AIMS AND METHODS

The aims of this course are to "provide an intense experience for personal exploration of a defined opportunity as well as discovery of entrepreneurial zeal and to launch new ventures". The course admits only students who come in with a well-developed business concept and a deep commitment to starting a company immediately following graduation, if not sooner. Another critical requirement is to be able to attract a mentor in an audition and students who do not succeed are not admitted to the course. The semester-long course focuses on action rather than theory. Deliverables and activities include: developing a timeline for launching the business; developing an expanded executive summary; identifying and meeting with customers; working with mentors; interacting with guest speakers; individual meetings with professors; discussions with fellow students; and identifying, attending, reporting back on networking events relevant to the business.

BACKGROUND

Named by U.S. News & World Report, as the leading school of entrepreneurship for 19 consecutive years starting in 1993, Babson has long been a leader in entrepreneurial education. This distinction recognizes the pioneering research of Babson entrepreneurship scholars as well as the curricular and teaching innovations of the larger faculty. It also acknowledges the College's evolving focus on entrepreneurship, which became an explicit emphasis in 1977 and was reaffirmed as a primary driver of College strategy in 2007-08. In 1999, the entrepreneurship faculty recognized the opportunity and need presented

by the dotcom boom to develop a course to guide students working on launching new ventures while still in school. Initially, the elective course attracted a large group of students enamored of the idea of being an entrepreneur, but in some cases without the passion and perseverance to weather the inevitable lows of the entrepreneurial process. Over time, a process for admitting students to the course was developed to better identify students who were truly serious about launching their ventures as soon as possible. Additional Babson resources, such as the Venture Accelerator, were developed to meet the needs of students for whom the EIT course was not appropriate.

KEY PARTNERS

This course has no formal partners. This is deliberate to avoid having any goals other than educating the students to launch new ventures. However, critical to its success are 15-20 volunteers who serve each year as mentors and guest speakers, recruited by the two course faculty from their extensive network of fellow entrepreneurs, investors, advisors and business leaders. The entrepreneurship faculty also plays a central role in the course by interviewing applicants for this program and they also recommend mentors and guest speakers, as do Babson alumni and leadership. This critical collaborative set is informally known as the "Babson Brain Trust."

ACHIEVEMENTS

At Babson, 100% of our students take entrepreneurship courses. Alumni records suggest that about 14% of students (MBA) start businesses at graduation (this is twice the average for most other

schools) but after 5 years, more than 50% are working in entrepreneurial or small firms. The 14 % doesn't capture those who buy a business, or franchise, or start a business in a family firm or corporate start ups.

KEY CHALLENGES

The key challenge is to constantly reinvent the course to adapt to the kinds of businesses the students are starting as the economic and technological environment changes. Related challenges come from the Intensity of engagement required by new venture creation, on the part of students and faculty. Although not a problem at Babson, this course also requires unique faculty who have substantial entrepreneurial experience and networks, as well as teaching and research expertise.

FUNDING

There is no funding for this course. A team of two faculty teach it, and recently the course has averaged 15 students. In an institution where the typical class ratio is 1:42, this represents an investment on the part of the college. Mentors and guest speakers get no stipend or expense coverage. Administrative assistance for this course is primarily for managing the logistics of admission.

CONTACT

Julian Lange
E-mail: langej@babson.edu

Website:

<http://www.babson.edu/Academics/divisions/entrepreneurship/curriculum>

CHALMERS UNIVERSITY OF TECHNOLOGY, SWEDEN: CHALMERS SCHOOL OF ENTREPRENEURSHIP

A two-year master program started in 1997 by two faculty members, Chalmers School of Entrepreneurship (CSE) today has three different tracks – technology, bioscience and intellectual property – accepting a total of around 50 students each year. The program has a strong venture creation track record with 50 ventures still up and running, employing some 400 people and with a total turnover of €40m. A key success factor has been the establishment of a separate legal entity named Encubator, handling idea providers, equity issues, business coaching and acting as a holding company for incorporated ventures. Key challenges have been financial sustainability and development of entrepreneurial faculty.

AIMS AND METHODS

The aim of the program is to develop entrepreneurial individuals prepared for sustainable business development in the knowledge economy. The program utilizes an action-based pedagogy where innovation and entrepreneurship is experienced hands-on and not only taught in classrooms. The education combines a distinguished academic Master's program with real-life innovation management and venture creation of technology and bioscience innovations. The program is an integrated part of Chalmers' strategy of being an entrepreneurial university. In 2009 an international peer review commissioned by the Swedish government gave the program the highest ranking in Sweden. Teams of two or three students are matched with a scientist or innovator to take forward a business idea into a business. At the end of the process, business ideas have the potential to be incorporated, with both students and the scientist/innovator taking ownership through shares in the newly formed business.

BACKGROUND

In 1995, Mats Lundqvist and Sören Sjölander, at the department of innovation management at Chalmers, initiated development of an entrepreneurship masters program based on reflection that there was a human resource gap between university research and the marketplace. This gap could be filled by individuals willing to take viable ideas, develop business strategies and take them to the market. The program was launched in January 1997 as a one-year masters-level program. In 2001, substantial developmental steps were tak-

en, such as opening the program to students outside of Chalmers and setting up a separate legal entity called "Encubator", gradually taking over the responsibility for many of the interactions with the outside market and society. In 2007, the program became a two-year international master's program in line with the Bologna process.

KEY PARTNERS

The primary partner is Encubator, an integrated incubator that works in synergy with the program, but with a business prioritization. Encubator was created and co-founded by Chalmersinvest, a wholly owned daughter company of the Chalmers Foundation, providing seed-investment. Public actors such as Västra Götalandsregionen, Business Region Göteborg and Vinnova are key partners external to the university environment. University of Gothenburg has been an important collaborator in facilitating an interdisciplinary setting. The program also builds upon a large network of external business actors and organizations, as well as program and university alumni, to contribute content, coaching and other resources to the action-based pedagogy.

ACHIEVEMENTS

Since its establishment in 1997, CSE has educated around 300 students. Around 50 ventures are still up and running, having been incorporated as a result of the student venture projects. These ventures have a total market value today of around €50m with an annual turnover of around €35m. The most successful ventures so far are Vehco, Avinode and Oxeon, employing around 250 people. Vehco sup-

plies mobile IT for the transportation sector. Avinode is a global aviation broker for private jets. Oxeon is an advanced materials company. CSE has a very active alumni network where around 100 people meet every year at a conference focusing on various kinds of new value creation.

KEY CHALLENGES

The main challenge has always been about financing the program. Most financial resources have been in the form of project funding, although there has been a minor endowment given to the school. Another key challenge has been to develop entrepreneurial faculty. The career paths for academics simultaneously engaging in action learning and research are challenging. A key challenge has also been the inability of traditional incentive structures and organizational leadership to adapt.

FUNDING

CSE receives funding for each enrolled student. However, this amount does not cover the cost of running the program and there is a need for additional funding from other sources. Additional funding has come from various sources. Funding organizations have included the public actors Västra Götalandsregionen, Business Region Göteborg and Högskoleverket. Each student ventures receives €20.000 each, majority of which requires matching with private money. This money is supplied by public venture capital entities.

CONTACT

Mats Lundqvist, Program Director
E-mail: mats.lundqvist@chalmers.se
Website: www.entrepreneur.chalmers.se

COLORADO STATE UNIVERSITY, USA: GLOBAL SOCIAL SUSTAINABLE ENTERPRISE MBA

The Center for Advancement of Sustainable Enterprise (CASE) educates entrepreneurs and incubates ventures. Faculty, labs, and research generated at Colorado State University provide the “idea-capital” for ventures. In our Global Social Sustainable Enterprise (GSSE) MBA, students build ventures while they complete MBA courses designed around sustainability & entrepreneurship. CASE incubates ventures in our New Economy Venture Accelerator (NEVA). In five years, GSSE has educated 100+ students and produced nine ongoing ventures that address issues such as health, irrigation and education. CASE will launch GSSE and NEVA in Kenya via the Sustainable Enterprise MBAs for Africa program (SEMBAA).

