



# Intensive Training



25 Jan - 5 Febr 2010

## Entrepreneurship in Photonics

A modular training for everybody who is interested in entrepreneurship in photonics.  
An initiative of the European Commission funded Network of Excellence on Biophotonics  
"Photonics 4 Life" and Vrije Universiteit Brussel.

Vrije Universiteit Brussel, Pleinlaan 2, 1050 Elsene, BELGIUM

### Module 1 Introduction to Business Economics (3 days)

25-27 January 2010

The first module covers an introduction to business economics and high tech entrepreneurship. It is aimed at young professionals with limited economic background. The module provides an introduction to a wide range of disciplines: understanding the structure and dynamics of industrial sectors, financial management and venture capital, intellectual property rights and other legal aspects, team and HR aspects, entrepreneurial marketing, strategy and management.

### Module 2 Business aspects of Photonics (5 days)

28 Jan. - 3 Feb. 2010

Module 2 provides young professionals with an overview of the photonics markets and the typical business aspects associated with these markets. Several sectors, where photonics plays an enabling role, are addressed, including those related to health and life sciences. Since the training is organized in the context of Photonics 4 Life, the European Network of Excellence on Biophotonics, a special focus is placed on the application of light in life sciences and in the medical sector. In order to get a better understanding and to make it more 'real-life', testimonials and business cases are included in the program, where photonics entrepreneurs & professionals will share their ideas and experiences with you. We continuously apply the concepts introduced in the first module.

### Module 3 Business plan (2 days)

4-5 February 2010

The third module lasts 2 days and provides concrete guidance to potential entrepreneurs on how to prepare and negotiate a business plan.

Fees:	Modules	M 1	M 2	M 1+2	M 1+2+3
	P4L/Academia/P4L IUC members	500 €	750 €	1,000 €	1,250 €
	Industry	1,000 €	1,500 €	2,000 €	2,500 €



For more information, please send an email to Tom Guldemont, the coordinator of this intensive training ([tom.guldemont@vub.ac.be](mailto:tom.guldemont@vub.ac.be)) and to Bernadette Callebaut ([bcallebaut@tona.vub.ac.be](mailto:bcallebaut@tona.vub.ac.be))



For a detailed programme and to register, please go to the following link:  
<http://www.photonics4life.eu/P4L/Events/Intensive-training-on-Entrepreneurship-in-Photonics>

The first 10 young researchers of Photonics 4 Life will receive a reimbursement of up to 400 €.

Please note that housing is not included in the subscription fee! However, to the first 9 subscribers, we can offer rooms at proximity of the university at very beneficial tariffs.



# Agenda Intensive Training Entrepreneurship in Photonics

Courses will be lectured by members of the Solvay Business School VUB, while keynote addresses will be given by experts in the field of photonics research, industry and sales.

## Module 1 Introduction to Business Economics ●

## Module 2

Monday  
25 January 2010

Tuesday  
26 January 2010

Wednesday  
27 January 2010

Thursday  
28 January 2010

Friday  
29 January 2010

08.15 - 08.45	Registration	Registration	Registration	Registration	Registration
08.45 - 10.30	Introduction and Business Ecosystems (Marc Goldchstein - VUB)	Finance 1: Funding Start-Ups (Diane Breesch & Marc Goldchstein - VUB)	Finance 3: Financial Analysis (Diane Breesch - VUB)	Introduction, Setting and History (Tom Guldemont - VUB)	Lighting (Continued) (Tom Guldemont - VUB)
10.30 - 10.45	Coffee Break	Coffee Break	Coffee Break	Break	Break
10.45 - 12.15	Innovation and Life Cycles (Marc Goldchstein - VUB)	Finance 2: Accounting (Diane Breesch - VUB)	Finance 4: Selected Topics (Diane Breesch - VUB)	Solar Energy (Tom Guldemont - VUB)	Displays (Tom Guldemont - VUB)
12.15 - 13.30	Lunch	Lunch	Lunch	Lunch	Lunch
13.30 - 15.00	Strategy and Management (Marc Goldchstein - VUB)	HR and team aspects (Mirya Pollmann)	Marketing (Marc Goldchstein - VUB)	Solar Energy (Continued) (Tom Guldemont - VUB)	Displays - E-Ink (Marc Goldchstein - VUB)
15.00 - 15.15	Coffee Break	Coffee Break	Coffee Break	Break	Break
15.15 - 17.00	Intellectual Property Rights (Hugo Loosvelt - VUB)	HR and team aspects (Mirya Pollmann)	Marketing (Marc Goldchstein - VUB)	Lighting (Tom Guldemont - VUB)	Displays - Barco (Martin De Prijcker - ex-Barco) (tbc)
17.00 - 18.30			Reception		

