



# Master of Science in Electrical Engineering

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## What does the future bring in electrical engineering?

Many companies in Belgium (and abroad) are constantly searching for good electrical engineers because they have a constant need for more people:

Alcatel, Arcelor/Mittal, Philips, TP Vision, Barco, Agfa Gevaert, NMBS, KBC, IBM, Belgacom, Telenet, Siemens, Nokia, VRT, SAIT/Zenitel en Honeywell

Also many SMEs in Belgium that are less known but are driving the future of smart systems, also here in Belgium!

Examples on the next slides

# Example: CMOSIS

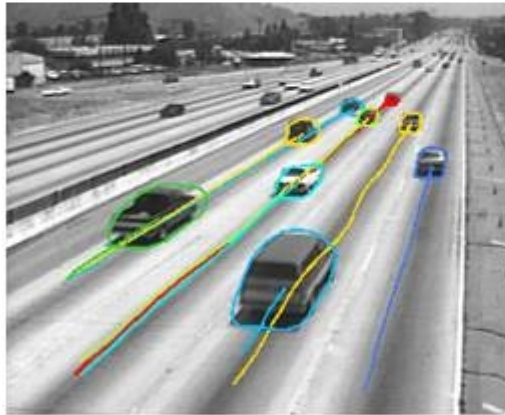
Broadcast



High end consumer



Sports, Animation



Intelligent traffic systems



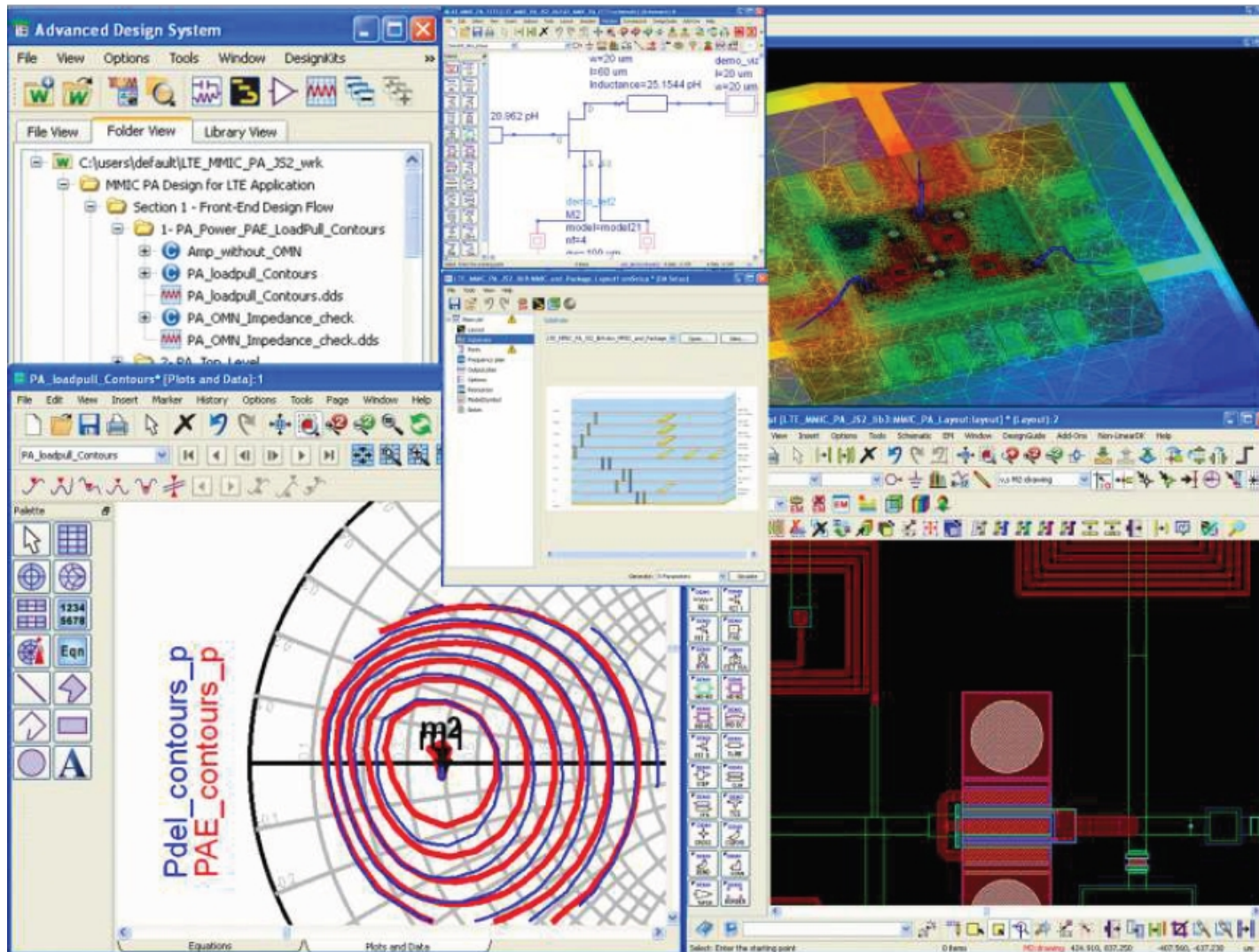
Space



Industrial inspection



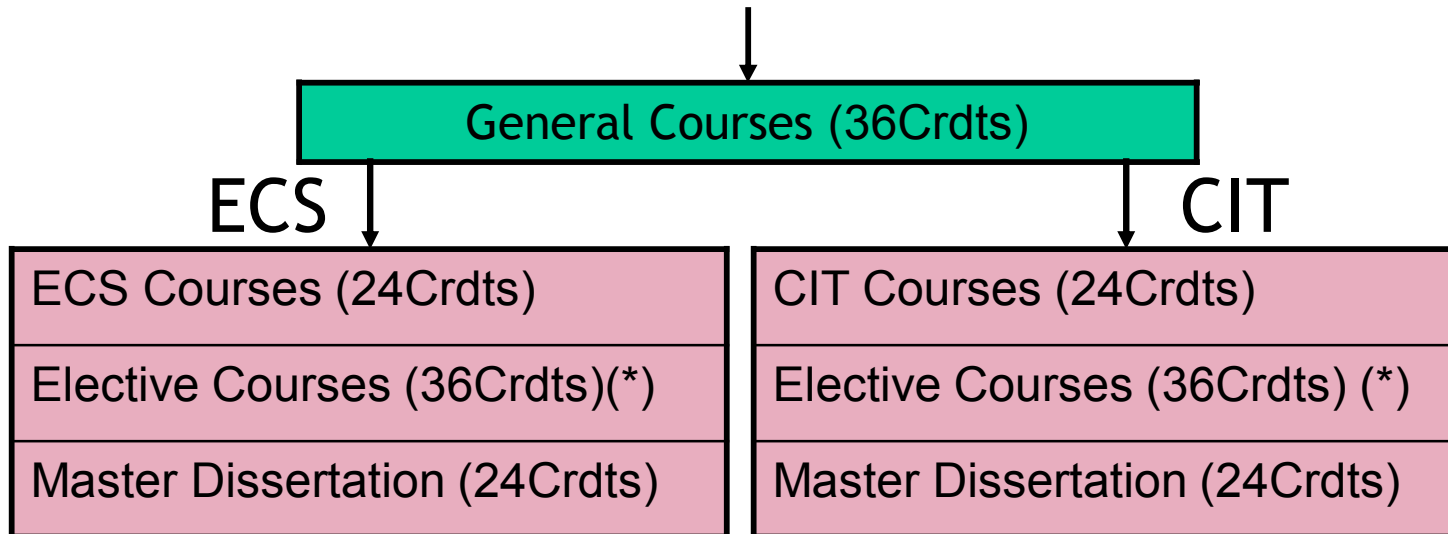
## Ex.2: Advanced Design System (Keysight Technologies)



# Master of Science in Electrical Engineering

2 main subjects :

- Electronic Circuits and Systems (ECS)
- Communication and Information Technology (CIT)



