Courses in English
Course Description

Department 10 Business Administration

Course title Sustainable Technopreneurship – (Re-)Aligning Business, Strategy and Management of Technologies and Innovations towards Sustainability

Hours per week (SWS) 4

Number of ECTS credits 5

Course objective

• Students understand that business activities have impacts and are of relevance in terms of Sustainability – along products’ whole life cycles and supply chains. Sustainability is a major business driver to gain competitive advantages. Students realize the business case for sustainability and its various opportunities for eco-innovations and social innovations, particularly based on latest ICT (Information and Communication Technologies) applications.

• Students could synthesize the principles of Strategic Management of Technologies and Innovations on the one hand and Sustainability Management or Corporate Social Responsibility (CSR) resp. on the other, with the aim to (re-)align businesses, strategies, management, technologies and innovations explicitly towards the globally accepted “Leitbild” of Sustainability.

• Students are familiar with the specific methods used for Technology Foresight and with the instruments of Technology Assessment and Sustainability Impact Analyses. They are enabled to apply this toolbox characteristic for Sustainable Technopreneurship in real life examples, e.g. at product, process, enterprise, supply chain, local area, and industry level.

Business engineers, technology managers, and other decision makers in technology-driven enterprises are faced with a wide range of responsibilities: They are in charge of the acquisition, preservation, protection and application of technological competencies. As the overarching goal, they are expected to attend to a preferably solid and market-oriented technological position of their company.

Sustainable Technopreneurship helps to inspire the next generation of forward-looking decision makers: to identify technological developments and future market trends, to rethink basic assumptions of business administration & management theory, and to redesign business models, processes, products & services, while contributing to a viable future, finally mainstreaming sustainable businesses.

Sustainable Technopreneurship is a new and powerful synthesis integrating Strategic Management of Technologies and Innovations and Sustainability Management or Corporate Social Responsibility (CSR) resp. The aim of this synthesis is to (re-)align businesses, strategies, management, technologies, and innovations explicitly towards the globally accepted “Leitbild” of Sustainability. Therefore a characteristic toolbox with sound methods and specific instruments are applied, among others: the Foresight Toolbox with Delphi Method, Scenario Analysis, and Technology Roadmapping and the various instruments used for Technology Assessment and Sustainability Impact Analyses.

In a nutshell, Sustainability aims to create economic living conditions that enable all the Earth’s population to satisfy their needs today, without compromising the ability of future generations to satisfy theirs. At least since the “Agenda 21” has been introduced at the Conference for Environment and Development 1992 in Rio de Janeiro (Brasil), Sustainability became the unifying aim for a long-term globally livable future. Approaching this Leitbild requires no less than a review of basic economic assumptions and the willingness to change our mindsets along doing business.
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Conventional management concepts and orthodox mainstream business practice mainly focus on so-called “pure” techno-economic goals, meeting minimum socio-ecological requirements defined by laws, regulations, norms or nature’s carrying capacity. As a result of such a narrow-minded, mere market-focused, short term business perspective enterprises as well as society and nature are faced with serious negative impacts and global risks. These impacts and risks in turn are produced by modern lifestyles and unsustainable resource-intensive patterns of production and consumption. Against the background of pressing environmental and social challenges - and corresponding global transitions -, however, Sustainable Technopreneurship aims at developing future-proof technologies, providing social benefit, and creating economic value in a more balanced manner, i.e. following the Triple Bottom Line (TBL) of economic, social, and ecological performance indicators, not just monetary terms. In that sense, future-proof technologies as well as businesses, strategies, and management behavior need to fulfill the three basic criteria of Sustainability: human, social, and environmental compatibility as a safe minimum standard.

Special emphasis is given to digital and other “smart” and supposedly “clean” technologies like ICT. For Sustainable Technopreneurship it is characteristic to take into account the crucial and ambivalent roles of technologies as solution as well as challenge: This means to evaluate the transformational power of technologies for approaching more sustainable patterns of production and consumption, but also to assess their impacts in terms of Sustainability, e.g. potential for dematerialization and eco-efficiency, options to new lifestyles, opportunities for eco-innovations, risks of rebound effects, life cycle assessment of ICT devices (e.g. computer, smart phones), overall use of raw materials, amount of energy consumption, and toxic electronic waste (e-waste).

Prerequisites
Strategic Planning, Sustainability Management

Recommended reading

- Comprehensive lecture notes, including handouts, slides, case studies, and seminal articles are available at the online learning platform: “moodle”.
  
- Further reading, most references are provided at “moodle” or are available at the department library (Pasing):
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Teaching methods
Mix of: lectures, case studies, literature reviews, online self-studying episodes, group work exercises

Assessment methods

Language of instruction
English

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Link

Course content

- Synthesis of basic principles of the Strategic Management of Technologies and Innovations - including Technology Foresight - and Sustainability Management/CSR
- Business Case for Sustainability and Sustainable Entrepreneurship
- Methods and Toolbox used for Technology Assessment and Sustainability Impact Analyses
- Applications, case studies, and real life examples of Sustainable Technopreneurship at product, process, enterprise, supply chain, local area, and industry level, with special emphasis to digital and other smart and supposedly clean technologies like Information and Communication Technologies (ICT).

Applied methods in Economics and Business administration

Analysis models and methods (research and analysis models):
- The Methods used for the Strategic Management of Technologies and Innovations
- Methods used for Sustainability Management

Quantitative empirical methods (comparative – statistical, mathematical methods, data analysis):
- Methods of Technology Foresight: Delphi Method, Scenario Analysis, and Technology Roadmapping
- Methods used for Technology Assessment and Sustainability Impact Analysis

Qualitative and interpretative methods (expert interviews, polls, standardised surveys)
- Methods of Technology Foresight: Delphi Method, Scenario Analysis, and Technology Roadmapping
- Methods used for Technology Assessment and Sustainability Impact Analysis