

## Importance of Language and Culture for Globally Competent Engineers

**What is a GLOBALLY competent engineer?**

**What are the skills needed?**

**How do languages and culture play a role?**

**What do companies expect?**

**How do engineering schools meet the needs of industry  
/ the challenge of globalization?**

2013 IIE New York

## Importance of Language and Culture for Globally Competent Engineers

What is a **COMPETENT** engineer?

Scientifically competent

Calculus I, II, Fourier, Ampere, Newton, algorithms etc..

Fluid mechanics, chemistry etc...

Engineers across the world have very similar syllabi

→ FAME program: ENSEA → 10 US schools (2007)

→ IEP Rhode Island (1987)

**2013 IIE New York**

## **Importance of Language and Culture for Globally Competent Engineers**

**A Globally Competent engineer**

**Scientifically competent**  
**Linguistically competent**  
**Culturally aware**

**2013 IIE New York**

## **Importance of Language and Culture for Globally Competent Engineers**

**A linguistically competent engineer**

**Number of languages spoken/studied? Fluency?**

Best foreign language for a chemE? - 6 messages - 25 juin 2011

which foreign language compliments computer ... - 13 messages - 15 déc. 2010

Do (Should) Engineering Students take a Foreign ... - 9 messages - 5 juin 2010

Would knowing a foreign language be beneficial for ... - 9 messages - 28 janv. 2009

**The European challenge: 27 countries 23 languages**

## Importance of Language and Culture for Globally Competent Engineers

A Basic User	B Independent User	C Proficient User
A1 Beginner	A2 Elementary	B1 Intermediate
B2 Upper intermediate		C1 Proficiency or Advanced
C2 Proficiency		

## Importance of Language and Culture for Globally Competent Engineers

C1

Can understand a wide range of demanding, longer texts, and recognise implicit meaning.

Can express him/herself fluently and spontaneously without much obvious searching for expressions.

Can use language flexibly and effectively for social, academic and professional purposes.

Can produce clear, well-structured, detailed text on complex subjects, showing controlled use of organisational patterns, connectors and cohesive devices.

## **Importance of Language and Culture for Globally Competent Engineers**

**B2**

**Can understand the main ideas of complex text on both concrete and abstract topics, including technical discussions in his/her field of specialisation.**

**Can interact with a degree of fluency and spontaneity that makes regular interaction with native speakers quite possible without strain for either party.**

**Can produce clear, detailed text on a wide range of subjects and explain a viewpoint on a topical issue giving the advantages and disadvantages of various options.**

**2013 IIE New York**

## **Importance of Language and Culture for Globally Competent Engineers**

**Culturally aware**

**Food**

**Manners**

**Gestures**

**Ethics**

**Ways of thinking, reasoning etc...**

**Customs**

**Dress etc...**

**2013 IIE New York**

## **Importance of Language and Culture for Globally Competent Engineers**

**Companies' role**

**Ex: Airbus**

**Internships**

**2013 IIE New York**

## **Importance of Language and Culture for Globally Competent Engineers**

**How do engineering schools meet the challenge of globalization?**

## Importance of Language and Culture for Globally Competent Engineers

<b>3 kinds of requirements</b>	<b>Modalities</b>
<p>1) Study a minimum of 2 languages, among which English.</p> <p>* Chinese, Japanese, Portuguese are electives + Russian and Arabic</p>	<p>Validate a project or work of some kind in :</p> <ul style="list-style-type: none"> <li>• <b>English</b> (all students)</li> <li>• <b>2<sup>nd</sup> language</b> : German, Spanish</li> <li>• <b>French as a foreign language</b> (compulsory for non French-speaking international students)</li> </ul>
<p>2) Take an independent English test</p>	<p><b>TOEIC</b> minimum score ; <b>785 points ( B2 )</b> or equivalent English test (IELTS, TOEFL)</p>
<p>3) ALL students are strongly recommended to spend a minimum of 3 months abroad.</p>	<p>Several options are offered to the students:</p> <ul style="list-style-type: none"> <li>• <b>Summer internships in a company or a partner school abroad</b></li> <li>• <b>Final year project (min 5 months)</b></li> <li>• <b>Final year abroad: 1 or 2 semesters / double degree in a partner school.</b></li> </ul>



@ ENSEA ...

THE WORLD



IS YOUR CAMPUS !!...

## Importance of Language and Culture for Globally Competent Engineers

ありがとう。 谢谢。

Komawoyo

Mersi

Dank u

Obrigado

Danke

Dhanyawaad

Gracias

Grazie

شکرًا

תודה

ຂອບຄຸມ

спасибо

Merci

Ευχαριστώ.

Terima kasih

Salamat

Thank you

Kiitos

Tak

**2013 IIE New York**

## **Importance of Language and Culture for Globally Competent Engineers**

**2013 IIE New York**

## **Importance of Language and Culture for Globally Competent Engineers**



# 3<sup>e</sup> Année à l'Etranger

@ ENSEA ...