(\*) 36Crds to be chosen as follows:

- 1) minimum **3 courses/12Crds** from list related to main subject (ECS/CIT)
- 2) minimum 6Crds of courses from list of social courses
- 3) remaining Crds= to be chosen freely or choice of a minor

# Master of Science in Electrical Engineering - ECS

1st master		2nd master	
<i>sem. 1</i>	<i>sem. 2</i>	<i>sem. 3</i>	<i>sem. 4</i>
Antennas & Propagation (6)	High-speed electronics (6)	Modulation & Detection (6)	
Analog Circuits & Building Blocks(6)	Information theory (6)	Technology integrated Circuits & Microsyst.(6)	
Complex Systems Design (6)	Circuit- & EMC-concepts (6)	Elective Courses (24)	
VLSI Technol & Design (6)	Hardware design project (6)	Master dissertation (24)	
Elective Courses (12)			



General Courses



Main subject related

# Master of Science in Electrical Engineering - ECS

- Elective courses related to main subject  
Electronic Circuits and Systems (ECS)  
(3 Courses/12 Crdts to be chosen)
  1. Design of Microsystems
  2. Stochastic Processes for Electrical Engineering
  3. Avionics: Electronics [en]
  4. Advanced Analog Design
  5. Advanced Modulation and Coding [en]
  6. Applied Heat Transfer
  7. Sensors and Actuators
  8. Computational Solutions of Wave Problems [en]
  9. Optical Communication Systems
  10. Queueing Theory
  11. Microphotonics [en]
  12. High-frequency Systems [en]
  13. High Frequency Design [en]
  14. Estimation and Decision Techniques [en]
  15. Power Electronics [en]
  16. Digital Building Blocks
  17. Audio-Engineering [en]
  18. Bioelectromagnetics [en]

# Master of Science in Electrical Engineering - CIT

1st master		2nd master	
<i>sem. 1</i>	<i>sem. 2</i>	<i>sem. 3</i>	<i>sem. 4</i>
Antennas & Propagation (6)	High-speed electronics (6)	Design of Distributed Software (6)	
Analog Circuits & Building Blocks(6)	Information theory (6)	Design of Multimedia Applications (6)	
Complex Systems Design (6)	Multimedia Networks (6)	Elective Courses (24)	
VLSI Technol & Design (6)	Queuing Theory (6)	Master dissertation (24)	
Elective Courses (12)			



General Courses



Main subject related

# Master of Science in Electrical Engineering - CIT

- Elective courses related to main subject  
Communication and Information Technology (CIT)  
(3 Courses/12 Crdts to be chosen)
  1. Image Processing
  2. Mobile and Broadband Access Networks
  3. Modulation and Detection
  4. Optimisation Techniques
  5. Traffic Aspects of Telecommunication Systems
  6. Network Modelling and Design
  7. Optical Communication Systems
  8. Advanced Modulation and Coding
  9. Speech Processing
  10. High-frequency Systems [en]
  11. High Frequency Design [en]
  12. Microphotonics [en]
  13. Estimation and Decision Techniques [en]
  14. HFC Access Networks: Case Study [en]
  15. Advanced Multimedia Applications [en]
  16. Machine Learning
  17. Audio-Engineering [en]
  18. Bioelectromagnetics [en]

