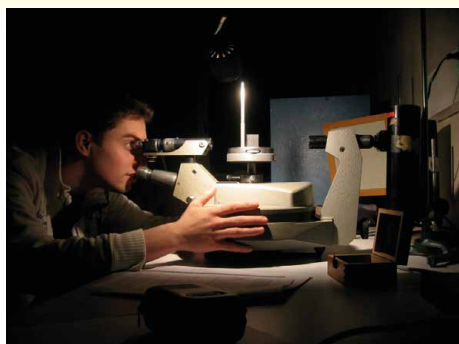


B.U.T. Mesures Physiques

Chemical Engineering and Applied Physics (Three-year Undergraduate Course)



The B.U.T. (Bachelor Universitaire de Technologie) Mesures Physiques is a French national undergraduate diploma for candidates/students having a good scientific "baccalaureat" (fairly equivalent to "A" levels in Maths and Science). They attend a three-year course, working an average 35 hours per week at the IUT. Lectures account for 20% of the total time, tutorials 40% and lab work 40%. Their course culminates in a minimum of 26-week work placements in two periods. The emphasis is put on lab work and applied science.

Three-year syllabus : 2 000 hrs

Common core syllabus

Science

- Chemistry (Analytical Chemistry, Atomic and molecular structures, Spectroscopic Techniques, Chromatography, Electrochemistry, Nuclear Techniques)
- Physics (Electricity, Electromagnetism, Thermics, Thermodynamics, Optics, Vacuum, Fluid mechanism, Material resistance) - Electronics (Analogical and numerical)
- Automation (Linear electronic control, PID)
- Optronics (photodetection, optical sensors, spectroscopy)
- Metrology (International standards)
- Quality & Control (Process Optimization)
- Computer science (C Language , LabVIEW)
- Photonics (optical fibers, LED, LASERS, light modulation and amplification)

Mathematics

- Mathematics for physics and signal processing (Fourier Analysis, Sampling, Modulation)

Humanities

- English: technical language and communication (Cvs, cover letters, job interviews, group discussions and oral presentations, reports, e-mails etc.)
- Communication/Management: Cultures and societies - Understanding the main operational fields of an organization, management methods, implementation of organization strategies, information technology management

In years 2 & 3, the students choose one from two options

MCPC (Materials and Physicochemical Controls or Chemical Engineering)

- Materials: Properties and structure, Crystallography, Characterization Techniques (DTA/DSC, X-RAY diffraction and fluorescence, Scanning Electron Microscopy, Vacuum deposit techniques (sputtering and evaporation), Semi-conductors.
- Chemistry: organic chemistry, Polymers, Analysis Techniques (Atomic absorption, Flame Emission, N.M.R. Spectrometry, Mass Spectrometry, Spectrometry (UV- Vis, FTIR), Chromatography(gas-liquid), Electrochemistry, Nuclear Techniques, Industrial product control

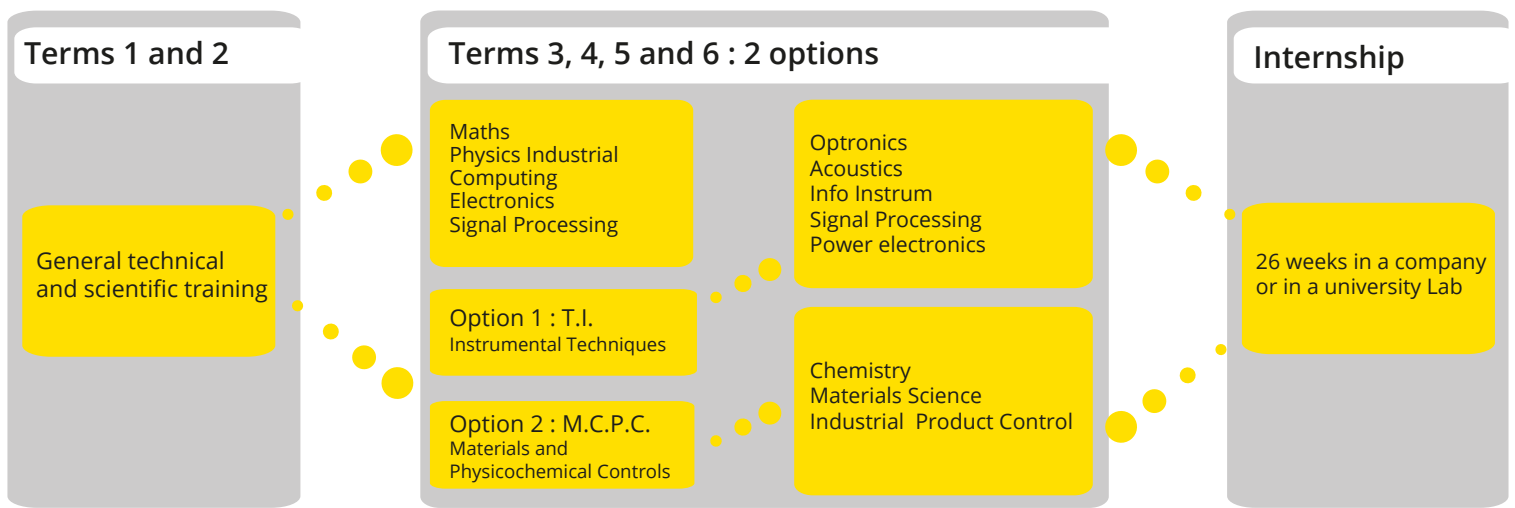
IT (Instrumental Techniques or Applied Physics)

- Electronics (Power Electronics, Data Acquisition Technology, Filtering)
- Microprocessors (Memory architecture, Microprogrammed systems)
- Acoustics (Architectonic acoustics, Noise characterization)

Tutored projects (about 300 hrs)

Technical or scientific applications in groups supervised by a tutor





The Internship period

The Internship/work placement period is scheduled for a minimum of 12 weeks during the 2nd year and 14 weeks during the 3rd year course.

A first compulsory work experience in a company in France or Internationally.

Objectives

- To apply the knowledge and skills the students have acquired and to develop new ones.
- To adapt to a different environment and a different culture, in an English-speaking country : to adapt to new tools, to a new corporate culture, to improve their skills in professional English through practicing it.

When is the placement ?

The placement usually takes place from early April to late June, but may last longer if the student and/or University so wishes.

What kind of projects can students work on ?

Here are some examples of project :

- An investigation of oscillator circuit designs for surface acoustic wave sensors
- Light Scattering by surface tension waves
- Advanced oxidation processes using a new catalyst in the treatment of industrial waste waters
- Development and validation of analytical methods for the analysis of antibiotics in animal feed
- Construction and handling of a clean energy reduced car
- Construction and handling of a superconducting levitation train.

Our students' skills

Our degree offers a unique set of skills and know-how in the fields of Material Science, Chemical Engineering, Physics, and Electronics.

Students are trained :

- To carry out all types of measurements and then to interpret and analyze them
- To design and implement an industrial system.

What do our graduates do ?

Sectors of Activity and Students' job profile

Students are trained to integrate and to evolve in the real working world in industry and research in many different fields such as those of the automobile, aeronautics, electronics, optics, materials, chemistry, environment ... and to adapt to new technologies.

Here are some possible positions and responsibilities :

- project manager,
- quality manager,
- production engineer,
- research engineer ...

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