Course Package

Systems Engineering, Entrepreneurship and Knowledge

Name module	Systems Engineering, Entrepreneurship and Knowledge
Educational programme	BSc Advanced Technology
Period	Second quartile of the second semester (Quarter 2B)
Study load	15 ECTS
Coordinator	E.M. Marsman

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<tr><td></td><td></td><td></td><td rowspan="2">System Engineering
(6 EC)</td></tr>
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The development and commercialization of a complex technological system is the central theme of this module for Advanced Technology. Students will obtain hands-on project experience in the entire innovation process from working on an initial technological idea to delivering a commercially viable system. For this purpose students will learn key theories, tools and methods from the fields of Systems Engineering, Entrepreneurship and Innovation Management, and Knowledge Production in Innovation. Thus, students will not only be able to understand complex system design, but also commercial, organizational and societal aspects that are at least as important for success as the technology itself. Since group work is an important part of the module, effective collaboration, reflection and presentation skills will also receive substantial attention.

System Engineering
Students have to demonstrate (in relatively large teams) that they can apply the System Engineering methodology, as learned in the lectures to a realistic case defined by experienced System Engineers active in industry. Students will visit these companies and interact with experienced professionals thus learning in a “real life” situation.

The modules are tentative and subject to change. Please check the website regularly.

Entrepreneurship and Innovation Management
In the EIM part of the module students will learn the key elements of bringing a new technology to market. First of all, one needs to understand how a firm currently creates and captures value in the market place. Second, students will learn about the human side of innovation processes, in particular effective teamwork and group dynamics. Third, since firms are not alone in the market place and products do not sell by themselves, students will obtain an understanding of the external environment of the firm in relation to product development, the role of competitors and other relevant stakeholders, and the planning towards as successful product launch.

Knowledge Production in Innovation
The knowledge and skills obtained in the Knowledge Production in Innovation part of the module is organized in two parts. First of all, students make an analysis of the knowledge production in (a) the particular firm/organization and (b) the world(s) of key actors. To make this analysis, a number of concepts will be introduced which the students need to apply: key actors in knowledge production, practices of knowledge production, and places of knowledge production. After having submitted their engineering report, students start developing a brief future scenario to map the future use, the future user and the future user context of the innovation/the design. They will be acquainted with a number of concepts – trend analysis, delhi studies, backcasting, road mapping, scenario building – that they will have to apply in developing their future scenario's.