

# **JULES FERRY HIGH SCHOOL, CANNES**

## **BTS BIOTECHNOLOGIES**

Explanatory leaflet for an internship abroad

### **1. Framework of the diploma**

The « BTS Biotechnologies » is a technical and vocational training over two years, after the French baccalauréat (equivalent of the A-level), which enables students to get a Higher National Diploma. It is a French Diploma taken two years after high school graduation, equalling level 3 in the French Framework and level 5 in the European Framework.

### **2. Profile and school career of the students**

The students usually start this training when 18, and finish it when 20. They are generally 19 during their internship. Some students have already had a previous experience in higher education institutions and are one or two years older.

- 70% of the students have a technological A-level (STL), which implies that they already have a two-year experience in the technological field, (even if overall), along with a thorough theoretical scientific training in mathematics and physics.
- 25% of the students have a scientific A-level, which implies that they have a very good theoretical level thanks to a high level scientific training. They discover the technological field when in HND.
- 5% of the students have a vocational A-level, which implies that they have more vocational skills than theoretical ones. Only the best students in vocational training get to pursue their studies for a HND.

About 60% of the students are motivated to pursue their studies after the HND (40% in an engineering school or at the University to achieve a master's level, and 20% in a vocational bachelor's degree to reach a bachelor's level).

### **3. Dates, duration and expectations of the internship**

The internship, also called the training period, takes place at the end of the first year, from May, 15th, approximately and is expected to last 7 weeks. For an internship abroad, though, it can last up to 2 months, if that is more beneficial to the student.

The internship must be conducted in a field related to Biotechnologies, in research laboratories and research and development or in production implementing biotechnological processes.

The main activities of the intern are the implementation of techniques related to the works of the host team. The aim of this first training period is to strengthen a methodology or a technique, or the study of one of their applications. At that time, the security problems, the equipment requirements and the cost estimation will be taken into account.

The intern can receive payment, but there is no obligation on the company to do so.

The company provides the student with a tutor for reference; someone who works in the same department as the student during the internship. At the same time, Jules Ferry High School, will appoint a member of the 1st year HND educational team to act as liaison.

The company manager, the principal, and the students will all sign an internship agreement, stating the rights and duties of each and every one, as well as the names of the company tutor and the referring teacher.

#### **4. Knowledge and skills of the students in Biotechnology HND, during the internship**

At the end of the first year, the students in Biotechnology HND class:

- Know the different in vitro culture techniques for animal and plant cells
- Know the in vitro culture mediums and their making
- Control the work in a laminar flow hood
- Know the cell labelling techniques and can use an epifluorescence microscope
- Know the basis of gene technology in the purification of nucleic acids and their study by restricting techniques
- Know the PCR techniques in final point and use a thermocycler
- Can use measuring instruments in a biochemistry laboratory : spectrophotometer (simple or plate reader), nanodrop, spectrofluorimeter
- Have a knowledge on eukaryotic and prokaryotic microorganisms and their study (identification, growth, counting, antibiogram)
- Have seen a growth monitoring in a fermentor
- Use computer based tools for the desktop holding, image editing and densitometric analysis.

#### **5. Selection and preparation of the students for an internship abroad**

The first year HND students who wish to do an internship abroad, will be selected by the biochemistry, microbiology, cellular biology, molecular biology and English teachers, based on the following criteria:

- Motivation
- Level of communication in English (B1 minimum, B2 preferably)
- Autonomy
- Level of skills achieved in the applied technical field
- Level of theoretical skills (if the tasks involved, require it)

The high school will organize extra training in English (approximately 30 hours) for the students doing an internship abroad.