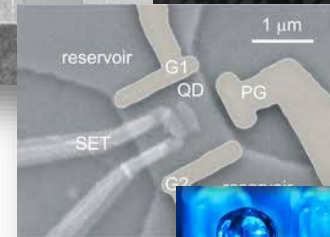
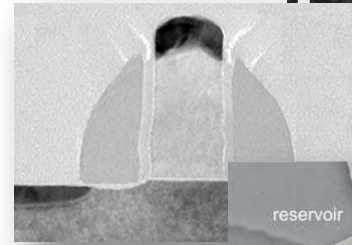


Module Device Physics

MOD7a

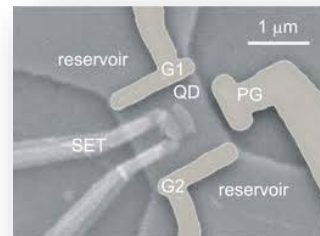
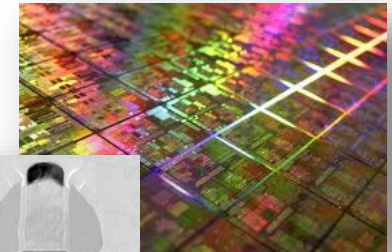
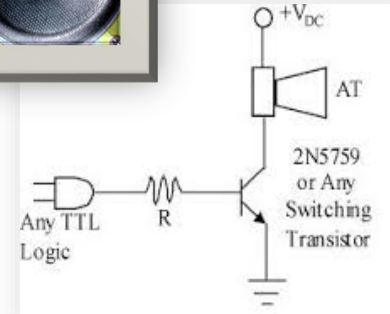
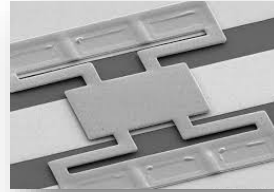
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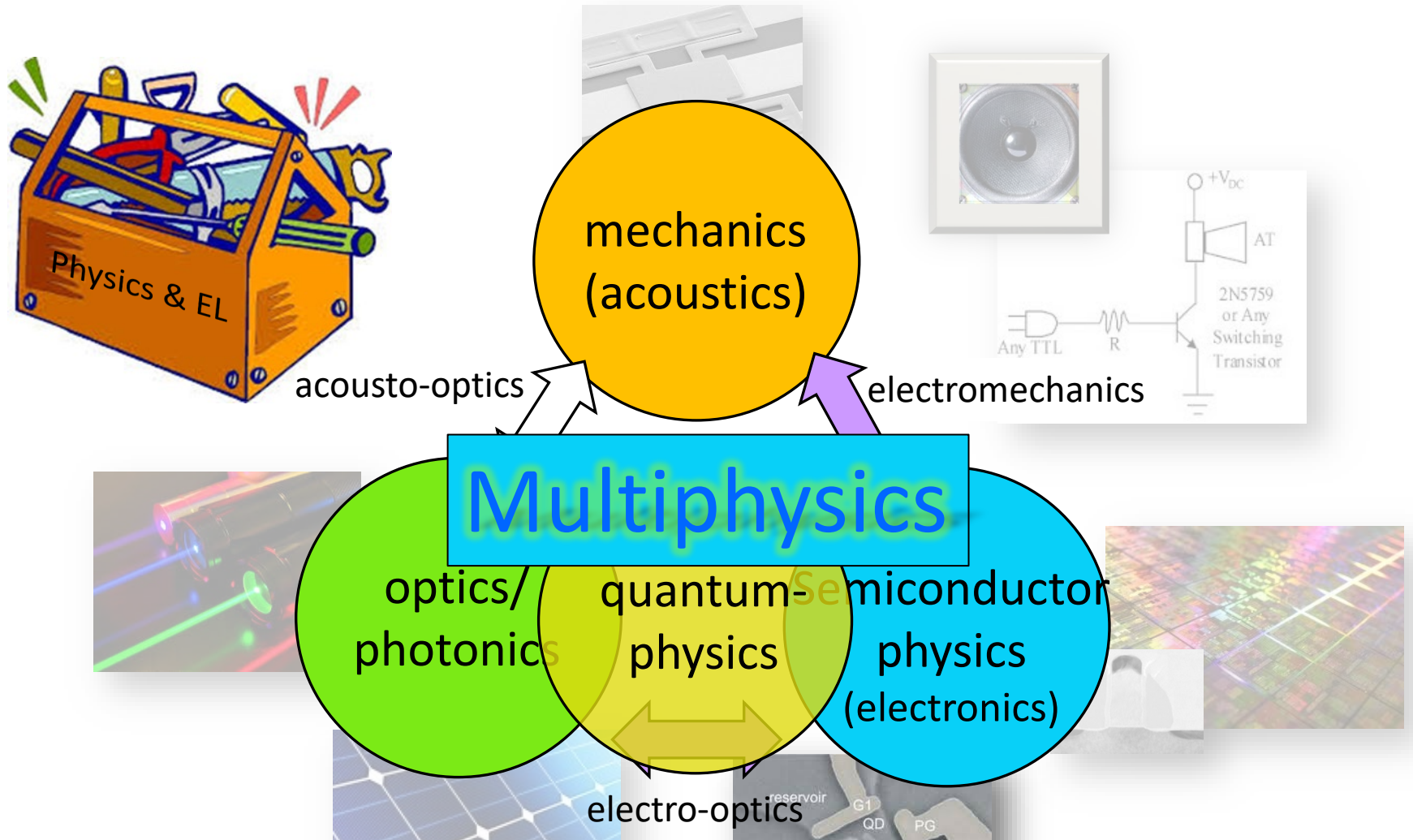


