Basics of Electronics and photonics for Life Scientists

Subject: Seminar Cycle – 2.5 days
18-20 September 2013

Context:

The extended workshop “Nanotechnology for Health” was developed on request from the Flemish doctoral schools. It will bring together engineers in electronics and material sciences, bio-engineers, biologists, chemists, physicists, ...

In the run up to this “Nanotechnology for Health” course, imec-academy organises 2 parallel course tracks addressing young professionals and PhD students to help them in acquiring cross disciplinary skills that are required in the field of Nanotechnology for Health:

1. Basics of Biology for Engineers
2. Basics of Electronics and Photonics for Life-scientists

Target Audience:

Young professionals, PhD Students + PostDocs
Biology, Biochemistry, Pharmacy, Biomedical sciences, BioEngineers:
Laymen in the field of electronics and photonics

Goal and Prerequisites:

The goal of this ‘basics’ course is to introduce a number of concepts to life-scientists, who did not have an introductory course on electronics and photonics, and to give them a feeling for a number of concepts. At the end of the course they will not be able to design and/or apply circuits, but they should have a basic understanding of working principles behind sensor and amplifier techniques and of the possibilities and limitations. Basic ideas required to successfully communicate with their colleague engineers will have been introduced.

Subscribe:

Basics of Electronics and Photonics for Life Scientists: 1000 EUR, excl. VAT. (Flemish Academic staff and PhD students – free of charge).
To subscribe, please email academy@imec.be or subscribe on www.imec-academy.be.
Deadline for subscription : 15th August 2013
Program:

1. Photonics – 18 September 9h-12h
   Roel Baets – Ugent / imec
2. Basics of components – 18 September 13-16h + 19 September 9h-12h
   Pieter Rombouts, UGent
   • linear components (resistors, capacitors and inductors)
   • non-linear components (diodes, transistor)
3. Basics of circuits – 19 September 13h-16h + 20 September 9h-12h
   Pieter Rombouts, UGent
   This part will cover more complex building blocks, starting with amplifiers and explaining why amplifiers are usually combined with feedback techniques. It will also introduce more advanced building blocks such as analog-to-digital (A/D) and digital-to-analog (D/A) converters and explain how they fit in a typical signal processing chain.
   • Amplifiers (stability, offset, noise)
   • OpAmp circuits
   • A/D, D/A convertors