EuMAS - European Masters Course in Aeronautics and Space Technology

La sfida dell’internazionalizzazione

Torino, 22 maggio 2008

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Challenges to the European industry in the worldwide aerospace market: multinational supply chain, time to market, fierce competition

Key skills for engineers and managers: cultural awareness, communications, team building and the team process


The ECATA Consortium was established to identify the high level training needs of the Aerospace Industry and develop appropriate training programmes. Academic know-how, experience and knowledge of the profession are combined to organize courses fitted to the needs.
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The ECATA Consortium

7 Universities: France, Italy, Germany, Spain, UK, Netherlands, Sweden

8 top European Aerospace Companies

Universitas di Pisa

Technische Universitat Munchen

KTH - Kungliga Tekniska Hogskolan

Cranfield University

TU Delft

Universidad Politonica de Madrid

Isae

AerMacchi

Airbus

Alenia Aeronautica

BAE Systems

EADS

Dassault Aviation

SAAB

Safran
The ECATA European Aerospace Business Integration Program is designed for high potential engineers already fully operational within the European aerospace companies (approx. 5 to 10 years experience) destined to senior management positions.

Structure: three intensive, residential sessions at the ECATA Institutes, carried out over a five month period to enable participants to return to the home and workplace in between.

Content is delivered by industry and academic experts and training professionals:
- International Aerospace Management.
- Integrated Product Development.
- Multinational Project Management.
- Multinational team project work, seminars, workshops, tutoring.....

By the end of the course participants will emerge with:
- Experience of multicultural co-operation, multinational teambuilding and team process;
- Understanding of international alliances, merging and the aerospace environment;
- Understanding of the complexities of managing multi-national aerospace projects.
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**ECATA - Key Facts**

20 selected delegates attend the yearly Aerospace Business Integration session.

Breakdown of ECATA ABI courses delegates per country.

Around 100 professionals and professors are involved per session.

7 ECATA Offices in Europe (France, Germany, Italy, Spain, Sweden, The Netherlands, UK) (ECALAS).

EuMAS Background

- ECATA was setup in 1988. The first Aerospace Business Integration course was run in 1991; since then, courses have been held on a regular basis every year.

- The ECATA junior programme started in 1993 and the Multinational student teams started in 1995. Round 10 projects representing 40 students from ECATA institutes have been performed in Aerospatiale (F) and DASA (D).

- The seven ECATA schools were founding members of PEGASUS - a network of 23 European aerospace schools - in 2002.

- The decision to apply for the Erasmus Mundus programme was taken in 2004, after one year of preliminary discussions. Five ECATA members joined the EuMAS proposal.

- EuMAS was selected in 2005. The first course started October 2005.
“Erasmus Mundus (...) is a new global scheme, providing a distinctly «European» offer in higher education. It seeks, primarily, to enhance the quality and attractiveness of European higher education world-wide. Secondly, Erasmus Mundus Masters Courses and scholarships will provide a framework to promote valuable exchange and dialogue between cultures. By supporting the international mobility of scholars and students, Erasmus Mundus intends to prepare its European and non-European participants for life in a global, knowledge-based society ...”
Goals of the programme:

“... to enhance the quality of European higher education by fostering cooperation with third countries in order to improve the development of human resources and to promote dialogue and understanding between peoples and cultures.”

Specific objectives:

- to promote a quality offer in higher education with a distinct European added value, attractive both within the European Union and beyond its borders;

- to encourage and enable highly qualified graduates and scholars from all over the world, to obtain qualifications and/or experience in the European Union;

- to develop more structured cooperation between European Union and third-country institutions and greater European Union outgoing mobility as part of European study programmes;

- to improve accessibility and enhance the profile and visibility of higher education in the European Union.
Erasmus Mundus Courses
Key Features

• Involve at least 3 higher education institutions from 3 different Member States;
• foresee periods of study in at least 2 of the 3 institutions;
• have built-in mechanisms for the recognition of periods of study undertaken in partner institutions based on, or compatible with, the European credit transfer system (ECTS);
• result in the awarding of joint, double or multiple degrees, recognised or accredited by the Member States;
• without prejudice to the language of instruction, provide for the use of at least two European languages spoken in the partner Member States and, as appropriate, for language preparation and assistance for students, in particular by means of courses organised by the institutions in question.
Il corso EuMAS

- Partner: ENSAE-Supaero, Toulouse (F); Technische Universität München (D); Universidad Politécnica de Madrid (E); Cranfield University (UK); Università di Pisa (I), coordinatore.

- Durata: 2 anni (120 crediti ECTS)- Specializzazioni: ingegneria aeronautica o ingegneria spaziale

- Titolo rilasciato: *double degree* - Titolo italiano: Laurea specialistica in Ingegneria Aerospaziale

- Borse di studio dalla Commissione Europea (solo per studenti extra-europei): 21 kEuro l’anno per due anni, per complessivi 1.1 MEuro per anno

- Tasse di frequentanza: 12 kEuro/anno extra-europei, 6 kEuro/anno europei
Network of European Aerospace Schools

Partnership of a European Group of Aeronautics and Space Universities

Tu Delft
NINU Trondheim
RWTH Aachen
KTH Stockholm
TU Braunschweig
TU Berlin
TU Dresden
CTU Prague
Shanghai Jiaotong University
TU Munich
Politecnico di Milano
Politecnico di Torino
UPM/ETSIA Madrid
Università di Pisa
Università di Roma
Università di Napoli
Course Structure