AIMS AND METHODS

The aim of CASE is to educate entrepreneurs and incubate their ideas and ventures. The GSSE MBA program integrates an 18-month venture development practicum into social entrepreneurial coursework. We incubate ideas and ventures through the New Economy Venture Accelerator (NEVA) which offers resources, mentoring and funding to promising start-up ventures developed by GSSE-MBA entrepreneurs. GSSE's method of education is based on the concept of addressing social and environmental concerns with an entrepreneurial approach and fully integrates social entrepreneurship and sustainable venturing into all coursework. GSSE includes an applied venture development practicum in which student teams develop a social venture throughout the 18-month program including travelling to the field for 2-3 months during the summer session. The GSSE program is unique in having designed each course to support actual ventures that students build while in the program.

BACKGROUND

GSSE's first student cohort was in 2007. GSSE was established as a Master of Science in Business Administration to offer entrepreneurial education that focused on building ventures that have a social and environmental impact; it changed to an MBA in 2010. In 2009, we created CASE and NEVA to offer more support to GSSE students, establish a venture accelerator, and build a network of experts and access knowledge from across the university and other organizations.

KEY PARTNERS

Our most important partners are other departments, labs, and centers from Colorado State University (CSU) with which our GSSE students partner to develop CSU research and innovation into business ideas and ventures as well as access for technical expertise as needed. Other key partners are Bohemian Foundation, International Development Enterprises, National Collegiate Inventors & Innovators Alliance, Philanthropiece, Rocky Mountain Innosphere, Nature Conservancy, New Belgium Brewery, and United States International University in Kenya. External partners are critical to the success of the GSSE venture development practicum component and to building long-term successful ventures from NEVA.

ACHIEVEMENTS

We have educated over 100 students and nine ventures are still up and running. The most successful ventures from GSSE are AYZH, PowerMundo, and SEED:

- AYZH develops products to address women's health issues such as a birthkit to provide a sterile birth environment and a ceramic water filter.
- PowerMundo develops supply and distribution networks to increase accessibility to solar lighting technologies for rural developing markets.
- SEED created a small, efficient irrigation pump which addresses agricultural water needs for small-holder farmers in the Indian sub-continent.

The GSSE-MBA is ranked #9 in Small

Programs in Aspen Institute's Beyond Grey Pinstripes Global 100 MBAs.

KEY CHALLENGES

Challenges include finding ongoing, sustainable funding sources for international students needing funding to be in the GSSE program and for ventures in NEVA needing financial support. Marketing to students is also a challenge regarding differentiating ourselves from the plethora of programs that are selling sustainability and entrepreneurship.

FUNDING

In addition to tuition and fees received from each GSSE student, we receive support from foundations and private donors. Travel and field work is funded by private donations as well as funds raised by students and their venture teams. The National Collegiate Inventors & Innovators Alliance has been an instrumental donor for NEVA and provided funding for prototyping, entrepreneur stipends, faculty stipends for mentoring, and materials for enterprise development.

CONTACT

Carl Hammerdorfer, GSSE Director
E-mail: carl.hammerdorfer@business.colostate.edu
Website: www.csugsse.org

COVENTRY UNIVERSITY, UNITED KINGDOM: **BA ENTERPRISE AND ENTREPRENEURSHIP**

The focus of our strategy is to create a lifestyle of entrepreneurship which is achieved by focusing on personal development, entrepreneurial skills and business skills to exploit and implement new ideas. We feel that all three areas should be in equilibrium to create sustainable success and improved socio-economic growth. Our approach acknowledges the fact that no two businesses are the same and therefore support is tailored to the specific needs of a person and the business. We are moving away from a short-term orientation towards a medium and long term approach which focuses more on the potential and real impact of entrepreneurs(ship) on the environment not just on how many businesses were created.

AIMS AND METHODS

The course is aimed at university students with a keen interest in business start-up and innovation. The modules follow an applied learning style with a strong emphasis on experiential learning, with personal business activities incorporated within the modules themselves. The course is designed to help and support aspiring entrepreneurs to develop and implement their business ideas. It is delivered entirely by 'entrepreneurial' academics, that is, people who are currently (or who have previously) run their own businesses in addition to their academic credentials. In the first year we work on idea generation and on developing the entrepreneurial mindset (PED). We also look at venture evaluation and creation. In year 2 the focus is more heavily on business start-up and business management. The final year we look the practical aspects and the experience of running and growing a business. Personal entrepreneurial development is an ongoing theme throughout the programme. We try to have a very open mind about the students we take, but some are more entrepreneurially challenged than others. We try to expose our students as much as possible to experts and practicing entrepreneurs. We have increased student autonomy, allowing more choice in projects. The current structure allows us to work with individual students and to support their personal entrepreneurial development as well as their academic development. We have taken the material out of subject specific silos.

BACKGROUND

The programme was established in 2007 as a BA in Business Enterprise (BA BE). In 2008 it became the BA Enterprise and

Entrepreneurship (BA EE). The Faculty home for both programmes was the Business School but in 2009/10, when the Institute of Applied Entrepreneurship (IAE) was formed, the 'Faculty' home moved to the School of Lifelong Learning. A number of incremental revisions were made to the BA EE until a major review in 2010/11 resulted in a shift away from Business School modules as outlined above. The degree now primarily aims to support student's aspirations for a career as entrepreneurs. The BA EE gives students every opportunity to test their skills and aspirations and supports their ambitions, whilst at the same time ensuring that their activities are underpinned with sound and relevant knowledge. Whilst this programme has been pioneering in many ways, having a large section of its delivery under the control of others placed major restriction on the range and type of changes possible.

KEY PARTNERS

Student Enterprise Fund - A fund to help support entrepreneurs has been initiated by the University's Chancellor who wanted to do something to encourage entrepreneurship by giving financial support to fledgling student businesses. Investments are in the range of £3k - £5k and as much as £30k for an outstanding proposition. The development of a student-led enterprise fund is a unique proposition in the UK. SPEED - Students and graduates accepted on the SPEED programme will get financial and support assistance tailored to suit their particular need, as well as provision of training days and workshops. Mentoring - we have used the NCEE mentoring website 'Make It Happen' and encourage all our students looking for business support or mentoring to

use this site to document their ideas and their needs.

ACHIEVEMENTS

The number of students starting on the programme is such that it is now viable as a standalone programme, i.e. not dependent on the Business School. We have been able to recruit new staff to support the delivery of the programme and to differentiate it within the university's offer. We offer a range of modules to support entrepreneurship across the university and this year we have taught over 1000 students from across all Faculties. We are the Times Higher Education Entrepreneurial University of the Year.

KEY CHALLENGES

The range and variety of students the programme attracts presents challenges. We are capped at around 30 students and try to hit that number which means that we sometimes attract students more suited to a straight business management programme. Given the above, some students don't settle into the programme and leave, others are discontented with the approach and the expectations placed on them. Keeping the balance between students that are more academically driven and those that prefer a more applied approach can be problematic.

FUNDING

Students generally enter the programme in the 'normal' way and are funded through student loans.