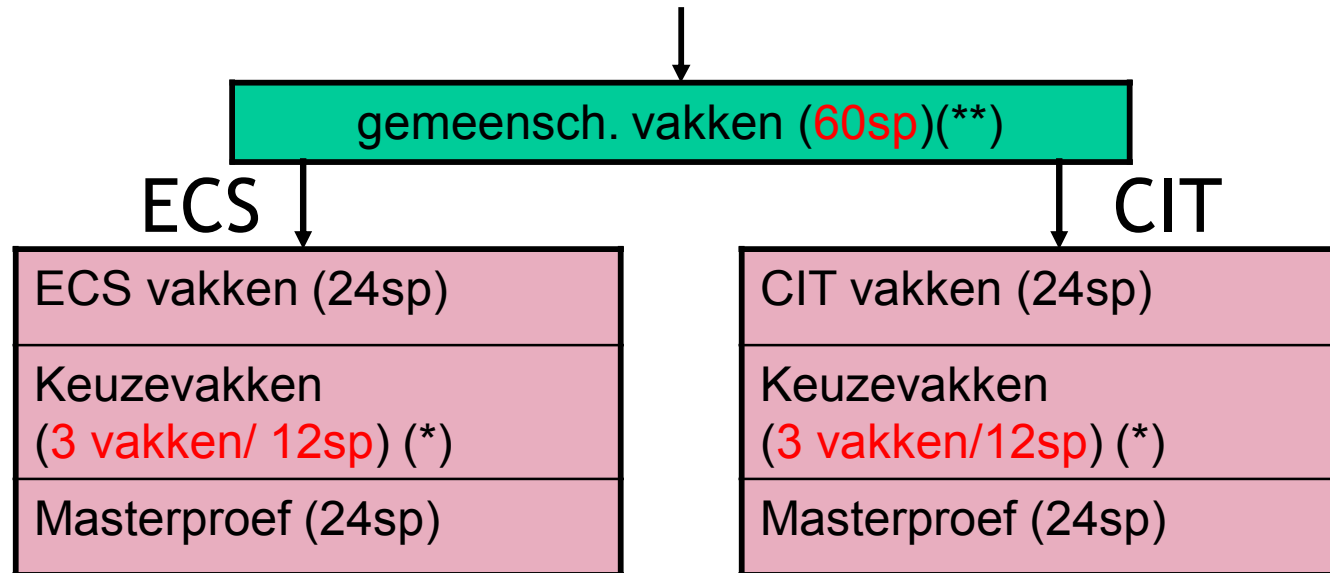


## Master of Science in Electrical Engineering

- Option 1: Individual program (18 Crdts)
- Option 2: Minors (18 Crdts)
  1. Operations Management (Bedrijfskunde)
  2. Biosystems
  3. Photonics

# Master of Science in Electrical Engineering - program for ing.

voor Masters of Science in de industriële wetenschappen: elektronica - CIT:



(\*) minimum 3 modules/12 sp uit richtingafhankelijke (ECS/CIT) keuzelijst

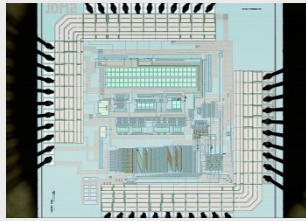
(\*\*) vier Bachelorvakken als plichtvak:

- 1) Wiskundige modellering in de ingenieurswetenschappen (NL)
- 2) Communicatietheorie (NL)
- 3) Modelleren en regelen van dynamische systemen (NL)
- 4) Toegepast elektromagnetisme

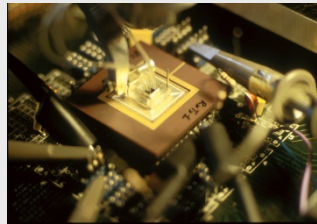
# A selection of what you could be working on



IC technologie



IC-ontwerp



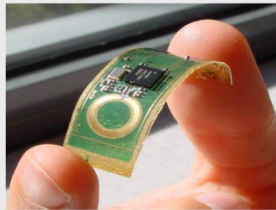
IC testing



elektronisch circuitbord



JPEG codeersysteem (demo)



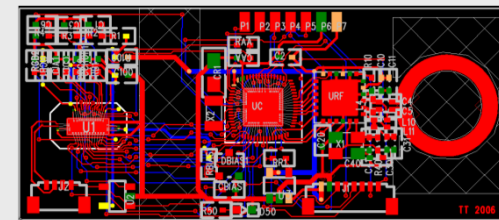
RF schakelingen



Satellietcommunicatie en lokalisatie (GPS)