■ It's all about devices ("*building blocks*")

Electrical
Engineering



- It's all about device physics...



- Multiphysics :
hardware oriented module

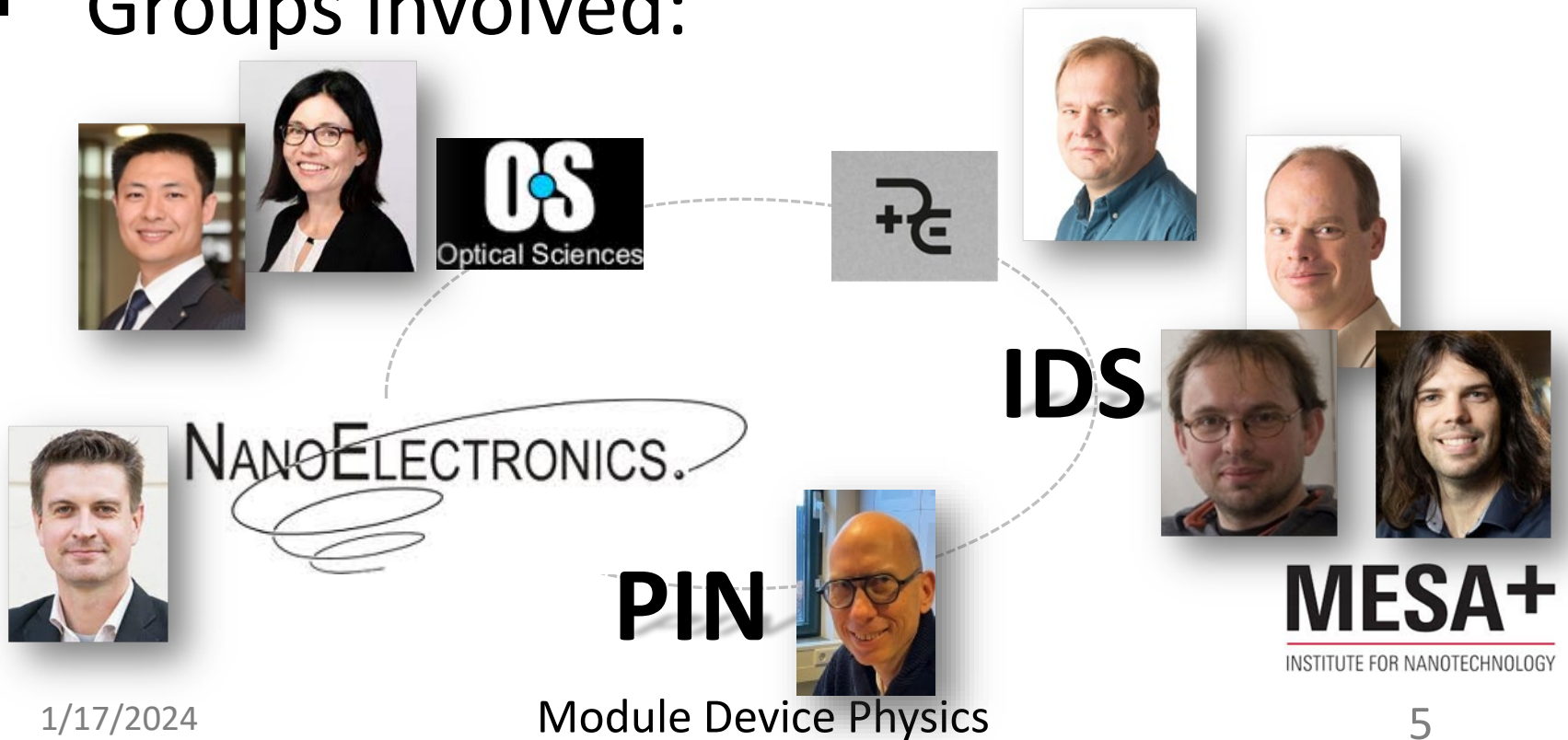
■ Objectives:

- Recognize each device regularly used in EE
- Understand relevance/success of devices
- Understand device physics
- Be inspired!!!





- **The team:**
- **Enthusiastic specialists in the field**
 - Great scientists (high *h*- and/or patent index)
- **Groups involved:**



■ Courses:

- Semiconductor physics (3EC)
- Semiconductor devices (3EC)
- Single-Electron Transistor (1.5EC)
- Transduction & mechanical devices (3EC)
- Optical devices (1.5EC)
- Project (3EC)



■ Educational format:

- 8 weeks course comprising:
 - Lectures: context, overview + understanding
 - Problem-based learning (PBL): understanding, skills
 - Tutorials: practice
 - Project: fun!!





- **The project:**
Device physics in practice
Fundamentals of chip technology

- Photodiode
- Microelectro-mechanical system (MEMS)
- Haynes-Shockley experiment

Unique(!): treats chain of chip development

- Simulation, design, realization and analysis



■ Assessment

Written exams in week 16 and 17 (resit):

- Single-Electron Transistor (SET) & Quantum/Semiconductor physics (Mo 11th Mar/We 17th Apr),
Note: not required to do resit for both parts
- Transduction & Mechanical devices (Mo 15th Apr/ Fr 26th Apr),
- Semiconductor devices (Mo 25th Mar/ We 24th Apr),
- Optical devices (Tu 3rd Apr/ Th 25th Apr).

Note: PBLs mandatory, not rated

■ Rating



- **Written exams**: count for 80% of total grade
 - Average: 5.5,
 - Min. 5.5 for **all** topics
 - Note: after resit highest grade counts
- **Project**: counts for 20% of total grade
 - Min. 5.5

- Deadline registration:

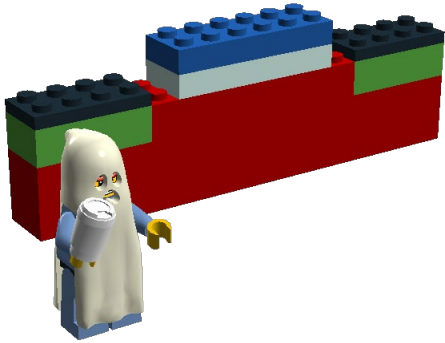


- **Friday 2nd February 2024 (23:59h)**



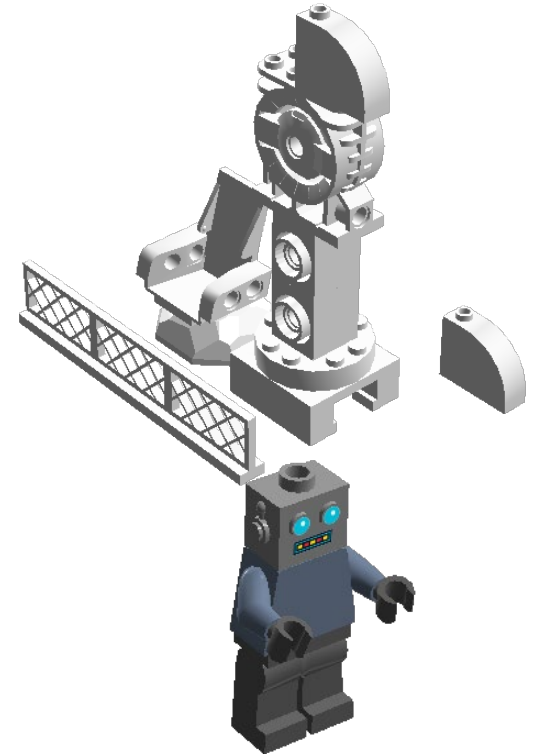
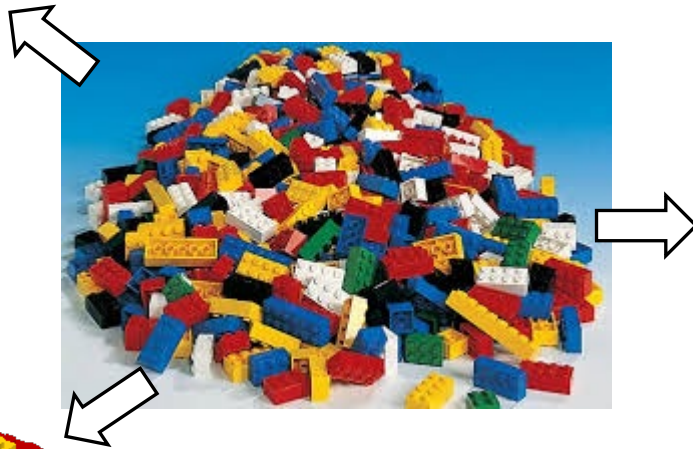
Contact info: r.j.e.hueting@utwente.nl; 053 4892754
Carré CR2613

- Backup slides

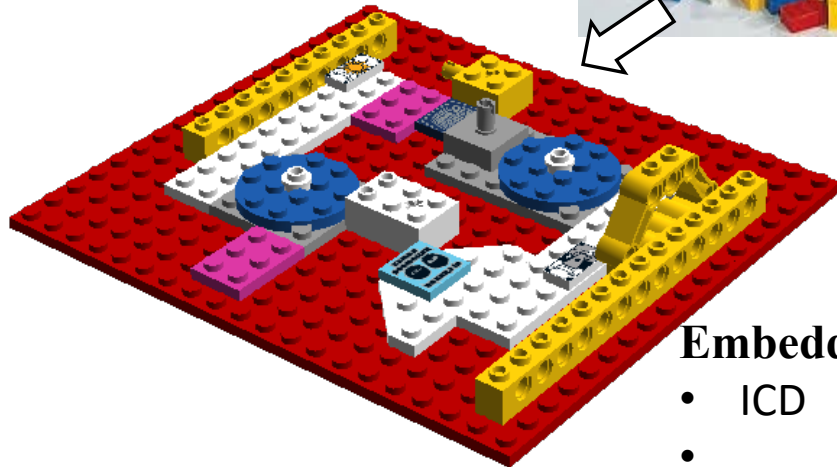


μ - and n-electronic components groups:

- IDS, NE, BIOS, OS



The ones who are interested !!



Embedded systems groups:

- ICD
- ...