CONTACT

Dr. Joan Lockyer
E-mail: jlockyer@cad.coventry.ac.uk
Website: www.coventry.ac.uk/IAE

LUND UNIVERSITY, SWEDEN:

MASTER PROGRAMME IN ENTREPRENEURSHIP

The Master Programme in Entrepreneurship at Lund University is a highly sought after and acclaimed education that aims to provide students with the latest knowledge in entrepreneurship, and to help them convey that knowledge into action. All of our students are expected to create a real business project as well developing theoretical and practical skills in entrepreneurship

AIMS AND METHODS

The programme is focused on letting the student learn from their own actions by reflection and by relating action and practice to theory. By emphasizing action, we have reoriented our education towards developing the students' functional entrepreneurial knowledge. Similar to labs in natural sciences, by taking real entrepreneurial actions, students gain a functional knowledge. While improving students' functional knowledge as such, it also provides memorable events that could be used to relate to entrepreneurship theories. The programme includes two tracks: (1) New Venture Creation, which focuses on the creation of new ventures, and (2) Corporate Entrepreneurship and Innovation, which focuses on entrepreneurship and innovation in established businesses. The corporate entrepreneurship track is new from 2011. Within the New Venture track students are to develop their own businesses during one year. Each student is assigned a mentor with genuine business experience from the local business community, office space, pedagogies clearly in line with effectual learning and start up, and the support of a dedicated teaching staff.

BACKGROUND

In 2007 an international Master's programme in Entrepreneurship was launched at the Lund University School of Economics and Management, as part of a university-wide strategy to concentrate on entrepreneurship and innovation. The programme was founded by professor Hans Landström and Dr Marie Löwegren. In June 2009, the Swedish government appointed the programme as one of two cutting-edge programmes in entrepreneurship and innovation in Sweden and funds were allocated for further development of the entrepreneurship activities. The government

funds have allowed us to strengthen our educational and research portfolio in accordance with the announced ambitions. The time limitation of the governmental allocation of resources has required a focus on creating long-term funding. In the spring of 2011 the donation from Sten K Johnson enabled long-term investments and allowed us to continue building a lasting entrepreneurial arena formed as a centre for entrepreneurship.

KEY PARTNERS

Key partners to the program includes: (1) The mentorship programme with experienced entrepreneurs, matched to students on a 1-1 basis i.e. 30 mentors for 30 students, (2) The innovation network at Lund, including Ideon innovation, venture lab, LU innovation systems, Technopol, Mobile Heights, Almi, Connect Syd, Venture Cup Syd, FENA (a national entrepreneurship student association) etc.

ACHIEVEMENTS

In total approximately 200 students have gone through the programme. About 40% of them are currently running their own ventures, in all types of industries including e.g. professional services, IT and biochemistry. The programme is now the most sought after Master Programme in entrepreneurship in Sweden. On average approximately 600 students are applying each year to the programme. They are carefully selected on basis of their entrepreneurial experience, their work experience, their educational background, presentation skills and level of English. The programme strives to find a diverse mix of students who benefit from learning from each other. We have students from more than 20 countries all over the world and with backgrounds ranging from computer science, to peace and conflict studies. Successful start ups from the programme

include Red Apple Apartment working with short term apartment rental all over the world, Desmo working with a virtual donation box and Logos 3D working with 3D digital landscaping and gaming.

KEY CHALLENGES

There are several challenges in the programme. The most central challenge at the moment is that the Swedish Board for Higher Education evaluation of business administration has clear conservative and standardizing elements. As the masters programme has been designed from research in entrepreneurship education and down to pedagogies, the pedagogies we use are quite different from the "normal" entrepreneurship education. The masters programme in entrepreneurship is uniquely designed to have examinations that corresponds to the development of functional skills in entrepreneurship, while the board of higher education is narrowly concentrated on analytical skills. Another challenge is in evaluation of the quality of the education. We are still struggling to establish proper evaluation of skills, perception of skills, and venture performance.

FUNDING

The programme has significant and stable funding from e.g. the Swedish board of higher education and the generous donation from Sten K Johnsson. Students are not provided funding for their start-ups and we demand no equity or royalty from the start-ups.

CONTACT

Professor Hans Landström
E-mail: hans.landstrom@fek.lu.se

Website:
<http://www.youtube.com/entrepreneurshipLU>

NORTH CAROLINA STATE UNIVERSITY, USA:

THE HiTEC PROGRAM

(HIGH TECHNOLOGY ENTREPRENEURSHIP AND COMMERCIALIZATION PROGRAM)

Since 1995, the HiTEC program has been teaching scientists, engineers and managers how to translate science and technology into goods and services. Using the HiTEC Algorithm, a process developed from a National Science Foundation/Kenan Institute research grant, HiTEC has been building new high-tech, high growth companies while training the entrepreneurs of tomorrow. In academia, our process and pedagogy have been benchmarked and exported to the UK, Portugal, Slovenia, South Korea, South Africa as well as Brown, Ohio State and Cal Poly universities in the U.S. In the business world, HiTEC is credited with supporting the formation of over 50% of the companies arising from North Carolina State University (NCSU).

AIMS AND METHODS

Our goal is to develop the next generation of entrepreneurs while building the high growth companies of tomorrow. MBAs are teamed with graduate science and engineering students to build and launch – whenever possible – real high growth, technology-based ventures. Each team is provided a portfolio of available IP and has at least two outside business advisors or “Executives-in-Residence,” including serial entrepreneurs, CEOs, lawyers, accountants, and consultants. The mapped process at the heart of the HiTEC experience is called the ‘Algorithm.’ This is the tool that separates HiTEC from other High-Tech Entrepreneurship courses. The Algorithm provides a process based framework for building viable startup companies from technological innovations. Issues that are both knowable and discerning at each phase in the development cycle are revealed and addressed in a rational manner. This detailed methodology permits the inexperienced entrepreneur to develop a compelling business case for his/her technology.

BACKGROUND

In 1994, Angus Kingon, a world-class Materials Scientist from the College of Engineering, and Steve Markham, a serial entrepreneur from the Poole College of Management, won almost a million dollars in grants from the National Science Foundation and the Kenan Institute of Technology, Science and Engineering to study technology commercialization and develop tools to teach scientists and engineers how to commercialize their discoveries. The HiTEC Program began teaching

courses based on their research in 1995 to graduate students from both colleges. It was apparent from the beginning that the best way to develop the knowledge, skills and abilities needed to be successful, was to provide an intense experiential learning opportunity for the students. The resulting pedagogy offers not only a rich context to their studies, but also provides the potential to participate in a real high growth startup company.

KEY PARTNERS

HiTEC would not be possible without support from both the College of Engineering and the Poole College of Management. The intellectual property used in the course comes from the offices of technology transfer at NC State University, Eastern Carolina University, Universities of North Carolina at Charlotte and Chapel Hill. Over the years, we have also used IP from more than a dozen local R&D facilities located in the Research Triangle Park and beyond. Finally, and perhaps most importantly, we would not be able to deliver the quality educational experience and maintain the expectations of continuing success without our Executives-in-Residence. Since 1995, more than 80 serial entrepreneurs, service providers and professionals have volunteered thousands of hours to help mentor the HiTEC teams.

ACHIEVEMENTS

Since its inception, the TEC Program has taught over 450 graduate students, been primarily responsible for the creation of new high tech ventures and lines of business employing over 400 people, and assisted more than forty companies

that have attracted over \$200,000,000 in capital. The HiTEC program is regularly benchmarked as a leader in technology commercialization education by universities around the world. Our international efforts were recognized by the Roundtable on Entrepreneurship Education at Stanford when they bestowed the 2006 Price Foundation award on us for our work in Portugal.

KEY CHALLENGES

We have three areas of ongoing challenges. First, though we have an extensive network of executives and service providers in the local entrepreneurial community, finding seasoned leaders for the new ventures we generate every year is a daunting task. Second, seed stage funding is always a challenge. Finally, our department within the College of Management has undergone several changes over the past 5 years and the result has left us fewer faculty and we are therefore behind in research output.