## Module 2 Business Aspects of Photonics ●

## Module 3 Business Plan ●

Monday  
1 February 2010

Tuesday  
2 February 2010

Wednesday  
3 February 2010

Thursday  
4 February 2010

Friday  
5 February 2010

08.15 - 08.45	Registration	Registration	Registration	Registration	Registration
08.45 - 10.30	Lasers (Tom Guldemont - VUB)	Case Image Sensors - Optrima (Daniel Van Nieuwenhove - Optrima)	Biophotonics - Medical Imaging (Johan de Mey - VUB)	Defining your venture (Kevin Douven - VUB)	About Business Plans (Marc Goldchstein - VUB)
10.30 - 10.45	Break	Break	Break	Coffee Break	Coffee Break
10.45 - 12.15	Case lasers (Kevin Douven - VUB)	Case Fibre Optic Sensors - FOS&S (Johan Vlekken - FOS&S)	Biophotonics - Sales & Marketing (Hubert Raeymaekers - Philips)	Performing an IP search (Hugo Loosvelt - VUB)	Term Sheets (Tbd - VUB)
12.15 - 13.30	Lunch	Lunch	Lunch	Lunch	Lunch
13.30 - 15.00	Industrial automation (Tom Guldemont - VUB)	Telecommunications (Tom Guldemont - VUB)	Biophotonics - Lab-on-a-chip (Ronny Bockstaele - Trinean)	Financial Plans (Kevin Douven - VUB)	A Venture Capitalists' Perspective (Tbd)
15.00 - 15.15	Break	Break	Break	Coffee Break	Coffee Break
15.15 - 17.00	Case Machine Vision - BEST (Christiaan Fizev - BEST)	Biophotonics - Clinical trials (Bernie Caessens - Cochlear)	Biophotonics - Trinean (Ronny Bockstaele - Trinean)	Start-Up Valuation (Thomas Crispeels - VUB)	In the Dragon's Den (Participant - Team)
17.00 - 18.30			Reception		Reception

More than ever it is of essential importance for our economy to innovate and generate new growth-oriented businesses. Photonics is a major enabling technology and will driver for innovations in a wide range of domains. Its core technologies, such as lasers, light emitting diodes, vision, displays, fibre optic cable, photovoltaic cells... translate in a wide range of industrial and consumer applications, of which several are in an explosive growth phase.

In order to stimulate and support innovative entrepreneurship in the domains of photonics, the VUB organizes an “Intensive Training on Entrepreneurship in Photonics”. This intensive course is targeted at researchers of universities and research institutes, young professionals, employees of photonics related companies, lawyers, business angels, consultants... active in the domain. In short: everybody who is involved or interested in entrepreneurship in photonics.

It is a 2-week modular training held in Brussels, starting on Monday 25 January 2010, ending on Friday 5 February 2010. It builds on the expertise and educational program developed at the institution over the last years, in close collaboration between the Business Economics Department (BEDR) and the Department of Photonics and Applied Physics (B-PHOT).

## Module 1

## Introduction to Business Economics

25-27 January 2010

The first module is aimed at young professionals with limited economic background. The module provides a general introduction to a wide range of disciplines that all entrepreneurs will encounter in developing their business.

- **Business ecosystems, innovation and strategy:** During the first day we provide insights in how ‘economic sectors’ are organised into business ecosystems. We will study value chains, standards and network effects; we will identify different types of actors. We then study the different typologies of innovation and how innovations permeate in ecosystems. Finally, we discuss the implications of the above on entrepreneurial strategy.
- **Intellectual property rights:** Often patents are the most important asset of a high tech startup. In this session Hugo Loosvelt presents key concepts of patents and other IP rights.
- **Funding high tech startups:** In the first session on finance we discuss funding needs of high tech startups, and get an overall view on the alternatives and their implications.
- **Accountancy and financial analysis:** We allocate 3 sessions to the key topic of financial management. These sessions are taught by Professor Diane Breesch. In the first session we study key financial reports (balance sheets and profit-and-loss statements) and accounting concepts (investment, depreciation, stock, accrual...).
- **Team dynamics:** in these sessions we elaborate on one of the key challenges of entrepreneurship: building and holding together a team of top notch professionals, and working together as an efficient and effective team. The session is organized by Mirya Pollmann, an experienced trainer/coach and HR professional.
- **Accountancy and financial analysis II:** We learn to analyse financial accounts; we study cash flow planning. Finally, we cover specific aspects such as VAT, taxes, labour costs, insurance...
- **Marketing:** In these sessions we elaborate on sales and marketing aspects of high tech startups. First we study key differences between selling to consumers and businesses. We discuss how entrepreneurs can assemble knowledge about their markets. We touch on the role of product management and discuss pricing aspects. We discuss marketing communications for high tech entrepreneurs. We study the role of distribution channels and sales organisations, and touch on the role of customer service.