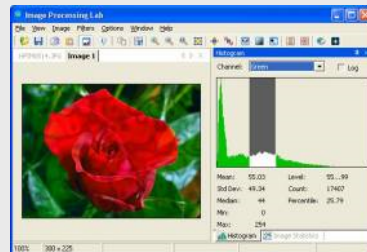
FPGA ontwerp



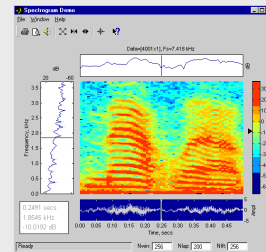
microsensoren



microsystemen: flexibel uurwerk



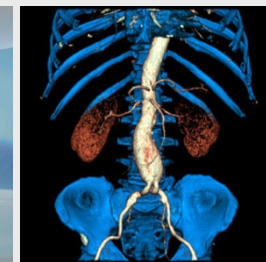
beeldverwerking



spraakverwerking

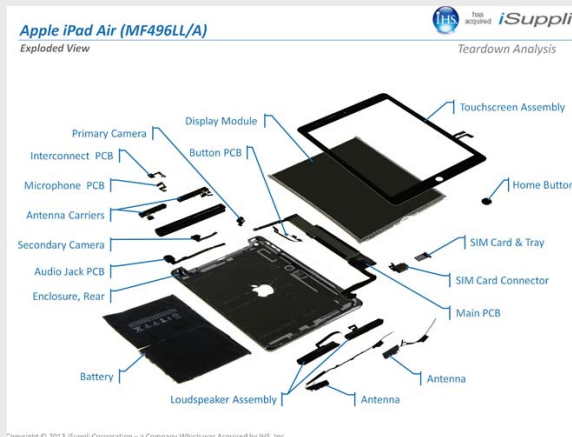


medische beeldvorming



# Aard van het werk

## Bouw zelf een Tablet



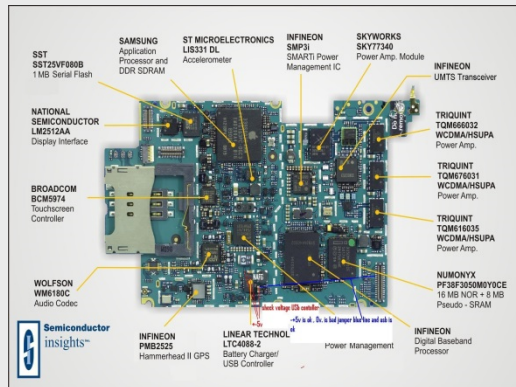
- VLSI ontwerp
- Informatietheorie
- Multimedia
- Software
- ...



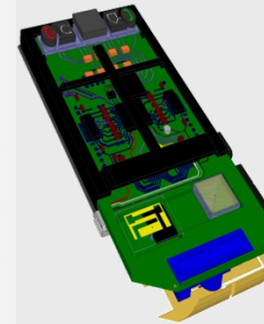
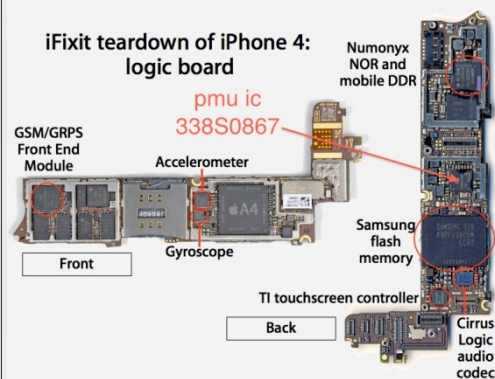
- Analoge elektronica
- Digitale elektronica
- Antennas and propagation
- Circuit- en EMC-concepten
- Modulatie en detectie

# A selection of what you could be working on

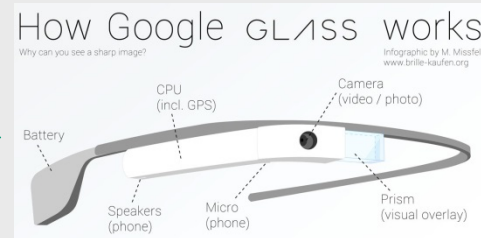
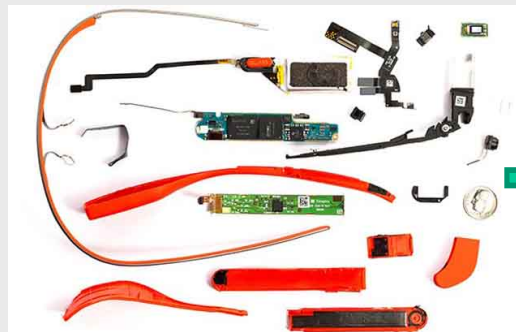
## Build your own iPhone/Google glass



iPhone motherboard



- VLSI design
- Photonics
- Multimedia
- Software
- ...