FUNDING

All our activities are self-funded. We share in the royalties from one of the companies we launched. The remaining resources we have are the result of a combination of grants and gifts. The faculty have also shared consulting fees with the HiTEC program.

CONTACT

Roger Debo, Director TEC Initiative,
Email: roger_debo@ncsu.edu
Website: tec.poole.ncsu.edu

UNIVERSITÉ CATHOLIQUE DE LOUVAIN, BELGIUM: FORMATION INTERDISCIPLINAIRE EN CRÉATION D'ENTREPRISE (CPME)

Initiated in 1997 by a university rector and a major bank CEO and equipped with substantial support from private companies, the innovative CPME program is a truly interdisciplinary initiative where students from almost all schools at the comprehensive Université Catholique de Louvain are brought together in cross-disciplinary teams to create businesses. Teams consist of students coming from different disciplines, i.e. business, law, engineering, physiotherapy, psychology, sciences, agronomy and liberal arts. Business ideas are supplied by students themselves and from university research. Key challenges have been convincing colleagues, adhering to varying assessment regulations and complying with the Bologna reform.

AIMS AND METHODS

The original aim of the CPME program was to stimulate new business creation and entrepreneurship. This was later broadened to include entrepreneurial skills and activities in their widest sense, i.e. intrapreneurship, working for SMEs, not-for-profit creation, spin-offs, business buyouts and related aspects. The program is not in itself a separate master degree but consists of a set of dedicated elective courses that are integrated into the corresponding master degrees from the eight different schools at Université Catholique de Louvain (UCL). The CPME program is managed in close collaborations with the faculty managing the parent degrees, and is spread across the last two years of its parent degrees, where the second year master thesis project revolves around creating a new business based on students' own or external business idea. Around 30 students are admitted each year, and the classes are given in the evening. The program has a dedicated building and students have 24-hour access to these facilities, including computers, team rooms and other facilities. This creates a bonding effect among students, promoting knowledge exchange and collaboration across cohorts and disciplinary affiliations.

BACKGROUND

In 1996 Fortis Bank CEO Jean-Jacques Verdickt teamed up with Marcel Crochet, rector of UCL and former entrepreneur, to launch the idea of the CPME program. The aim was to remedy the lack in Belgium of entrepreneurship programs outside business schools and to counter poor entrepreneurial spirit of the southern region of

Belgium. This top level initiative was able to secure substantial financial support, and also managed to bypass the existing academic structures needed in order to create a visionary, interdisciplinary and truly action-based program structure. The core team consisted of faculty from the law, engineering and business schools of UCL, and included the current program director Frank Janssen. The first cohort started in 1997. In 2007 the program was shortened from three to two years according to the Bologna process. It was also opened to all schools at UCL, welcoming students from agronomy, psychology, physiotherapy, sciences, theology, etc.

KEY PARTNERS

The most important partners are the different schools at UCL, allowing the interdisciplinary nature of the program. Other important partners include UCL's technology transfer office LLTTO, incubators, the student entrepreneurship club Crealouv and the Federation of Enterprises in Belgium (FEB). The stock listed investment company Brederode supports the program financially. A network of entrepreneurs, bankers, capitalists and program alumni also supports the program through various interventions in the program.

ACHIEVEMENTS

Around 350 students have graduated from the program. A survey shows that 11% of the students who graduated between 2000 and 2005 have created a firm, and that 64% of former students think that the CPME program has had an impact on their entrepreneurial intention. Many alumni have however made more tradi-

tional careers, in line with their disciplinary origin. Three example ventures originating directly from the program are Greenwatt, Creacorner and Mnemotique. Greenwatt is a cleantech company in biogas. Creacorner is a chain of leisure stores. Mnemotique offers digital storage of archival data.

KEY CHALLENGES

Challenges are mainly related to the interdisciplinary nature of the program, such as convincing colleagues in different schools at UCL of the importance of entrepreneurship and adhering to the varying assessment rules of each disciplinary framework. Difficulties in accepting a master thesis in the form of a business plan is an example issue within assessment. Other challenges include the limited track record in terms of number of directly created ventures, and the Bologna reform forcing a shortening of the program from three to two years.

FUNDING

Substantial financial resources were raised upon creation of the program from various private companies, such as Belgian glass manufacturer Glaverbel. So far financials have not restricted the operation of the program. The student ventures do not receive any funding from UCL, except if they arise from university research.

CONTACT

Frank Janssen, program director
frank.janssen@uclouvain.be
Website: www.uclouvain.be/cpme

UNIVERSITY OF BUCKINGHAM, UNITED KINGDOM:

BSC BUSINESS ENTERPRISE

The BSc Business Enterprise (BBE) programme enables undergraduate students to start and run their own real business, as an integral part of their honours degree. BBE was the idea of a new Dean in Buckingham Business School, who had previously been a faculty member at Babson College, USA. He worked with the current Dean of the Business School and other faculty members to develop and obtain approval for the BBE Programme in 2004 and 2005. The first cohort of students started in January 2006 and as Buckingham offers two-year undergraduate programmes, with four 9 week terms each year, the first successful students completed the BBE programme in December 2007. A total of five cohorts have graduated and two cohorts are currently studying.

AIMS AND METHODS

The BBE Programme is aimed at undergraduate students who want to:

- Start and develop their own business, at the same time as studying for a degree.
- Make a positive contribution to the strategic development of a family business or other small or medium enterprise.
- Develop an entrepreneurial or “can-do” approach to business to enhance their future career in any size of company.

Within 4 months of starting the programme, students must prepare and “pitch” their business plan to “Buckingham Angels” VC panel. If successful the students are awarded up to GBP 5000 funding, which is written-off. Provided the students pass their first exams, their new business is launched during the third term and they continue studying and running the business for the next five terms. The students study “normal” Business School subjects, plus some additional subjects. In addition to academic assessment, they are also assessed on the way in which they plan and operate the business, not on its success.

BACKGROUND

In 2004 Phil Dover, the new Dean of the Business School proposed that the School should develop an innovative programme during which undergraduate students had to start and run their own businesses as part of their honours degree. Jane Tapsell and other faculty worked with Phil to develop the BSc Business Enterprise programme. They discussed the pros & cons of offering it at undergraduate or post-graduate level. It was decided that undergraduate level would be unique and

more attractive to students. The university is small and entrepreneurial, as at that time it was the UK's only independent university. This meant that such a non-traditional programme could gain internal and external academic approval quickly and it was launched in January 2006. Nigel Adams was appointed Programme Director in January 2008 and he had to promote the programme extensively to ensure its survival, due to low numbers of applicants. He also introduced several changes in 2009 & 2010 as a result of experience operating the programme.

KEY PARTNERS

The funding of the working capital for the students' businesses was donated by Legal & General insurance company and a private donor, the late Mr. John Desborough. An “Enterprise Hub” was established on the university's campus, with financial support of SEEDA (UK South East Economic Development Agency). This has been used as the offices for the majority of the students' businesses since 2006. Some of the office accommodation was offered to start-up businesses in the area, on low cost basis. In addition to academic lectures, tutorials and support, external entrepreneurs and business people have been invited to mentor and support the students throughout the programme. BBE students have also been encouraged to join several local business networking groups.

ACHIEVEMENTS

- The survival and success of the programme. As a result, from 2013 we must restrict numbers of students accepted.

- Full employment of all 26 BBE graduates. Two businesses developed directly from the BBE programme, three other businesses were started by BBE graduates, four returned to family businesses, 14 gained employment, the remaining three continued in higher education.

Other positive results include personal development of the BBE students, support of all colleagues throughout the university, involvement with the business community.

