

## Hohenheim Summer School 2015: Innovation | Finance | Entrepreneurship

### Content:

Economic growth crucially depends on innovations. However, innovations develop under a high degree of risk and uncertainty and rupture existing structural patterns. Thus, the rise and management of innovations poses severe organizational problems, and it creates special informational problems that can obstruct financing. Successful innovations require not only financial resources, but also a true entrepreneurial spirit; be it inside an existing company or through the creation of start-up companies.

The aim of our Summer School is to provide you with sound knowledge on the economics, management and financing of innovations and the link of the respective concepts to entrepreneurial behavior and the creation and financing of innovative new companies.

### Learning outcomes:

Our Summer School will provide insights into core concepts of innovation economics, entrepreneurship and innovation management, with a particular focus on risk and risk management, financing of innovations and implications for public policy. We will provide you with analytical tools that enable you to tackle fascinating and highly important research questions in these areas. On the practical side, the learned skills may help you in establishing your own business, in getting job as an alternative investment manager in an insurance company or a mutual fund, as a manager in a VC firm, as a consultant in the government agency that supports entrepreneurial companies and their capital providers at a regional, national or supra-national level.

**Duration of program:** 2 – 24 July 2015

**Lectures:** Students will receive 42 hours of academic lectures (14 lectures à 3 hours)

**ECTS:** 9

**Form of assessment:** Group presentation, oral exam

**Range of application:** Advanced undergraduate and graduate students

### Preliminary Course Structure:

#### A. OVERVIEW LECTURES

Prof. Dr. Andreas Pyka: An introduction into innovation economics

Prof. Dr. Tereza Tykvová: An introduction into entrepreneurial finance

Prof. Dr. Andreas Kuckertz: An introduction into entrepreneurship research

#### B. RISK and RISK MANAGEMENT

Prof. Dr. Jörg Schiller: Risk Perception, Risk Taking and Risk Aversion

Dr. Niklas Lampenius: Risk Management using Monte Carlo Simulation

#### C. TOOLS

Prof. Dr. Robert Jung: Econometrics of Innovation

Prof. Dr. Dirk Hachmeister: Entrepreneurial Firms' Valuation

#### D. ROLE OF FINANCIAL MARKETS

Prof. Dr. Hans-Peter Burghof: Early-stage finance, state subsidies and financial markets

Prof. Dr. Sibylle Lehmann: Financing innovation in the industrial revolution

#### E. MANAGEMENT OF INNOVATION

Prof. Dr. Alexander Gerybadze: Innovation Management and New Product Development

Guest speakers from Industry: R&D Management | Patent and Intellectual Property Management

Prof. Dr. Andreas Kuckertz: New Venture Development

#### F. PUBLIC POLICY

Prof. Dr. Alexander Gerybadze: Innovation Policy in Germany

Prof. Dr. Hans Tümmers: Innovation Management, R&D Policy, European R&D Policy

## A. OVERVIEW COURSES

### **Prof. Dr. Andreas Pyka: An introduction into innovation economics**

Innovation economics will introduce the summer school students into the broad field of modern innovation economics. Innovation economics has gained momentum since the 1990s as an autonomous field in economics qualified by the increasing importance of knowledge and innovation for the competitiveness of firms, regions and economies as well as by the peculiarities of innovations, which makes innovation processes difficult to be analyzed in the context of standard industrial economics. It turned out that modern innovation economics has become a field of interdisciplinary research combining besides economists, among others technological historians, economic sociologist, engineers and complexity researchers. In this course, students will be made acquainted with important concepts and ongoing research projects.

#### Literature:

Dosi, G. and Nelson, R. (2010), Technical Change and Industrial Dynamics as Evolutionary Processes, in: Hall, B. and Rosenberg, N. (eds.), Handbook of the Economics of Innovation, Vol. 1, 51-127

### **Prof. Dr. Tereza Tykvová: An introduction into entrepreneurial finance**

The lecture will address key questions which challenge all entrepreneurs and their investors: How much money should be raised? Who should provide it? When should the money be raised? How should funding be structured? What are the information problems that investors and entrepreneurs face? We will put particular focus on venture capital.

#### Literature:

Robb, A. M. and D. T. Robinson (2013). "The Capital Structure Decisions of New Firms". Review of Financial Studies, forthcoming.

Denis, 2004: "Entrepreneurial finance: An overview of the issues and evidence". Journal of Corporate Finance, Elsevier, Volume 10, pages 301-326.

Amit, Brander, Zott 1998: "Why do Venture Capital Firms Exist? Theory and Canadian Evidence". Journal of Business Venturing, Volume 13, pages 441-466.

### **Prof. Dr. Andreas Kuckertz: An introduction into entrepreneurship research**

Entrepreneurship research provides answers related to questions of how new ventures can enter new markets successfully, how established corporations can overcome organizational inertia by developing an entrepreneurial spirit and what factors allow whole economies to become more entrepreneurial. This class will introduce students to the main concepts and results of entrepreneurship addressing these three fundamental questions.

#### Literature:

Shane, S., & Venkataraman, S. (2000). The promise of entrepreneurship as a field of research. Academy of management review, 25(1), 217-226.

## B. RISK and RISK MANAGEMENT

### **Prof. Dr. Jörg Schiller: Risk Perception, Risk Taking and Risk Aversion**

Financial decisions are usually made in a risky environment. The lecture will deal with the following questions: How do people perceive risky situations? When people are risk averse, do they dislike certain risks more than others? Which risks are people willing to take? How can we model and measure behavior in risky situations? In order to explore these questions, the lecture will include experiments, which are directly analysed in the classroom.

