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The need for a specific curriculum for technicians in Geo-science, distinct from the existing Masters/ Engineering course

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SUMMARY

Introduction

At present, the lack of short courses in geosciences (for example, the BTS in Nancy and a few professional degree courses) has led to the introduction of new courses, such as the “Diplôme de Technicien Supérieur Professionnel en Géologie” (Professional technician in geology) at Lasalle Beauvais with the aim of developing new skills for assistants and supervisors in geology.

The educational environment and the naturalist knowledge are complementary to the “modern” technological skills and numerical modelling required by companies, both technically and scientifically.

We present in this poster the new specific curriculum for technician in geosciences developed in the Institut LaSalle Beauvais (France).

A wide range of jobs opportunities

The course is aimed at a wide range of jobs: mud-logger, work-site manager (drilling or grading), prospector, geology assistant in a big company (petroleum, BRGM). The work would consist especially for drilling campaigns, geo-technical trials, geological sampling and rock extraction follow-up.

These jobs cover the majority of professional sectors.

- Energy: petrol prospection and production, coal and gas fields;
- Mineral resources (figure 1): industries involving cement, granular, rock embankments, sand pits;
- Water: prospection, management and protection;
- Geotechnics: development and equipment, large-scale work, road layouts;
- Geo-technologies: drilling, geo-physical, logging, numerical models;
- Natural hazards: cartography, estimations, risks;
- Quality of the environment: diagnosis and monitoring the pollution, cleaning-up, safety.

During their three years studies in the institute, students meet several companies during the careers day in October or during other meeting with firms or alumnus.

Training period (or internship) is the main chance to develop their working network and so to prepare their future professional integration.

Figure 1: Examples of domains which recruit technicians in geosciences: Hard-rocks extraction (for aggregates) and geotechnical engineering. Water-resource management and environmental companies also have needs for these graduates.

The main assets of the Institut Polytechnique LaSalle Beauvais (France)

With its extensive know-how and facilities, Lasalle Beauvais is able to offer:

- A unique training course centred on learning in the field, and a wide practical experience of the technological tools of applied geology;
- A course firmly geared towards the industrial milieu and companies involved in the geoscientific field;
- A course designed for past-baccalaureate students wishing to study applied geology for three years;
- Numerous job opportunities in companies ranging from small ones, such as research or design offices, to multinationals;
- A professional educational team, with many different experiences and skills;
- A wide campus in a quiet city near Paris;

The strong points of this new course (Figure 2)

- The specialist know-how and its application on the field;
- In-company training-periods;
- The appropriateness to the employment market and its interest for companies;
- The conformity with the European system (ECTS: European credits transfer system), while Opening the door to the professional Master degrees;
- The Past-student network and companies;
- Excellent educational resources and personalised supervision and guidance;
- English which remains an important part of the curriculum.

This diploma, the “Technician Supérieur Professionnel en Géologie” at LaSalle Beauvais prepares students for professions in the category “employees, technicians and supervisors” or for further studies for a Masters degree. It is officially recognised as a level two diploma, the equivalent of a University degree (bac + 3) by the Ministry of Research and Higher Education.

<i>First Year</i>	<i>Second Year</i>	<i>Third Year</i>
Fundamental sciences Geology, Mathematics, physics, chemistry, mineralogy Basic knowledge 35%	Fundamental geology 10%	Applied geosciences Energy and Mineral resources 12% Environment and construction 12%
Technician tools Mapping, geometry, topography 20%	Applied geosciences Energy and Mineral resources 15% Environment and construction 15%	Technician tools Geophysics, drilling, ICPE 15%
Transverse and communication sciences Computing, data base, English, French, methodology 30%	Technician tools Geophysics, modeling 15%	Transverse sciences Management, English 15%
Field work Mapping, petrography 15%	Transverse and communication sciences Computing, statistics, English 25%	Training period 5 to 6 months in a company for a technician position in geosciences 45-50%
	Training period 1 month and half in a company 20%	

Figure 2: Pedagogical content of the three years of the “Diplôme de Technicien Supérieur Professionnel en Géologie” of the Institut LaSalle Beauvais (France). Note the increasing of the Applied geosciences and training periods proportions.

The pedagogical content has been studied particularly carefully as it must be directed towards the real needs of employment. Therefore, the bases of this training-course and the necessary skills had to be established in consultation with all the people involved in geosciences who are likely to employ these technicians.

Conclusions

Thus, within the existing system of geo-science diplomas in France, the “Technicien Supérieur Professionnel en Géologie” has the following major assets:-

- the unique work in the field: cartography, repeated and diversified applications in geophysics, hydro-geology and soil engineering;
- the naturalist approach, deeply anchored in the institute;
- the fundamental scientific content, still omni-present;
- the technological tools : SIG, specific software, modelling, data bases;
→ Applied geo-sciences as the central theme of the three years.

These five unique features make the “Technicien Supérieur” a pioneer course, without doubt well adapted to what will be the focus in science and technology in the years to come. The technicians should develop extensive skills for technology while retaining a critical naturalist mind and having a wide practical experience.