KEY CHALLENGES

These have been: Time taken and cost of promoting the programme, mainly through “word of mouth” and the Internet. Attracting the appropriate students. Sufficient students attracted only after 5 years. Student workload & drop-out rate. So all applicants are made aware of workload to reduce this problem. Costs/time involved in administration of the students' companies with Companies House & UK Tax Authorities. So businesses now operate under one limited liability company.

FUNDING

The funding for the businesses started by BBE students has been provided by Legal & General insurance company and a private donor, the late Mr. John Desborough. BBE Students are charged the same academic fees as other undergraduate students at Buckingham, i.e. GBP 22,500 for the two year programme for Home/EU students. This compares with GBP 27,000 for most UK state universities.

CONTACT

Nigel Adams, Programme Director
E-mail: nigel.adams@buckingham.ac.uk
www.buckingham.ac.uk/business/bbe/

UNIVERSITY OF GOTHENBURG, SWEDEN:

BUSINESS CREATION AND ENTREPRENEURSHIP IN BIOMEDICINE

The two-year master program in Business Creation and Entrepreneurship in Biomedicine started formally at the Faculty of Health Science of University of Gothenburg, at the Sahlgrenska Academy, in 2008. Building on the collaboration with Chalmers School of Entrepreneurship and their courses in bioscience this globally rare program contains specialization in biomedical research, innovation and entrepreneurship. The programme contains two different profiles – entrepreneurship in life science and intellectual capital management, recruiting 20 students per year.

AIMS AND METHODS

The aim of the program is to develop entrepreneurial individuals prepared for sustainable business development in the knowledge economy. The program utilizes an action-based pedagogy where innovation and entrepreneurship is experienced hands-on as vocational and tacit knowledge. The education combines a distinguished academic Master's program with real-life innovation management and venture creation of technology and biomedical innovations. The program is an integrated part of the efforts from the Sahlgrenska Academy to take a leading role in the biomedical and health care ecosystem. In 2009 an international peer review commissioned by the Swedish government gave the program the highest ranking in Sweden. Teams of two or three students are matched with a scientist or innovator to take forward an idea into a venture or to further evaluate and develop a research platform. At the end of the process, business ideas have the potential to continue as project or to be incorporated.

BACKGROUND

The initiatives for the present platform has been taken by Professors Thomas Hedner, Ulf Petrusson and Boo Edgar, merging a program in law with a program in biomedicine. The Masters programme "Business Creation and Entrepreneurship in Biomedicine" (BCEB) thereby provides two profiles Entrepreneurship in Life Science (ELS formerly GIBBS) and Intellectual Capital Management (ICM), focusing on different aspects of innovation and entrepreneurship in life science. From a background in industrial knowledge, a strong theoretical knowledge base and vocational training in business or project management related activities this becomes a hands-on education. The education, research platform and participation in the eco-system have cre-

ated the possibilities for this programme with new pedagogical activities with clear benefit for the more traditional educations in health science. All in the faculty are practical entrepreneurs and involved in research, and at present the unit includes five senior researchers and five younger teachers/researchers.

KEY PARTNERS

The major collaboration partners are the Institute for Innovation and Societal Change (IIS) at the Faculty of Business and Law at the University of Gothenburg and the department of Management, Organizational Renewal and Entrepreneurship (MORE) at Chalmers University of Technology and Centre of Innovation and Entrepreneurship at University of Linköping. Internationally the university partners are with the Universities in Lyon, Cardiff, Budapest, Berlin (Charité), Steinbeiss (Rostock) Gdansk, Vilnius, Turku, Tromsø, Oslo, and the bioclusters in Berlin, Nantes, Madrid, Charlois, Milan, Uppsala, Tartu, Ålborg/Århus, Vilnius and the regional health care organization.

ACHIEVEMENTS

Among the achievements are a pool of elective courses, such as business planning, entrepreneurship, project management and clinical trials applicable for students as well as professionals. As these courses are based on non-campus methods, e-learning, distant mentoring they are in the forefront with pedagogical methods. In the business-planning course we collaborate with the business plan competition Venture Cup as an excellent feedback and networking platform for the students. The unit is today part of four EU programmes and additionally four national programmes supporting the extension of entrepreneurship. A SCOPUS analysis of the publications from I&E at SA dem-

onstrates that our researchers contribute largely to the Academy output, with more than 12000 citations.

KEY CHALLENGES

Key challenges have been to find a financial sustainability and development of an entrepreneurial faculty, based on basic entrepreneurial knowledge and experience and research in innovation and entrepreneurship and research, development and management in the field. The Health Care Sector is a huge driver for a competitive and knowledge based health economy. To stimulate entrepreneurial activities in this field there is a need for further knowledge and understanding, skills and experience, entrepreneurial intent and opportunity recognition as well as an increased number of active individuals in life science. These activities have to be combined with traditional academic research at the Sahlgrenska Academy. Such a platform is now being established focused around research in life science together with several of the partners.

FUNDING

Funding is received for each enrolled student. However, this amount does not cover the cost of running the platform, some additional funding is provided from the Academy. Special project funding has been received from international EU applications, and national programmes as well as from public actors such as Västra Götalandsregionen, the Swedish Government, VINNOVA, Tillväxtverket and the Swedish Patent and Registration Office. The incorporation work is today done together with Chalmers and Encubator, while project handling is via University bodies.

CONTACT

Boo Edgar
E-mail: boo.edgar@gu.se

UNIVERSITY OF HUDDERSFIELD, UNITED KINGDOM:

BA ENTERPRISE DEVELOPMENT (BAED)

BAED is a three year undergraduate degree where students must start and run a real business if they are to graduate. The degree was conceived to deal with three transformations – an idea into a product (or service) that is a genuine opportunity; a would-be entrepreneur into a competent practitioner; a University hot desk into a real organisation. Students work independently but share the experience; occasionally they form partnerships. There are fall-back opportunities if their business does not get off the ground. Recognising the power of networks, the support of real entrepreneurs was sought and obtained; these entrepreneurs, together with relevant professionals, routinely provide guest lectures and mentoring.

AIMS AND METHODS

The degree is ideal for someone who is interested in start up but feels that he or she lacks something critical – knowledge, confidence, wherewithal – or a really good opportunity to pursue. We take people through a measured process – first, they identify, screen and test out a growth opportunity (basically the first year of the three) – second they plan and start the business – and then, finally, they start to grow it. Inevitably some students get ahead of our intentions! In the first year we concentrate on giving students a wide understanding of entrepreneurship, on developing relevant skills and developing a positive mindset. Finance and marketing are introduced. The second year focuses more on the knowledge and expertise to start a business and develops the functional expertise; the third year deals with the knowledge and expertise to grow that business. At the end of Year One we ask for a conceptual business pitch; at the end of Year Two a business plan. Both of these are evaluated by external judges. The focus is always on learning by doing and learning from doing. Reflective practice and action learning are at the heart of this degree; the classes are all designed to support what students are doing. From the outset we encourage students to build a reflective portfolio. Their work-based learning is credit bearing.

BACKGROUND

Businesses start – and businesses close – all the time. The success rate overall continues to disappoint. Sometimes the problem is the idea was never good enough in the first place; sometimes it is a lack of competitiveness; on other occasions

it is poor decisions through inexperience and misjudgement. We want to help increase the success rate amongst business start-ups. The degree was conceived by Professor John Thompson who had already started two small business incubators; and it builds on our research interests in identifying entrepreneurial potential and in enabling, coaching and mentoring.

KEY PARTNERS

The degree is supported by successful and self-made entrepreneur Theo Paphitis who is a regular contributor to the UK TV programme 'Dragons' Den. He provides Masterclasses, brings along businesses he supports and also acts as an Ambassador to promote the course. He has commented that had it been available this is a degree he would have taken rather than rely on the 'University of Life'.

