UNIVERSITY OF TWENTE.

Project C

Testing

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Thermische Werktuigbouwkunde

Example project C 2012

Design an installation, based on Concentrated Solar Power, with which you can supply Aruba with electricity the whole year round.

In addition to this, supply the necessary electricity for the production of drinking water on Aruba.

PROJECT C

- **High tech project with realistic question and non-trivial solution (8 + 4.5 EC)**
  - First year WB, third project (April - June)

- **Disciplines in this project:**
  - Technical Thermo Dynamics (TTD) – also separate course (4.5 EC)
  - Chain Management / Life Cycle Analysis (LCA) - project course *in* the project (3.5 EC)

- **Skills to be applied in the project :**
  - Dealing with uncertainties / estimation
  - Modelling and programming
  - Combination of disciplines (synergy)
  - Writing a (technical) report
  - Presentation to technical audience

Specific learning objectives Project C

- Analyse an existing installation for generation of heat/cold/power;
- Change an existing installation or design a new one, including argumentation of design choices;
- Execute a simple life cycle analysis and develop a simulation model of a product life cycle;
- Interpret environmental profiles and compare products based on their impact on the environment.
- Determine the consequences of newly designed installations and optimise these installations (thermodynamicly, environmentaly, socialy);
- Present the thermodynamic and environmental aspects of the installation clearly by means of diagrams and graphs, and answer the main question;
- Apply simple modelling techniques on thermodynamics and life cycle analysis;
- Deal with contradictory / insufficient information and insecurities /inaccuracies;
- Write a report for specialists and present the main findings convincingly.

ASSESSMENT

Report & Presentation
Group Grade 50%

Oral
Individual grade 50%

Onderdeel	Weegfactor	Percentage
Presentatie (groep)		10%
Functionaliteit	1	
Attractiviteit	1	
Verslag (groep)		40%
Thermodynamica	3	
Ketenbeheer	2	
Verslagtechnisch	2	
Conclusies	1	
Mondeling (individueel)		50%
Thermodynamica	5	
Ketenbeheer	5	
	20	**100%**

ASSESSMENT OF REPORT

Assessment report (40%)		1 (onv)	2 (matig)	3 (vold)	4 (rv)	5 (goed)
1	**Thermodynamica (15%)**					
	Thermodynamische analyse van de huidige installatie (30% van TTD)					
	Keuze, thermodynamische analyse en optimalisatie van de nieuwe situatie (50% van TTD)					
	Vergelijking van de huidige en de nieuwe situatie (10% van TTD)					
	Presentatie van de resultaten (10% van TTD)					
2	**Ketenbeheer (10%)** *(details volgens nakijk schema Ketenbeheer docent)*					
3	**Verslagtechnisch (10%)**					
4	**Conclusies en synergie (5%)**					

- For all aspects we designed assessment criteria, based on learning objectives;
- 3 tutors/teachers with different expertise per project exam;
- As much as possible different couples, in order to calibrate results.

ORAL TEST

Oral examination (50%)

	Naam student	Thermodynamica			Ketenbeheer		
		Toepassing	*Gevolgen / evaluatie*	*Toepassing buiten project*	*Begrip theorie*	*Toepassing*	*Gevolgen/ evaluatie*
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.			→	Increase in level		→	

Testing TTD expands on written test, more focus on consequences and application, even outside the project assignment

Chain management theory is tested in oral group examination.

- TTD not assessed on basic knowledge and theory (already in written test). *Note*: good result on written test does not automatically lead to good result on oral exam and vice versa!
- Chain management is also tested on understanding of theory (facts)
- Different levels in testing, good students get questions on a higher level.

Oral exam

- Meeting of 2.5 hrs
- Most questions to individuals (not for the group)
- Special attention for ‘loudmouth’ and ‘silent one’
- Questions on report
- Questions on alternative design
- Theory questions on chain management

Last half hr specifically aimed at weakest and strongest student(s)