<table>
<thead>
<tr>
<th>Year 1</th>
<th>- 60 ECTS -</th>
<th>Year 2</th>
<th>- 30 ECTS -</th>
<th>Final project</th>
</tr>
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<tbody>
<tr>
<td>Hosting University 1</td>
<td></td>
<td>Hosting University 2</td>
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The Course includes three main segments:

- a **first taught part** of 60 ECTS ("first year");
- a **second taught part** of 30 ECTS ("second year");
- the **final project** of 30 ECTS to be carried out at one of the following:
  - any one of the five partner universities. If the project is carried out at a partner other than the two hosting the cycle, the partner university hosting the project is not involved in delivering the final degree;
  - a third university, external to the Consortium, chosen among those which have Erasmus/Socrates agreements already in place with one of the Consortium partners;
  - an external institution: industry, research laboratory, Agency, etc.
Struttura didattica

- Il corso è ospitato da due sole sedi, a rotazione, per ciascun ciclo - gli studenti formano un gruppo compatto per l’intera durata del corso

- Corsi integralmente in inglese; corso obbligatorio della lingua locale

- Corso “base” fornito dalla sede ospitante (circa 2/3 dei crediti) + moduli integrativi forniti dai docenti in visita delle altre sedi

- Accordi di doppia laurea, completo riconoscimento mutuo dei crediti acquisiti presso ciascuna sede (cfr. programma Socrates/Erasmus !)

- Collaborazione con l’Agenzia Spaziale Europea (ESA) e con le principali industrie del settore aerospaziale
Distribuzione degli studenti

<table>
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<tr>
<th></th>
<th>05/06</th>
<th>06/07</th>
<th>07/08</th>
<th>08/09</th>
<th>09/10</th>
<th>10/11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>Pisa</td>
<td>Munich</td>
<td>Pisa</td>
<td>Cranfield</td>
<td>Munich</td>
<td></td>
</tr>
<tr>
<td>Year 2</td>
<td>Toulouse</td>
<td>Madrid</td>
<td>Madrid</td>
<td>Toulouse</td>
<td>Cranfield</td>
<td></td>
</tr>
</tbody>
</table>

Primo ciclo: Pisa (2005/6) - Tolosa (06/07), 23 studenti (110 candidati)

Secondo ciclo: Monaco (06/07) - Madrid (07/08), 28 studenti (220 candidati)

Terzo ciclo: Pisa (07-08) - Madrid (08/09), 28 studenti (310 candidati)

Quarto ciclo: Cranfield (08/09) - Toulouse, 370 candidati (ad oggi)

Primi laureati EuMAS (primo ciclo, luglio 2007): circa 30% in Europa (Airbus, Eurocopter, Safran, ESA, DLR, industrie avanzate non aerospaziali); circa 30% studi dottorali in Europa o in USA; circa 40% impiegati nei Paesi d’origine.
Nazionalità di provenienza

- India: 20%
- Other Asian countries: 39%
- Africa: 5%
- North America: 5%
- Latin America: 15%
- Australia & New Zealand: 4%
- Europe: 1%
- Russia: 4%
- China: 7%
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Second cycle class
at the German Space Operations Center (GSOC) in
Oberpfaffenhofen, Oct. 17, 2006
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Erasmus Mundus 1: 2004-2008

Main Outputs

✓ 103 Erasmus Mundus Masters Courses - wide spectrum of disciplines, from humanities to law, economics, health, science, engineering, applied sciences
✓ 5950 grants for third-country students
✓ 965 grants for third-country academics
✓ 47 Partnerships
✓ Approx 1000 grants for outgoing EU-students
✓ Approx 500 grants for outgoing EU-scholars
✓ 34 attractiveness projects
Wider scope: inclusion of external policy objectives -> future reference programme in the field of higher education cooperation with third countries

- Joint doctoral programmes

- (Possible) inclusion of third-country Universities in joint programmes

- Priority for joint degrees

- Scholarships for EU students
La sfida
dell’internazionalizzazione:
problem e lezioni apprese

Carenze strutturali: alloggi, prima accoglienza, etc. (superabili con lavoro e determinazione).

Punto dolente: mancanza di una mentalità internazionale. La presenza di studenti extra-europei è percepita ancora come stravaganza, episodio accidentale, corpo estraneo rispetto alla realtà di una università (geograficamente) di provincia che si scopre al centro di un mondo.

Plauso al personale amministrativo: ha raccolto la sfida con entusiasmo e ha saputo vincerla. Servono più occasioni di sfida! In sintesi: il problema non è la nostra percezione degli altri o la percezione che gli altri hanno di noi, ma la percezione che abbiamo di noi stessi.

EuMAS si avvia all’autosufficienza. Il finanziamento comunitario, per una volta ben strutturato e assegnato in base al merito, ha sortito l’effetto desiderato.

Fattori cruciali del successo di EuMAS: abitudine a lavorare insieme costruendo nel tempo la fiducia reciproca; contatti stabili tra le istituzioni coinvolte; focalizzazione delle energie su un settore ben delimitato.
Costruire e consolidare reti università - imprese intorno a progetti condivisi

Integrare formazione continua, formazione superiore ("post-graduate") e formazione alla ricerca (dottorati congiunti)

Introdurre corsi in inglese, anche per gli studenti italiani (solo a livello MSc - laurea specialistica)

Promuovere, mantenere e animare reti di ex-allievi

Investire e agire sul lungo periodo - Come per l’eccellenza, l’internazionalizzazione non si fa per decreto!