ACHIEVEMENTS

The degree recruited its first cohort in 2009 and the first graduates will be awarded their degrees in 2012. The degree has generated several news stories for the University website and in the local press. The businesses range from those with real growth potential to more modest self employment opportunities. Whichever, we require that there is genuine trading, that supplies are obtained, that customers are found, that sound records are kept and that businesses behave ethically. A number of the student businesses have won local and even national awards and appeared on television. For example a first year student recently came second in the Virgin Media Pioneers new business competition and he has received financial support from Sir Richard Branson.

KEY CHALLENGES

We are a long way from a situation where schools and students believe that young people should be as serious about creating their own job as about finding one once they have a good degree. Consequently undergraduate courses like this are likely to remain niche rather than mainstream; and attracting interest on a wide geographical scale is tricky. In the context of the University as a whole this is a very small course – but one that 'punches well above its weight' in terms of visibility. Selection is critical; students have to be interviewed to make sure they are right for the programme and the programme is right for them. International recruitment is constrained by a need that the students must be in a position to register and run a real business in the UK. Finance and risk are important issues. Classes are timetabled to make it easy for students to work part-time to earn money. We encourage students to take personal risks and get outside their comfort zones; but we strive to make sure their businesses do not involve a financial risk that cannot be dealt with.

FUNDING

The student fees are in alignment with those charged by the University for all undergraduate programmes. We do not assume that students either come with or will need particular levels of financial resources.

CONTACT

John Thompson, Professor
E-mail: j.l.thompson@hud.ac.uk

Janine Day, Course Leader
E-mail: j.c.day@hud.ac.uk

UNIVERSITY OF OREGON, USA: VENTURE LAUNCH PATHWAY (VLP)

A creative breakfast in 2001 with an entrepreneurship center director and a national research laboratory director resulted in a napkin sketch and the idea to create the Venture Launch Pathway, which later became University of Oregon's centre piece in their strategy to become an entrepreneurial university. The program today has a solid track record on the international business plan competition circuit and has also resulted in valuable insights into the art of crossing the 'valley of death'. However the absence of engineering students has also become apparent at University of Oregon.

AIMS AND METHODS

The VLP program aims at creating interdisciplinary educational experiences by immersing students in authentic technology commercialization processes, resulting in a rich learning environment and increased entrepreneurial activity on campus. Each year around 50 students are admitted to the interdisciplinary one-year program, with applications coming from students in business, law and science. The program starts in May each year with evaluation of technologies stemming mainly from Pacific Northwest National Laboratory (PNNL) and University of Oregon's office of technology transfer. Selected technologies are explored, market potential in relevant segments is assessed, a business plan is produced and finally some of the teams participate in a number of major international business plan competitions. Insights from the program have led to a proposed division of the classical 'valley of death' between scientific discovery and market into three distinct gaps – technology discovery, commercialization and venture launch.

BACKGROUND

The idea of establishing the VLP program came at a breakfast meeting in 2001 between Randy Swangard, managing director of Lundquist Center for Entrepreneurship at University of Oregon, and Erik Stenehjem, business development director at PNNL. The rationale for this idea came from the need to overcome the barriers to university commercialization and the desire to realize the idea of the entrepreneurial university. The first trial consisted of two teams formed in the summer of 2002, which produced an encouraging outcome, spurring the institutional-

ization of the program in 2003. In 2005 an internal evaluation showed excellent educational outcomes but low venture creation frequency, raising questions about the high cost of running the program. The program was rescued by new legislation giving tax deductions and other incentives for donors to initiatives in university technology commercialization. This made the VLP program the centrepiece of the university's new strategy for raising and deploying venture fund donations, attracting substantial donations in 2007.

KEY PARTNERS

Pacific Northwest National Laboratory and University of Oregon's technology transfer office have been the most important partners supplying technology based ideas for the students to evaluate and commercialize. More recently, the National Energy Technology Laboratory and the Hewlett-Packard Corporation have become technology partners. Important university partners are the Law School and the Graduate College at University of Oregon, as well as Oregon State University and Portland State University supplying engineering students to the program since 2009. Important financial partners include National Science Foundation and Oregon Nanoscience and Microtechnology Institute. Business professionals from the local entrepreneurial community regularly contribute to the program with mentorship, feedback and inspiration.

ACHIEVEMENTS

A total of around 400 students have graduated from the program so far. Each year some students reach a 'tipping point' when they go from managing a 'school

project' to taking full ownership of their project, which becomes very exciting for faculty as well as the students. Example ventures from the program include Perpetua producing renewable energy solutions for wireless sensors, Floragenex providing genetic research services for clients in agriculture and Innovative Sports Strategies supplying planning software for the sports industry.

KEY CHALLENGES

A major challenge has been the amount of time and resources needed to manage a growing program. Difficulties in persuading licensing professionals to license intellectual property to students with limited industry experience has previously kept down the amount of ventures being launched by students after graduation, but is now a resolved issue. The interdisciplinary nature of the program has been a challenge when confronted with the traditional university silo structures emphasizing departmental borders.

FUNDING

In addition to internal university resources, the main external funding for the program has been supplied by federal grants from National Science Foundation and Oregon Nanoscience and Microtechnology Institute. However, the program does not yet have a long-term financing solution matching the high levels of resources and labor needed to maintain the program.

CONTACT

Donald Upson, Program Manager
E-mail: dupson@uoregon.edu
Website: bizlaw.uoregon.edu/tep

UNIVERSITY OF TEXAS AT AUSTIN, USA: MASTER OF SCIENCE IN TECHNOLOGY COMMERCIALIZATION

Launched in 1996, the Master of Science in Technology Commercialization (MSTC) Program offers a one year, 30-hour business master's degree including ten highly integrated and interdisciplinary courses focused on (1) identifying technologies with market potential, (2) writing fundable business plans, and (3) developing launch plans for taking technologies to market either through new ventures or existing businesses, all with the goal of creating wealth in the process. Students include both aspiring entrepreneurs and corporate employees wanting to take technologies to market through their employer's company.

AIMS AND METHODS

The Master of Science in Technology Commercialization (MSTC) Program aims to create trained professionals who can identify emerging technologies with market potential and take them to market through either entrepreneurial ventures or established corporations. In the process they will create wealth for their companies, communities, and themselves. During this one-year graduate program, students develop commercialization strategies for transferring their product concepts into marketable solutions. They become the entrepreneurs who foster innovation and create new value and new markets. A background in technology is not required as this program focuses on the commercialization of technologies, not their creation. The ten-course curriculum emphasizes action-based learning as students assess actual technologies. Students apply a proprietary methodology called Quicklooks™ to determine the market potential of new technologies and assess if they are worthy of commercializing. In teams, candidates collaboratively develop marketing strategies and business plans. The program culminates with each team formally presenting its final technology commercialization plan to a panel of entrepreneurs and investors. The MSTC Program is offered in class at the McCombs School of Business and online wherever an Internet connection is available. Bringing the online students into the classroom via teleconferencing technology represents a major evolution in pedagogy for distant learning. This approach opens the Austin classroom to all of the Americas and Europe.

BACKGROUND

In the global economy, rapid technology commercialization becomes essential for mature economies like in the USA to maintain its ability to generate wealth. Rec-

ognizing the need to meet demands for accelerated commercialization of emerging technologies, the former Dean of the McCombs Business School created the MSTC Degree Program in 1996. The MSTC Program was designed to fill the need for commercialization professionals who could take technologies emerging from university research activities, federal laboratories, and corporate research centers to market. Since then, MSTC graduates have played a growing role in the technology commercialization process not only in Austin but around the world.

