

Toulouse

- the European space capital - among the foremost in space related education

Toulouse in Southern France, mostly known as the home of the Airbus Industry, recently reached the headlines with the first flight of A 380, the biggest civil aviation airliner so far. However, Toulouse is world-class in something very different; housing major companies such as Alcatel and Astrium, not to forget the French Space Agency, CNES, with more than 2.000 employees. Close to 25 per cent of Europe's total space activities are related to Toulouse.

Toulouse, with approximately 700.000 inhabitants, is located close to the Pyrenees chain of mountains with motorway access to the Atlantic ocean and the Mediterranean, thus making Toulouse one of Europe's most impressive cities in terms of high-technology. Toulouse is a modern international-oriented city with close to 300 foreign companies and a large international settlement. What Toulouse can offer, situated where it is, is its environment of compact high-technology and advanced industries, French and foreign companies, along with their need for the highest possible knowledge as well as updated modern educational programmes at all levels. Research and Development (R&D) is without doubt also one of the most important pillars in this industrial metropol. Over 10.000 scientists are working in 900 different R&D-organisations, many of whom in aerospace-laboratories (electronics, material technology, system testing etc). Alcatel and Astrium, with their satellite construction programmes, are among the foremost in these topics. CNES, with its Technical Centre, also houses the Space Control Centre from which satellite controlling is being handled with regards to European (and French) satellites in orbit, and is thus part of the major space environment in Toulouse.

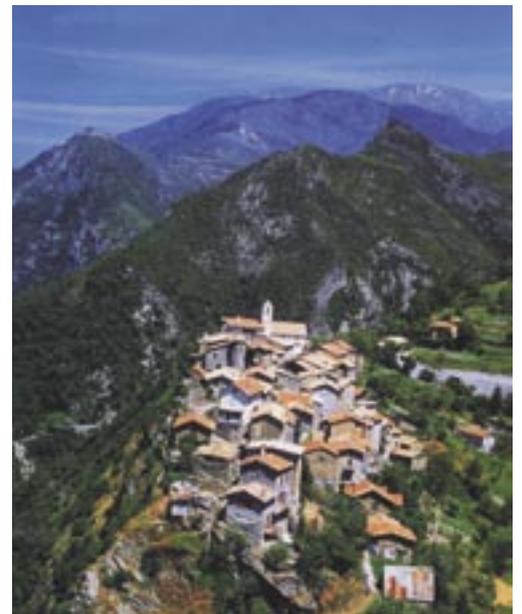
This is the basis for the highly advanced education programmes offered by four major universities and fourteen "grandes ecoles", from short-term

introduction courses lasting days or weeks to full-term Masters or Ph.Ds. The Norwegian Space Centre in Oslo has for some years cooperated with several of these institutions both in terms of introducing advanced educational programmes to students, as well as part of an upgraded training for leaders in space industries in Norway. In the following we will present some of our experiences with space related education in France, and how a possible common Nordic approach could benefit all parties concerned.

CNES (www.cnes.fr) alone provides educational and trainee programmes to international partners to a greater extent. Students from universities can apply to finish their Masters at CNES by identifying a good basis for their theses at a CNES laboratory or project in France or abroad, including the space launching site in Guyana in Southern America.

Other very important space related educational programmes are found at the "Grandes Ecoles", also known as "technological universities", and SUPAERO (www.supaero.fr) and ENSICA (www.ensica.fr), both of whom are European versions of MIT-USA.

SUPAERO is an elite institution which can boast of having educated some of the most success-



*Toulouse - near the fantastic Midi-Pyrénées.
Picture: CNES*

Einar Sørensen, Norwegian citizen, has been working in Toulouse for close to nine years. He runs his own independent Oslo-based consultancy, but has specialised in French and European aerospace. For some years he has been engaged by the Norwegian Space Centre on educational advice for space studies in Toulouse.

He can be contacted at the following address:

einar.sorensen@wanadoo.fr

ful leaders in French aerospace. ENSICA, situated not far from SUPAERO, is specialised on advanced education and training in engineering topics, in addition to promoting programmes in collaboration with international universities on all continents.

Worth mentioning is certainly also the Paul Sabatier University which offers advanced scientific programmes including mathematics, and physics amongst others (www.ups-tlse.fr), in addition to research projects in space matters at a very demanding level.

Two other important higher educational institutions should be equally mentioned in this connection. Firstly, the Institute Aeronautique et Spatiale, IAS (www.inst-aero-spatial.org), which is highly respected due to its upgrading programmes. IAS also provides the FASIA-programme which is a unique scholarship with all expenses covered including a golden opportunity to work in the aerospace industry in France or abroad.

Secondly, the INSA institution of Toulouse, (www.insa-tlse.fr), a technical university which is well-known because of its high number of Norwegian students. INSA has a direct agreement to collaborate with CNES, thus contributing to developing special trainee and/or post-graduate studies for students from abroad. By choosing INSA, Norwegian students can go directly from the national basic education to engineering studies at INS, Toulouse, specialising in space topics at CNES. Estimated time: five years from entering INSA.

With regards to the upgraded courses, SUPAERO, Toulouse, has for a long time collaborated with the French Engineering Society SAE (Société des Amis de l'ENSAE et de l'ENSA) in providing an impressive annual programme on short term courses and conferences. That programme can

be found at www.supaero.fr/sae or www.ensa.fr/sae.

During their first term aerospace studies in Toulouse, the students will learn about ONERA the French Aerospace Research Organisation (www.onera.fr) which is one of the most important establishments in Toulouse. ONERA is highly involved in all relevant European Space programmes, not least the development of Ariane launching systems, satellite technology, spacebased platforms, and/or more general scientific research programmes.

Most of the institutions mentioned above have collaborated with universities in the Nordic countries for a good number of years. Both Kungliga Tekniska Högskolan (KTH) in Stockholm, The Norwegian University of Science and Technology in Trondheim (NTNU) as well as their Danish and Finnish counterparts, have all agreements with regards to exchange programmes with Toulouse. Consequently, students who are looking for an approach to studies in Toulouse should first of all search for openings by contacting the Nordic universities.

It is not difficult to be a foreign student in Toulouse in the deep Southern France. Of course there is always the language and the cultural aspect. Speaking French is an advantage, and learning French is definitely important not only because of the social impact, but most of all its impact on a professional basis. Nevertheless, English is more and more the common language in space-programmes. In Toulouse it is an accepted solution to start studies by using English using specially prepared terminology for foreigners, who then are gradually introduced to French.

CNES, as an exemple, now provides a broad range of training programmes and courses in English, including the annual course "Spacecraft Techniques and Technology, which covers a full two-week programme on spacecraft technology in Europe with the foremost lecturers. More information: tvs-cnes@carte-blanche.fr.

Toulouse, "la belle vie", as the French put it, is a very friendly city, and you will have no problem finding your way in this "Mecca of" high-technology. Museums and interesting places to visit, include the Cité de l'Espace, The Space Parc of Toulouse, Europe's answer to Houston Space Center. And in your time-off, you can go walking in the mountains, do all kinds of sports, and enjoy cultural activities to everybody's taste. It is definitely not boring to live in Toulouse.

To copy the famous quotation about London by the famous English author Samuel Johnson: "If you are tired of Toulouse, you are tired of life"!

Soyez bienvenue à Toulouse!



A group of Norwegian students who participated in an introductory programme towards the institutions in Toulouse. Here the group is outside the main entrance of the CNES, October 2004. Photo: Einar Sørensen

