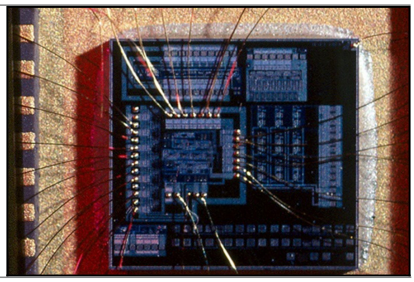
SC15 | Optoelectronics



Nouvelle Formation

NIVEAU : INTERMÉDIAIRE

Publics : Technician or engineer willing to understand optoelectronics systems functionning and their components

Prérequis : Basic knowledge in optics corresponding to EF1 - Optics without calculation

Responsable(s) pédagogique(s) : Nicolas Dubreuil - Enseignant-chercheur à l'Institut d'Optique

Langue de la formation : Français

Capacité maximum : 12

Prix : 1380€ HT - **Durée :** 3 jours - 21 h

Objectifs

- Acquire the basic skills in optoelectronics
- Be able to communicate in the domain of optoelectronics
- Be able to understand technical specifications
- Learn how to use current optoelectronics components and instruments
- Design and set-up a simple experiment.

Dates et lieu des prochaines sessions

- 25 mars 2019 au 27 mars 2019 - Palaiseau

Thèmes abordés

Wave optics
Emission, modulation, guided optics
Semiconductor based components
2D detectors
Transmission

Formation Continue de l'Institut d'Optique - 2 av. Augustin Fresnel, 91127 Palaiseau. Tél . : +33 1 6453 3236 - fc.institutoptique.fr
PARIS-SACLAY - SAINT-ETIENNE - BORDEAUX

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Le programme

Introduction to optoelectronics
- Reminders in optics, diffraction, scattering and light propagation effects

Optical functions
- Emission, detection and deflection of light
- Optical modulation: accousto- and electro-optics, example of modulators
- Guided optics: waveguides and optical fibres

Semiconductors components
- Basics in semiconductor materials
- PIN and avalanche Photodiodes: principle of operation, characteristics, source of noise
- DEL light source: principle of operation, characteristics,
- Fabry-Perot, DFB, DBR, VCSEL... laser diode types: principle of operation, characteristics, comparison

Array detectors
- CCD/CMOS array detectors in the visible range: principle of operation, architectures, characteristics, applications
- Infrared array sensors (thermal and quantum): principle of operation, architectures, characteristics, applications

Labworks and demos
- Characterization of a LED and a laser diode
- Noise detection
- Characterization of a CMOS camera
- Optical fibre transmission: modulation formats, electro-optical modulator, set-up of a 10 Gbit/s transmission

Méthodologie et évaluation

Tutorials and exercises
Interactive experimental demonstrations
Labworks on instruments