KEY PARTNERS

The Houston based oil field equipment company, National Oilwell Varco, sends teams of employees to the MSTC degree program as well as to a certificate program designed specifically for NOV engineers. NOV employees who completed these programs have launched multi-million dollar technologies as a result of the skill set learned. Advanced Micro Devices, Apple, Cisco, Dell and IBM send employees to the Program each year to create cadres of professionals capable of commercializing new technologies. IBM alone employs some 60 MSTC graduates.

ACHIEVEMENTS

Over 800 students have graduated from the Texas MSTC Program. Each year MSTC students participate in a business plan competition within the class, and go on to compete in business plan competitions throughout the country. Recently, Athena Laboratories won the international competition at the University of Manitoba; the venture has a cure for cellulite. The class of 2011 had six out of ten teams compete in business plan competitions, with two competing in the world-renowned "Texas Venture Labs Investment Competition" (formerly Moot Corp). Many MSTC

graduates have launched entrepreneurial ventures based on new technologies. Several of these are on trajectories to have significant exits within the next two years. Other graduates are involved in new product development at major corporations. UT Austin has "cloned" the MSTC Program in Poland, Australia, and Mexico; and discussions are underway to train faculties to teach the MSTC curriculum in Russia, Bulgaria, Scotland and Norway.

KEY CHALLENGES

A major challenge has been getting Corporate America to resume sending employees into the Program. Tuition funding has been cut back or reduced by Corporate America since the beginning of the Great Recession. We are starting to see this change a little, as some companies are starting to once again sponsor some employees for the Program. Another challenge has been the lack of "Career Resources". This had not been an issue up until this year, as most of the students in the past had been sponsored by their employers and continued to work with those companies after graduation. With more twenty-something students entering the Program, we need to provide them with career advice and employment assistance. Approval to hire a "Career Resources" expert has been granted for the Class of 2013.

FUNDING

The Texas MSTC Program does not receive any funding from the State of Texas, grants or corporate donations. The Program is 100% funded by student tuition.

CONTACT

Dr. Gary M. Cadenhead, MSTC Director
Gary.cadenhead@mcombs.utexas.edu
Website: www.texasmstc.org

UNIVERSITY OF TROMSØ, NORWAY:

BUSINESS CREATION AND ENTREPRENEURSHIP PROGRAM

The Business Creation and Entrepreneurship (BCE) program at the University of Tromsø is a business-oriented, group-based master's program within an international learning environment in Northern Norway. The program offers a diverse group of students the tools to become entrepreneurs, innovators, and creative thinkers through an action-based curriculum involving real-life projects. Our students aim to found firms right after graduation or become intrapreneurs within well-established firms.

AIMS AND METHODS

The first term on the BCE program is called the Business Creation Lab. The Lab's main objective is to create a foundation for innovative project development in the second year, and to explain how to take knowledge-based ideas to the market. The first semester involves role play and group work, as students from day one work on an idea. The University of Tromsø uses real ideas, real investors, and real idea providers as parts of the role play. Students transition in the second term from the BCE lab to idea generation where one of three options is pursued: (1) Developing their own idea. In developing their idea, the student can use UiT campus and all the faculties as a "laboratory". They can also search for input in other milieus. The students who choose this option will require the most entrepreneurial skills. If appropriate, an advisory team will be set up. (2) Working on potential entrepreneurial ideas from the idea bank. Ideas in the bank come from scientific environments in the Tromsø region, primarily from the University, but also from the University Hospital, NORUT and other affiliated researched facilities. Students choosing this option will learn how to work with scientific inventors. (3) Collaborating with an established company in Norway on creativity and innovation projects. Students will work side-by-side with BCE staff and industrial managers to devise innovative, human-centered solutions to real business problems using the design-thinking methodology. They will do in-depth field research, brainstorm, prototype, and eventually test their solutions in a team setting. The students apply the knowledge from their courses in the second and third term on the chosen entre-

preneurial idea or company innovation project. The fourth term is devoted to writing the Master thesis. During this term, much effort is also put in enhancing students' presentation techniques and presenting their work to external stakeholders. While writing the Master's Thesis, students are given close supervision by the professors. Regardless of the option chosen, the thesis uses theory and analysis to develop the student's projects.

BACKGROUND

Professor Lene Foss spearheaded the creation of the BCE program in 2008. The main impetus for doing so was to bridge the gap between academic inventors with research-based ideas and entrepreneurship students with the motivation to found thriving startups.

KEY PARTNERS

Norinova Technology Transfer contributes in the commercialization of technology and research-based innovations. Their main means are competence, a contact network, creative environments and capital. Northern Research Institute has research activities within technology, innovation and social science research and carries out research commissions for industry, business and the public sector. BioTech North is an emerging biotechnology cluster of enterprises and R&D organizations, which cooperate closely with regional funding and development actors (triple helix).

ACHIEVEMENTS

The program has graduated approximately 20 students and two research-based firms have been launched: D'Liver and Globesar. D'Liver offers services based on 30

years of research done by Professor Bård Smedsrød. Norinova Technology Transfer examined the commercial potential of D'Liver AS in collaboration with three students at BCE. A BCE graduate now leads the firm. Globesar AS is a Norwegian Earth Observation company with its head offices located in Tromsø, Norway. The company is a spin-off from the Northern Research Institute Tromsø (Norut) and was formed in June 2010.

KEY CHALLENGES

We face three main challenges: (1) The limited availability of research-based ideas in the Tromsø area, which fit the criteria for our BCE program. (2) The incentive structure for academic inventors potentially limits their involvement in the collaboration process with the BCE program. (3) It is at times difficult for international students (50% of the most recent cohort) to become integrated into the professional environment in Norway post graduation, due to language and cultural barriers.

FUNDING

The BCE program, like many other educational programs in Norway, is state-funded.

CONTACT

Professor Lene Foss,
E-mail: lene.foss@uit.no
Website: <http://bit.ly/JPjGLH>

THE ECOSYSTEM

Successful venture creation programs almost always seem to be part of a larger entrepreneurial ecosystem. It is outside of the scope of this folder to describe the multitude of types of actors here, but below is a good example of an important kind of ecosystem actor.

UNIVERSITY OF TEXAS AT AUSTIN, USA: THE IC² INSTITUTE

Innovation, Creativity & Capital: A research unit at The University of Texas at Austin, the IC² Institute investigates the processes of wealth creation. Emphasis is placed on moving technologies from the laboratory to the market, moving technology companies into the global market, and helping regions establish critical mass for high-technology cluster development. The Institute takes lessons learned worldwide and leverages best practices against emerging and developing economies. Major programs include the Austin Technology Incubator, the Bureau of Business Research, the Global Commercialization Group, and Central Research with Endowed & Global Fellows, Visiting Scholars, and Publications.

AIMS AND METHODS

The IC² Institute is a research unit of The University of Texas at Austin, that investigates the processes for wealth creation and tests best practices in real-world context. The Institute examines how regions enrich entrepreneurial ecosystems, accelerate high tech development, and enter global markets. Local champions across business, academia, and industry sectors are brought together to help develop a regional vision and determine “next steps” to leverage their assets to overcome challenges. Training programs help mentor individuals and “teach the teachers” so that a widespread sustainable economic impact can be realized. Particular focus is placed on moving technologies from the laboratory to the market, moving technology companies into the global market, and helping communities reach critical mass for regional wealth creation. Key goals of the Institute include: developing human capital, growing sustainable civil societies, catalyzing global economic networks, and accelerating wealth creation.

