Supervision with external and internal clients

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Student projects at DTU Nanotech

- Students join a research group
- Project in collaboration with Professors, PhDs & PostDocs
- Project in collaboration with industrial partners:
  - Directly with company
  - As part of an HTF project
  - As part of other project

Project types:
- "Fag" project for Physics & Nanotechnology
- Project as part of a course
- Special course
- Bachelor project
- Master project
Why

- 60% of the students will continue with PhD
- 40% goes directly to companies: Project leaders
- Apprenticeship, Mesterlære
- Clear goals facilitates results
- Results needed and expected: Facilitates performance
- Students are aware that their results will be used directly: Motivation

Some typical results:

- New theory
- Devices
- Reports
- Best practice developed
- Experimental setup developed
- Peer reviewed articles

Bad performance: I take over

Example: ELBA HTF project

7 Bachelor projects:

- Thomas Lehmann Christiansen: Design, fabrication and characterization of a MEMS PZT/PZT-cantilever device for energy harvesting. Bachelor project, June 2010
- Anders Thyssen and Adam Carsten Stoot: Design, fabrication and characterization of an optimized PZT/Silicon cantilever component for energy harvesting. Bachelor project, June 2010
- Christian Dahl-Petersen: Robust Fabrication and Characterization of PZT/PZT Thick Film Bimorph MEMS Energy Harvester. Bachelor project, June 2011

1 Master project:

- Christoffer Mølleskov Pedersen. Fabrication of a Nonlinear MEMS Based Energy Harvester. Master project, August 2011

Course projects:

- Mikkel Wennemoes Hvitfeld Ley, Christian Ivan Bagh Fugle and Anders Filae Pedersen: Triple stack anodic bonding. 3-week course, January 2011

1 Diplom project:

- Anders Greve: Efficiency examination of dc-dc converters in ultra low power applications. Diplom-E Afgangsprojekt, November 2013
Expectations: Must be clarified

My questions to the students:

• What type of project are you looking for? (experimental, theoretical, mix)
• What projects have you made before?
• What is the perfect supervisor for you?
• What grade do you aim for?
• Is that grade realistic based on your past performance?
• How much time will you invest?
• What would you like to learn? (define learning objectives)
• What are you good at?
• Where do you need help?

My expectations:
• Do your best
• Student is the project leader
• Project plan
• Feedback plan

Conclusions

• Integrating students projects with internal/external clients leads works very well

• Highly appreciated by students

“I am so glad that my results can be used in real life”

• Backup plan needed in case of poor performance

• Project plan needed

• Expectations must be clarified

• Discuss mark before project – follow up