I^2E^2 Project manual

International Innovation Engineering & Entrepreneurship Project

I^2E^2 council
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1 Preface

Students are in the final theoretical semester; they will later prepare themselves for the final graduation project and eventually their entrance in the engineering market. Each student has or should have an expectation of what they want to be in their career. Some students want to work in production plants while others want to take more effort in R&D jobs. Again, others want to work in an entrepreneurial or intrapreneurial way. In whatever way, companies desire for their employees to work more towards real lucrative innovations. This project gives student the opportunity to develop their capabilities and competences into the complex world of innovation development.

2 Aim / objectives

Students will experience what it means to find a new invention. This is often hard to find. They also write a business plan in which the profitability can be seen. The aim of this project is to give students experiences on developing innovations. They, therefore, are better prepared to be able to take an active role in innovation developments in companies they are going to work for in the future.

3 Additional Information

This project is relatively complex because students need to find an interesting invention and proof the marketability in a written business plan. Students also work with students from another University of Applied Sciences. Organizing your project is of outmost importance to be successful. Therefore, the I^2E^2 organization give students in projects a first set up of a project management scheme as shown below to give the teams a quick start to manage their own project well.

This year, some videos of supporting content and advising guidelines are available. Your teacher from your project will provide you these videos, when available. Or we point one person of the group to be the contact person for the available Dropbox, where she/he can download the videos and some tools which she/he can hand over to his fellow team members of her/his project. Some information about the video workshops is given in chapter 5.

Work packages	Description of activities	Aug	Sep. Wk 35-39	Oct. Wk 39-43	Nov. Wk 44-48	Dec Wk 48-52	Jan. Wk 1-5
Start-up activities	Introduction of team members						
	Setting up interdisciplinary collaboration.						
	Search cultural difference of partner Universities.						
	Discuss communication procedures						
	Fontys: Get in contact to Business students						
	Ending Milestone 1 (Week 37)		1				
Creative Process	Search for interesting ideas. Using TRIZ creativity methods						
	Analysis of customer's needs, defining a possible market.						

Please see Innovation Engineering introducing video workshop

Please see project management video workshop

Please see cultural difference video workshop, when available

Please see TRIZ and patent inspiration video workshop

	Writing technical, product-related and market-related demands/requirements/conditions												
	Literature research to investigate latest information idea(s)												
	Patent search and having contact patent expert												
	Possibly a pitch to present idea												
	Ending Milestone 2 (Week 41)			2									
Organizing Project	**Trip to collaborating international University. Decision which concept will be developed.**												
	Discussing how to set up Project Management plan												
	Writing a complete plan of approach/project plan												
	Finding interested company and possibly sponsoring												
	Search for possibilities on sustainable development												
	Search for possibilities in IPR												
	Finding new trend connected to the idea												
	Ending Milestone 3 (Week 44)					3							
Design	Design the mechanical/Mechatronical/electrical system												
	Make calculations to power, forces, etc												
	Making technical drawings, electrical schemes, etc.												
	Preparing making the proof of concept												
	Ending Milestone 4 (Week 49)								4				
Investigate Business	Researching market possibilities												
	Investigate business requirements												
	Investigate information for business plan												
	Organize the production of the proof of concept.												
	Ending Milestone 5 (Week 2)										5		
Finishing	Make a video film Youtube of your I^2E^2 project (about 10 min).												
	Prepare presentation for symposium.												
	Make a poster for presenting to I^2E^2.												
	Write final I^2E^2 Report and Paper												
	Write final Business Innovation Report to be included in total report.												
	Ending Milestone 6 (Week 3)												6
	Visiting collaborating international I^2E^2 symposium Strasbourg.												

Please see technical trend analysis video workshop

Please see Patent analysis video workshop

Please see business plan video workshop, when available

Please see symposium presenting video workshop, when available

Please see writing paper video workshop, when available

4 Final products of the project

Students deliver the following final products:

- A final report about the total content of the I^2E^2 project, containing:
  - An innovation report, which explains all about of the invention.
  - A Business plan report, with which a real company start-up or real project for existing company the profitability of the innovations is explained.
  - A Patent search report, of which companies can benefit to get a patent.
- From the final report write a paper according to the template. This will be used for presenting in symposia and possible other presentations
- A functioning proof of concept.
- A presentation to be presented at the I^2E^2 symposium.
- A poster to be shown at I^2E^2 symposium.

5 Online workshops

University students in the network will be given the opportunity to follow online workshops that sufficiently inform them on important topics to enable successful project implementation. The following online courses/workshops will be available:

1. **Innovation perception**: This will focus on what is innovation, and how outline guidance to students in their innovation research.
2. **TRIZ analysis**: TRIZ is a sophisticated creativity tool often used by high-tech companies
3. **Patent search**: In companies Innovations need to be protected for competitors in order to invest safely in the innovation development. This workshop will explain what a patent is, and how to search patent data banks.
4. **Project management**: In this course students will be given a method of managing and organizing projects and formulating relevant plan of approach.
5. **Cultural differences**: Often when person from different backgrounds, and cultures work together misunderstandings due to cultural differences. This course will widen student's perception to understand how to approach and communicate in diverge teams.
6. **Writing reports and papers**: This workshop will assist students to understand how to write effective research reports and papers.
7. **Presenting and pitching**: This workshop will assist students to create longer presentations or short pitches.
8. **Technology trends**: It is always interesting to know more about future trends; it would be of a major advantage when an innovation engineer is developing new products.

6 Rules for students in the Innovation Engineering Project

- Students need to understand how they contently can contribute to reach the project goals.
- Students need to have weekly fixed meetings of approximate 1 hour, in which progress of the project will be discussed and weekly assignments for each student are given. Attendance is mandatory.
- Students work towards a common project management system which organizes all needed activities. (Video and project management tools are available)
- Students collect all needed data for a joint time schedule in which it is clear when the project days take place and when holidays or mandatory exam days and preparations for them take place.

- Students need to know what the given time from each University OAS is, with which one understands what the timely contribution (credits) of each student member can be seen. (also provided by project management tool). If there are differences in credits for students, this must be well communicated to each other to prevent unwanted misunderstandings.
- Students organize trips to each other countries. There are two options of traveling. One in the beginning of the project, to ensure team building and one at the end of the project (January) to take part at the I^2E^2-Symposium. Ask your teacher what the possibilities are to support traveling costs for each student. Of course, all must be in line with the COVID 19 measures to be taken, as it is directed from your country.
- Tasks to be done in the project must be evenly (according to given credits) divided among students at each University OAS. (This is also supported in the project management tool.)
- Students work according to the general timetable with the given milestones. Milestones are seen as deadlines for delivering products.
- Students ensure each teacher/coach is adequately informed about project proceedings.
- Students support and prepare for an international Symposium on Innovation Engineering topics of their projects. They present their paper at the international Innovation Engineering and Entrepreneurship I^2E^2 Symposium.