BACKGROUND

Dr. George Kozmetsky, co-founder of Tele-dyne, former Dean of the McCombs Business School, and winner of the National Medal of Technology, established the IC² Institute in 1977 with the vision that science and technology provide the basis for enterprise growth and economic development. In the 1980's, the Institute was an important catalyst across academia, gov-

ernment, and business, in Austin's economic transformation from a government-oil-agricultural model to that of a globally recognized high technology center. Lessons learned were articulated in the Austin Model, which continues to provide a research base for much of the Institute's work.

KEY PARTNERS

Technology innovation is often the result of interdisciplinary research, and IC² helps support Endowed Fellows across the UT Austin campus. IC² also works with more than 160 Global Fellows who, with the IC² Institute staff, provide a wide variety of in-depth expertise. The Austin Technology Incubator provides sector-specific assistance for member companies in the areas of IT, Clean Energy, Wireless, and Biotechnology. Master's degree programs in Technology Commercialization are currently offered in Austin, Mexico, Poland, Russia and Australia. Research programs to improve regional economies are currently underway in Mexico, India, Colombia, Portugal, Russia, South Korea and Norway.

ACHIEVEMENTS

IC² Institute regional programs help accelerate high technology growth and create high quality jobs. The Austin Technology Incubator has worked with more than 200 companies to secure more than \$750 million in venture capital. Hundreds of student interns have worked in this “labora-

tory” for venture creation. The Institute has provided technology commercialization training in Mexico, Brazil, Russia, the Canary Islands, Portugal, Poland, Hungary, Kazakhstan, India, China, Australia, and many regions across the United States.

KEY CHALLENGES

“The challenge of technology innovation in the globally competitive era is: How can each region and nation individually and in concert with others, manage technology creatively and innovatively to reap the benefits of sustained economic growth.” – Dr. George Kozmetsky, Founding Director, IC² Institute

FUNDING

The IC² Institute is a non-profit organization. IC² projects are funded by government, academic and business partners. Some of the Institute's core functions are funded by IC² endowments. The Austin Technology Incubator works closely with city, state, and national organizations that help supplement programmatic expenses; only the Bureau of Business Research receives state educational funds. Efforts are underway to increase endowments to expand research efforts.

CONTACT

Dr. David V. Gibson, Associate Director
E-mail: davidvg@ic2.utexas.edu
Website: www.ic2.utexas.edu

ELF PARTICIPANTS

Representatives from all of the described programs in this folder met in Gothenburg in June 2012 at the inaugural Entrepreneurial Learning Forum, hosted by Chalmers University of Technology. The aim was to establish a community for the pioneers of this kind of programs, in order to discuss, share and make more sense of experiences, knowledge and expertise. Below is a list of participants, and also some relevant literature on venture creation programs written by the participants and others.

STEFFEN	FARNY	AALTO UNIVERSITY
FABIAN	SEPULVEDA	AALTO UNIVERSITY
ANNE	DONNELLON	BABSON COLLEGE
DAVID	ANDERSSON	CHALMERS UNIVERSITY OF TECHNOLOGY
VIKTOR	BRUNNEGÅRD	CHALMERS UNIVERSITY OF TECHNOLOGY
KRISTINA	HENRICSON	CHALMERS UNIVERSITY OF TECHNOLOGY
MARTIN	LACKÉUS	CHALMERS UNIVERSITY OF TECHNOLOGY
MATS	LUNDQVIST	CHALMERS UNIVERSITY OF TECHNOLOGY
KARL	PALMÅS	CHALMERS UNIVERSITY OF TECHNOLOGY
KAREN	WILLIAMS MIDDLETON	CHALMERS UNIVERSITY OF TECHNOLOGY
GREGORY	GRAFF	COLORADO STATE UNIVERSITY
CARL	HAMMERDORFER	COLORADO STATE UNIVERSITY
JOAN	LOCKYER	COVENTRY UNIVERSITY
TOMAS	KARLSSON	LUND UNIVERSITY
HANS	LANDSTRÖM	LUND UNIVERSITY
MARIE	LÖWEGREN	LUND UNIVERSITY
JOAKIM	WINBORG	LUND UNIVERSITY
STEVE H	BARR	NORTH CAROLINA STATE UNIVERSITY
ROGER	DEBO	NORTH CAROLINA STATE UNIVERSITY
PASCAL	RENARD	PROGRAMME WALLON ESPRIT D'ENTREPRENDRE
FRANK	JANSSEN	UNIVERSITÉ CATHOLIQUE DE LOUVAIN
NIGEL	ADAMS	UNIVERSITY OF BUCKINGHAM
BOO	EDGAR	UNIVERSITY OF GOTHENBURG
KARL	MAACK	UNIVERSITY OF GOTHENBURG
PAMELA	NOWELL	UNIVERSITY OF GOTHENBURG
JOHN	THOMPSON	UNIVERSITY OF HUDDERSFIELD
DAVID	GIBSON	UNIVERSITY OF TEXAS AT AUSTIN
LENE	FOSS	UNIVERSITY OF TROMSÖ
FEDERICO	LOZANO	UNIVERSITY OF TROMSÖ
ELIN	OFTEDAL	UNIVERSITY OF TROMSÖ

SOME REFERENCES ON VENTURE CREATION PROGRAMS

- Barr, S. H., Baker, T., & Markham, S. K. (2009). Bridging the Valley of Death: Lessons Learned From 14 Years of Commercialization of Technology Education. *Academy of Management Learning & Education*, 8(3), 370-388.
- Boocock, G., Frank, R., & Warren, L. (2009). Technology-based entrepreneurship education: meeting educational and business objectives. *The International Journal of Entrepreneurship and Innovation*, 10(1), 43-53.
- Hedner T, Edgar B, Maack K, Abouzeedan A; Innovation and entrepreneurship curricula in a Swedish university setting - Theoretical, tacit and narrative learning aspects, In *innovation and entrepreneurship in Universities*; ed M-L Neuvonen-Rauhala Proceedings of the 3rd international FINPIN 2010 Conference Joensuu, Finland, April 25-27. 2010 pp 150-162
- Janssen, F., Eeckhout, V., & Gailly, B. (2007). Interdisciplinary approaches in entrepreneurship education programs. In A. Fayolle (Ed.), *Handbook of Research in Entrepreneurship Education*, Volume 2 (pp. 148-165). Northampton: Edward Elgar.
- Kington, A. I., Thomas, R., Markham, S. K., Aiman-Smith, L., & Debo, R. (2001). An integrated approach to teaching high technology entrepreneurship at the graduate level.
- Lackéus, M., & Williams-Middleton, K. (2011). *Venture Creation Programs: entrepreneurial education through real-life content*. Paper presented at the Babson College Entrepreneurship Research Conference (BCERC) 2011 Syracuse.
- Meyer, A. D., Aten, K., Krause, A. J., & Metzger, M. L. (2011). *Creating a university technology commercialisation programme: confronting conflicts between learning, discovery and commercialisation goals*. *International Journal of Entrepreneurship and Innovation Management*, 13(2).
- Ollila, S., & Williams-Middleton, K. (2011). The venture creation approach: integrating entrepreneurial education and incubation at the university. *Int. J. Entrepreneurship and Innovation Management*.
- Rasmussen, E. A., & Sørheim, R. (2006). Action-based entrepreneurship education. *Technovation*, 26(2), 185-194.
- Thursby, M. C., Fuller, A. W., & Thursby, J. (2009). *An Integrated Approach to Educating Professionals for Careers in Innovation*. *Academy of Management Learning & Education*, 8(3), 389-405.

VENTURE CREATION PROGRAMS

In this folder, venture creation programs are defined as follows: “An entrepreneurship or business education program at a higher education institution with a pedagogy firmly based on the creation of a real-life venture as their primary learning vessel, with intention to incorporate or in some other way indicate future operative status”.



CHALMERS