Innovation and Lean Product Development

LEARNING OUTCOME

After successfully completing this course the students will be able

- To understand real world innovation problems and business developments
- To define, discover, develop and demonstrate business opportunities
- To understand/have knowledge about team management, team cultivation and knowledge development as well as project management in innovation processes.
- To understand basic Lean Product Development
- To understand how to develop industry on an extensive scale on the basis of the product idea through an adapted Business Model

CASE

Students are expected to run a specific innovation development project during the course. Projects will be a group task (see assessment methods)

SCOPE

7,5 ETC
Master and Business Level
36 teaching hrs + presentations

TEACHING METHODS

Subject oriented lectures and tutorials. Class discussions and project assignments. Theories, models and methods will be presented in lectures. Students are expected to prepare for the lectures, participate in discussions, project presentations and assignments. Group participation is of great importance during this course.

ASSESSMENT METHODS

Mandatory group tasks (max 5 students pr group) and presentations. There will be 4 written group assignments through the course. First assignment counting 10 %, second 20 %, third 30 %, while the fourth and last assignment counting and presentation 40 % of the final grade.

Literature

- A collection of several articles from several authors and books
- Books (main)
  - What Customer Want (2005) Ulwick
  - Mastering Lean Product Development (2011) Mascitelli
  - Understanding A3 thinking (2008) Sunek and Smalley
- Books (help)
  - The Innovators Toolkit (2009) Silverstein, Samuel and DeCarlo
  - The Lean Toolbook (2009) Bicheno and Holweg
  - Business Model Generation (2010) Osterwalder and Pigneur

A-3

Extensive use of A-3. All tools are presented in an A-3 format. Students are also requested to produce their writings in the same format.

1st Gathering (Perspective)

Introduction to LPD and customer value and techniques to define and verify viable innovation opportunities.

Tools and topics

1. LPD (LeanProductDevelopment) - an introduction)
2. Evolutionary Patterns
3. Who is and what do yr customer want
4. Market Information Techniques (Ethnography, Questionnaires, User Panels, Lead Users etc)
5. Case presentation

2nd Gathering (Idea level)

Forming groups and group idea generation process ending up with an idea that should be worked upon rest of the course. Initial reflection on IPR - possible strategies and ways to protect your idea.

Tools and topics

6. Creativity and Creative Groups
7. Team roles and Belbin Test
8. Idea Generation Process
9. Preserving IPR (Intellectual Property Rights). Initial phase.

3rd Gathering (Lean Project)

Folder Submission

Students will scope and focus on their ideas and start their innovation and development project. Who are stakeholders and their contributions. How do we build a project control system by means of A-3?

Tools and topics

10. Idea Harvesting Process
11. Functional analyses
12. Project Charter
13. Stakeholder Management
14. Project Control System - A3-reports, Visual meetings

4th Gathering (Innovation and Lean Tools)

Lean Product Development looking at the idea from various angels to find new and better solutions at a product level.

Tools and topics

15. Triz - Ariz Inventive principles, and SCAMPER (Substitue, Combine, Adapt, Modify, Put to other purposes, Eliminate, Rearrange)
16. Pugh Matrix
17. QFD (Quality House

5th Gathering (Lean Process

Folder Submission

The approach consists of a set of tools for reducing the downstream costs of the product in manufacturing, service and support.

Tools and topics

18. Process Mapping - Set Based Development
19. Prototyping/Piloting
20. Industrial design/design for manufactoring
21. DFMEA (Design Failure Mode and Effect Analysis)

6th gathering (Company level)

Folder Submission

Product concepts are placed in a business contexts. How to present the idea in front of professional investors in speech and writing.

Tools and topics

22. IPR.
23. Business Model Generation
24. The Art of Pitching
25. Business Plan

7th Gathering (Student level)

Folder Submission

Final presentation of the projects in front of other students and professional development officers from local industry.

26. Presentation (Product, Business Model and - Plan)
27. Course evaluation

Team of lecturers 2011/2012

- **Alberto Sols** - Associate professor BUC *)
- **Gerrit Muller** - Professor BUC
- **Leif Næss** - VP Strategy and Group Development at Kongsberg Automotive
- **Jan Erik Korsjøen** - Senior Advicer BUC
- **Rolf Qvenild** - Associate professor BUC
- **Arnt Farbu** - Associate professor BUC
- **Eivind Fauskanger** - Associate professor BUC
- **Ivar Wergeland** - Associate Consultant, Plougmann & Vingtoft a/s, Intellectual property consultants

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Innovation and Lean Product Development

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Idea generating process

Student groups do some market investigation to be more familiar with the very customer need between 1st and 2nd gathering

Customer has an uncovered need

Need is picked up by a supplier. Supplier addresses professional advisers (KI)*) and ask for help/evaluation

Idea need to be further developed?

Yes

Idea is scrutinized by lecturers and a teaching case is developed

No

Idea is presented for student groups sin 1st gathering.

Idea generation process in 2nd gathering

Group discussions, guidance by present team of lecturers and peer presentations during all gatherings. Focal point will be group projects in the perspective of the topic in each gathering.

Each group start a unique product development project in 3rd gathering.

Each group improve their product solutions by various techniques in 4th gathering.

Each group improve their process solutions by various techniques in 5th gathering.

Each group form their business idea and -model in 6th gathering.

All ideas are presented in front of a professional panel of development officers from local companies in 7th gathering

All ideas are evaluated by the panel and 3 ideas are given priority and passed over to the initial supplier for possible commercialization.

Best idea

Second best idea

Third best idea

Product or service are developed and brought to marked

Customer need is fulfilled

*) Kongsberg Innovasjon AS