- Expected utility, expected value, certainty equivalent and risk premium
  - Holt-Laury Experiment
  - Determine your own utility function
- Loss Aversion
  - Rabin-Critique
  - Fourfold pattern of risk attitude (Eisenführ et al.)
- Probability Weighting
- Prospect Theory

Literature: tba

### **Dr. Niklas Lampenius: Risk Management using Monte Carlo Simulation**

The course covers the identification and management of operational and financial risks in the context of innovations using Excel-based Monte Carlo Simulation tools. In the course of the session, students model and identify operational and financial risks in a case-study based context. Further, students test various mitigations strategies in terms of cost efficiency and mitigation potential. The session concludes with a recommendation to management regarding the top-5 risks and potential mitigation strategies of a particular innovation.

Literature: tba

## C. TOOLS

### **Prof. Dr. Robert Jung: Econometrics of Innovation**

A common measure for the innovativeness of a firm is the number of patents it files. Patents have the advantage that reliable data is available through official databases of the European Patent Office or the U.S. Patent and Trademark Office for example. But, because of the non-negative and integer nature of the data special econometric methods have to be employed. The purpose of this course is to introduce you to these count data models and to investigate possible influencing factors like tangible and knowledge capital stock on the number of patents of a firm using a real world data set and the statistical software package STATA.

#### Literature:

Schwalbach, J. and Zimmermann, K.F. (1990) A Poisson Model of Patenting and Firm Structure in Germany. In: Acs, Z. and Audretsch, D. (eds.) Innovation and Technological Change. Springer.

Winkelmann, R. (2008) Econometric Analysis of Count Data. Springer (5<sup>th</sup> ed.)

### **Prof. Dr. Dirk Hachmeister: Entrepreneurial Firms' Valuation**

Valuation is the process of converting a forecast into an estimate of the value of the firm. In the first part, we will have a short look on valuation theory and concepts. In practice, a wide variety of valuation approaches is employed. In this lecture, we illustrate valuation using an all-equity firm to simplify the discussion and look at implementation issues using the real life example of Facebook Inc.

#### Literature:

Koller, T./ Goedhart, M./ Wessels, D. (2010), Valuation, 5. Aufl., Hoboken.

## **D. ROLE OF FINANCIAL MARKETS**

### **Prof. Dr. Hans-Peter Burghof: Early-stage finance, state subsidies and financial markets**

The financing of young innovative companies is hampered by several inefficiencies. The high degree of riskiness, information asymmetries and contractual incompleteness can lead to market failure, in particular if these companies rely on new and innovative technologies. A solution can be found in the adequate design of financial instruments and the availability of financial markets. Furthermore, the state tries to overcome these inefficiencies through subsidies. In the course, these different remedies to improve early stage financing are presented and evaluated according to their economic efficiency.

#### Literature:

Allan, F./Gale, D.: Diversity of Opinion and Financing of New Technologies, *Journal of Financial Intermediation*, Vol. 8 (1999), pp. 68-89.

Bauer, E./Burghof, H.-P.: The Economics of State Subsidies in Early Stage Financing, *International Journal of the Economics of Business*, Vol. 14 (2007), pp. 433-457.

Schmidt, K. M.: Convertible Securities and Venture Capital Finance, *Journal of Finance*, Vol. 58 (2003), pp. 1139-1166.

### **Prof. Dr. Sibylle Lehmann: Financing innovation in the industrial revolution**

The course will discuss how innovative companies accessed capital during the industrial revolution in Germany. A particular focus will be put on the role of the German universal banks and stock exchanging in this process.

#### Literature: tba

## **E. MANAGEMENT OF INNOVATION**

### **Prof. Dr. Alexander Gerybadze: Innovation Management and New Product Development**

This course emphasizes the role of industrial corporations in implementing innovation at the firm and industry level. We will compare large multinational firms and their R&D investments as well as entrepreneurial young start-up firms. New techniques such as stage-gate-processes, R&D portfolio management and strategic management of technology will be described using selected case examples. German corporations and their strategies will be compared with companies from North America and Asia.

Literature: tba

### **Guest speakers from Industry: R&D Management | Patent and Intellectual Property Management**

This course will give an insight into the topics of R&D Management and Patent & Intellectual Property Management from a practitioner's perspective. Details will be announced with the programme brochure during spring 2015.

### **Prof. Dr. Andreas Kuckertz: New Venture Development**

tba



## **F. PUBLIC POLICY**

### **Prof. Dr. Alexander Gerybadze: Innovation Policy in Germany**

This course provides an overview of political processes through which decision-makers at federal and state level attempt to influence and set the stage for research and the national innovation system. What is considered public and what is private? The structure and governance of the public research system and the universities in Germany. Industrial R&D activities and mechanisms for public support of private R&D. Federal innovation policy vs. Länder states and regional clusters. The course provides deep insight into the work of the Expert Commission of Research and Innovation (EFI) and the recommendations of this advisory council during the period 2010-2015.

Literature: tba

### **Prof. Dr. Hans Tümmers: Innovation Management, R&D Policy, European R&D Policy**

The course discusses innovation management and the role of R&D policy, with the particular focus on the European Union.

Literature: tba