Monday 25 January

Tuesday 26 January

Wednesday 27 January

There will be an examination on this course on Saturday, the 30th of January, for those participants who wish to earn 3 ECTS-credits (prerequisite: general economics course).

## Module 2

## Business aspects of Photonics

28 Jan. - 3 Feb. 2010

General: Module 2 aims to provide young professionals with an overview of the photonics markets and the typical business aspects associated with these markets. Several sectors, where photonics plays an enabling role, are addressed. We regularly focus on aspects that illustrate the concepts taught in the first module. Business cases are provided, and photonics entrepreneurs & professionals will share their ideas and experiences with you.

- **Setting & History of Photonics:** The 2nd module starts with a general introduction to Photonics. We will give you an overview of important photonics organizations and a description of the diverse photonics markets

Thursday 28 January

- **Solar energy:** Renewable energy sources are becoming more and more successful. Solar energy is one of the fastest growers among them. One of the main drivers of this growth are government incentives. Other topics that will be addressed are its history, current and emerging technologies, production processes, a value chain analysis, applications and venture capital investment

- **Lighting, LEDs & OLEDs:** Different kinds of light sources exist, in nature, and made by mankind. The incandescent light bulb is at the end of its industry life cycle, opening the way for newer technologies, like gas discharge lamps and solid-state lighting. The history and development of LEDs, another photonics building block, is sketched, as well as patent issues and applications. On the other hand, OLED is proving to be a competing and complementing technology for LEDs.

- **Lighting, LEDs & OLEDs (continued)**

Friday 29 January

- **Monitors & projectors: Industry Overview & LCD Value Chain:**

During this talk, different kinds of display technologies, their development and applications are presented. You are introduced to the value chain of LCDs, the market structure of LCD components, and a view on their suppliers. Other topics that are addressed are ‘the rise of the East’ and the impact of a recession on the LCD value chain

- **Monitors & projectors: E-Ink, a competing technology:** E-Ink is the technology used in e-books and e-readers. Through the years, the company had to make many strategic choices, like their place in the value chain, the cooperation with other companies,... This session tells the exciting story of E-Ink.

- **Monitors & projectors: Case: Barco:** The story of Barco is one of continuous change. As a company founded in 1934 and assembling radios, Barco developed to become a leader in the global display market. The last decennia, Barco acquired and sold several business units, placing the focus on all sorts of displays. Martin De Prycker, ex-CEO of Barco, will tell you what is related to making these strategic choices.

- **Lasers:** Lasers are one of the building blocks of the photonics world.

Invented in 1960, the laser celebrates its 50th birthday in 2010. In this session, the history and several types of lasers are discussed, including their applications.

Monday 1 February

- **Case: Lasers:** We discuss several papers of Steven Klepper (Carnegie Mellon University) and Guido Buenstorf (Max Planck Institute of Economics) in which the influences on start-up location are analyzed for the German laser industry. Furthermore, a model of industry evolution is developed to explain the creation, destruction and fusion of independent submarkets in the US laser industry. Similarities in the spin-off development process are found between the German and the US laser industry.

## Module 2

## Business aspects of Photonics

28 Jan. - 3 Feb. 2010

### Monday 1 February

- **Industrial automation: Vision & Sensing:** This session explores how photonics plays a growing role in enabling machines and installations to sense their surroundings. It includes an introduction to image sensors, machine vision and its applications in manufacturing and non-manufacturing industries. 1 chapter will be devoted to a special type of Machine Vision, namely thermal imaging. Another type of sensing is provided by optical fibre sensors, which can be used to measure several parameters such as pressure, strain or temperature in all sorts of environments.
- **Case Machine Vision: BEST:** BEST is active in the food sorting business. It manufactures and sells sorting machines based on photonics technologies. Christiaan Fivez, the CTO of the company, will provide you with a guest lecture, where you will be confronted with, amongst others, a very special sales model. The session is then completed with a walk through the demonstration room where you can see the machines at work.