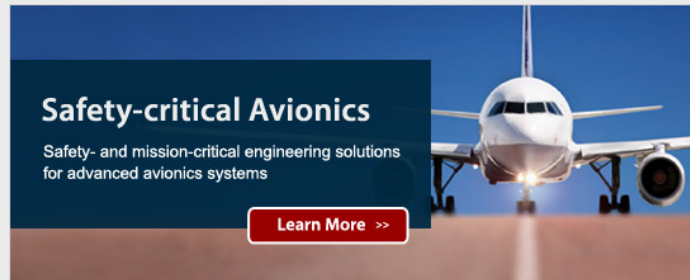


- Analog electronics
- Digital electronics
- Antennas and propagation
- Image processing
- Sensors and actuators



# A selection of what you could be working on

## Avionics



- VLSI design
- Information theory
- Multimedia
- Image analysis
- ...

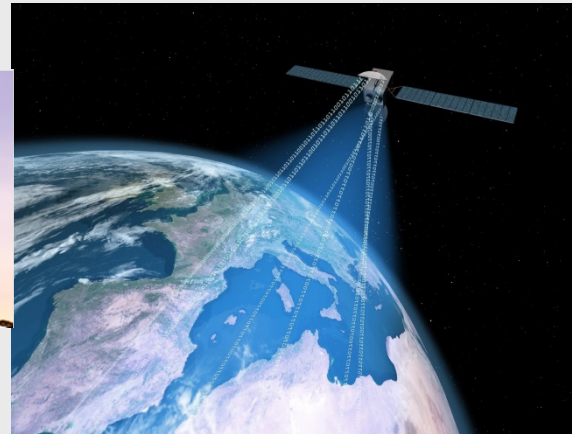


- Analog electronics
- Digital electronics
- Antennas and propagation
- Circuit and EMC concepts
- Modulation and detection

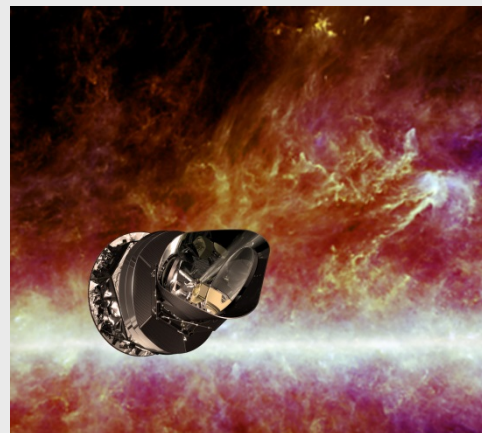
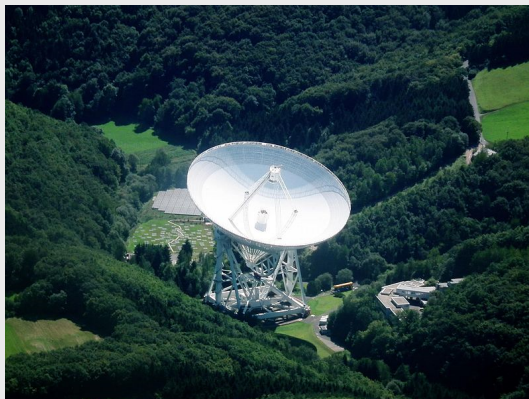


# A selection of what you could be working on

## Sattelite systems



- VLSI design
- Information theory
- Multimedia
- Image analysis
- ...



- Analog electronics
- Digital electronics
- Antennas and propagation
- Circuit and EMC concepts
- Modulation and detection