

# TELECOM PHYSIQUE STRASBOURG

## ICT & Healthcare

## Innovative Therapeutics

Télécom Physique Strasbourg (ex-ENSPS) is a French graduate engineering school part of the Mines-Télécom Institute which selects its students through competitive examination after two years of math and physics “classes préparatoires”. The ICT and Healthcare diploma, created in 2011, is the first engineering degree in France linking information and communications technologies and healthcare. It trains innovative biomedical engineers in three years by giving its students a solid physics, computing and modeling background in addition to biology and medical-related knowledge.

Our engineers, specialized in innovative therapeutics, are to be part of multidisciplinary R&D projects with a focus on advanced biosystems and miniaturized technologies.

### Microsystems, Electronics & Nanosciences

- Microfluidics and lab-on-chip.
- Analog and digital electronics.
- Microcontrollers and FPGA.
- CMOS technology and applications.
- High-level heterogeneous systems modeling.
- Nanosciences and applied nanoparticles.

### Biology & Healthcare

- Genetics, protein structure and functions, cell mechanisms, study of cancers etc...
- Anatomy and biomechanics.
- Synthetic biology: top/down and bottom/up modeling.
- Study of drug development processes.
- Physics applied to healthcare (ultrasound, X-ray, NMR, fluorescence).

### Instrumentation

- Sensor, laser and Bio-MEMS technology.
- Optical and ISFET Bio-sensors : Cytometry - Plasmonics.
- Biomolecular instrumentation (mass spectrometry, NMR).
- Practical work in a clean room environment (soft-lithography, DNA chips).
- Labview.

### Modeling and Computing

- C, C++ and Matlab.
- Bioinformatics (R language).
- VHDL-AMS: multi-domain modeling.
- COMSOL microfluidics: Lab-On-Chip studies.
- COVENTOR: MEMS design software.

### Introduction to professional life

- Engineering Projects: two 6 month long group projects.
- Financial management, entrepreneurship, quality.
- **Internships: 4, 12 and 20 weeks (resp. after the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> year), including a foreign experience and an in-company placement.**

#### Academic (CNRS) and industrial partners:

ICube (electronics, bioinformatics, medical imaging), IGBMC (biomedical), IPCMS (materials), LINC (neurosciences, imaging), PCBiS (chemical biology), ECPM, IMLS (forensics), IRCAD, Axilium Robotics, Bürkert Fluid Systems, Dreampath Diagnostics, Eurorad, General Electrics, Sonoscanner.

#### Former employers (internships 2011/2012):

Elvesys (Microfluidics, France), ENS Paris (R&D, France), Fluigent (Microfluidics, France), IChF – PAN (Supramolecular Complexes, Poland), IOR (Orthopedics, Italy), Karl Storz (Germany), Merck-Millipore (Microfluidics & Sensors, France), MGH-MIT (Cognitive Sciences, USA), MGH (Physics, Canada), SCK-CEN (Radiations for Healthcare, Belgium), Symbiomed Sdn (Biomedical devices, Malaysia), UPMC-Lip6 (Computer Sciences, France), UTokyo (Therapeutic Engineering, Japan).