### Tuesday 2 February

- **Case Image sensors: Optrima:** The story of the very recent VUB spin-off is told by Daniel Van Nieuwenhove, a researcher who developed the 3D camera the company commercializes. The options for the company are very diverse. This is a very welcome innovation in the world of interactive gaming. But also in other fields, like industrial automation, interest is growing.
- **Case Fibre optic sensors: FOS&S:** As a spin-off of the Vrije Universiteit Brussel, this company provides fibre optic sensing solutions in very demanding engineering environments. Johan Vlekken, the Chief Technology Officer of FOS&S, tells you about the history of this SME and explains how they try to enter new and existing market segments, which are currently served by traditional electronic sensors.
- **Telecommunications:** This session elaborates on how photonics is used in our communication networks. A special focus is placed on Fiber-To-The-Home (FTTH), where the last mile of copper wire in our information networks is replaced by optical fibers. We will examine the advantages of the technology, structures & standards and the European and global implementation.
- **Biophotonics: Clinical Trials:** One aspect that distinguishes the life sciences industry from other industries, are clinical trials. Any product that is to be used for medical applications has to go through this time-consuming process and has to be approved. In this session, Bernie Caessens explains how these trials are organized, how long they take, which steps are involved, how you have to cope with them, and so on.

### Wednesday 3 February

- **Biophotonics: Overview of Medical Imaging:** Medical imaging is an important section in the biophotonics field. Johan De Mey, head of the radiology department of the University Hospital, will provide you with an overview of the different technologies that are used, as well as the companies that supply these products.
- **Biophotonics: Case Philips: Sales & Marketing in Medical Imaging:** Medical imaging installations typically are products that you don't buy in a supermarket. So, how is the sales model of a medical imaging company structured? How do they market their products? The presentation of Hubert Raeymaekers, Country Director Belgium - Luxemburg at Philips HealthCare will give you an answer to these questions.
- **Biophotonics: Introduction to lab-on-a-chip:** An emerging life sciences market is point-of-care diagnostics & analysis. This is possibly enabled by using lab-on-a-chip devices, where a photonics technology can be integrated to analyze a sample. This session will present how these devices become more and more important in diagnostics.
- **Biophotonics: Case: Trinean:** Trinean is a young Belgian company that develops and sells lab-on-a-chip devices. In its early years, it proved difficult to collect the necessary funding, but the company managed to survive. Ronny Bockstaele, one of the founders of Trinean, tells you his story and adventures.

## Module 3

## Business Plan

4-5 February 2010

In module three, participants will put to use all the previous learning on Business Economics and apply this on their own business case. Their ideas will be translated into a business model, written down in a business plan and finally presented to a venture capitalist. Confidentiality will be respected.

On Thursday, a framework for developing a sustainable business model summarizes the previously learned concepts. This is followed by an interactive patent database search, tailored to the participant's business case. In the afternoon, the attention shifts towards the financial aspects of business modeling, (e.g. financial forecasting, cash flow analysis, sensitivity analysis...). The day is concluded with insights into various start-up valuation tools and techniques employed by venture capitalists.

- **Defining your venture**, in the first session we discuss a general framework to 'describe' a high tech venture. We will learn to ask fundamental questions about the project.

Thursday 4 February

- **Performing an IP search**: in this course participants are guided in performing a patent search on their business case. In this way, they will be aware of existing patents related to their invention, which enables them to determine their freedom to operate.

- **Financial plans**: just after lunch, we study the financial aspects of business plans, such as a cost and sales forecasting, a cash flow analysis, capital needs...

- **Start-up valuation**: one of the most challenging aspects of entrepreneurship is the valuation of the young company. Therefore, at the end of the day, we will elaborate on the different start-up valuation tools and techniques that are used by venture capitalists.

On Friday, the financial plan is turned into a business plan and the specifics of how to write a convincing business plan are explained. Afterwards, term sheets and other legal aspects are covered. After the lunch break, a venture capitalist will come to explain what the most important characteristics for success are in high-tech ventures, and how he values them in a start-up company.

At the end of the day, all participants pitch their business case to the VC and apply the concepts and insights they've learned throughout the course. A team of business developers and technology transfer officers from the VUB will join the venture capitalist to provide feedback to the participants' business cases.

- **About business plans**: at the beginning of the last day, we discuss the content and the structure of a business plan.

Friday 5 February

- **Term sheets**: in this course, we look at the process of negotiating with venture capitalists; we zoom in on the typical elements of negotiation on shareholder rights.

- **A venture capitalists' perspective**: in this session, we meet a venture capitalist. Participants will learn how a VC looks at a business plan and what is important for him or her.

- **In the Dragon's Den**: volunteer participants pitch their business case to Venture capitalists and business developers from the VUB. They will provide feedback to the participants' business case.