THE WORLD



IS YOUR CAMPUS !!...

# 3e Année aux USA

- **DOUBLES DIPLOMES (cursus plus long)**
  - 2 ou 3 semestres académiques + PFE
- **ECHANGE SIMPLE**
  - 1 ou 2 semestres académiques + PFE

# 3e Année aux USA

## ■ Destinations pour double diplôme

- SUNY Buffalo  
**State University of New York at Buffalo**
- IIT Chicago (*présentation le mardi 6/11/2012*)  
**Illinois Institute of Technology**
- GT Lorraine & GT Atlanta (*présentation le merc. 24/10/2012*)  
**Georgia Institute of Technology**
- University of Pittsburgh

# 3e Année aux USA



# 3e Année aux USA

	SUNY BUFFALO	IIT CHICAGO	GEORGIA TECH	PITTSBURGH
Durée	3 semestres	3 semestres	4 semestres	3 ou 4 semestres
Dates	Mi-Aout 2013 Mi-Sept. 2014	Mi-Aout 2013 Mi-Sept. 2014	Septembre 2013 Avril 2015	Septembre 2013 Dec. 14 ou Avr 15
PFE inclus	oui	oui	oui	oui
Coût scolarité	14 000\$	16 000\$	18 000\$	38 000\$ *0 si TA
Année de début du partenariat	1998	1997	2000	2012
Nombre total d'élèves partis	15	165	50	0

# 3e Année aux USA

- Destinations pour échange académique
  - GE3 Global Engineering Education Exchange

40 partenaires aux Etats-Unis

[www.GE3.org](http://www.GE3.org)

## GLOBAL E<sup>3</sup> MEMBER INSTITUTIONS

### AUSTRALIA

- University of Melbourne
- University of New South Wales

### AUSTRIA

- Vienna University of Technology\*

### CHINA

- University of Michigan - Shanghai Jiao Tong University Joint Institute
- Xiamen University

### DENMARK

- DTU: Technical University of Denmark

### EGYPT

- American University in Cairo

### FRANCE

- ENSEA: Ecole Nationale Supérieure de l'Electronique et de ses Applications\*
- INSA Lyon: Institut National des Sciences Appliquées, Lyon\*
- UTT: Université de Technologie de Troyes\*

### GERMANY

- MUAS: Munich University of Applied Sciences
- Technische Universität München\*

### HONG KONG

- Hong Kong Polytechnic University

### INDIA

- Manipal University

### INDONESIA

- Institut Teknologi Bandung

### ISRAEL

- Technion – Israel Institute of Technology

### ITALY

- Politecnico di Milano\*

### JAPAN

- Tohoku University

### MALAYSIA

- Universiti Teknologi PETRONAS

### MEXICO

- Tecnológico de Monterrey

### SINGAPORE

- Nanyang Technological University

### SOUTH KOREA

- Handong Global University
- Hanyang University

### SPAIN

- Universidad Del País Vasco
- Universidad Politecnica de Madrid
- Universidad Pontificia Comillas

### UNITED KINGDOM

- Cardiff University
- University of Leeds

### UNITED STATES

- Boise State University
- Case Western Reserve University
- City College of New York
- Clemson University
- Drexel University
- Embry-Riddle Aeronautical University
- Franklin W. Olin College of Engineering
- Georgia Institute of Technology
- Illinois Institute of Technology
- Lehigh University
- Mississippi State University
- Missouri University of Science & Technology
- New Jersey Institute of Technology
- Northeastern University
- Polytechnic Institute of NYU
- Rensselaer Polytechnic Institute
- Santa Clara University
- Texas Tech University
- University at Buffalo (SUNY)
- University of Arizona
- University of Colorado, Boulder
- University of Connecticut
- University of Illinois, Urbana-Champaign
- University of Maryland
- University of Michigan
- University of Pittsburgh
- University of Tennessee, Knoxville
- University of the Pacific
- University of Tulsa
- University of Washington
- University of Wisconsin, Madison

# 3e Année aux USA

## CONDITIONS

- Pour Double Diplôme (Tuition Fees)
  - 14 000 \$ (IIT, UB) à 18 000 \$ (GaTech) 11 000€ à 14 000 €
  - 38 000 \$ (Pitt), poste possible de TA (teaching assistant)
- Pour Echange Académique
- Maîtrise de l'anglais
  - TOEFL = 90                      IIT
  - TOEIC = 750                      GaTech
  - GRE = ....

# 3e Année aux USA

## ■ PFE en labos de recherche

- IIT ex: imagerie médicale [www.mirc.iit.edu](http://www.mirc.iit.edu)
- Pitt (12 sujets variés reçus pour 2013)
- UB ex: télécoms
- Autres partenaires GE3

## ■ PFE en entreprise

- Chicago : AllCell Technologies [www.allcelltech.com](http://www.allcelltech.com)

# 3e Année aux USA

## ■ PFE ou STAGES d'été

1. CV en anglais
2. Lettre de candidature (motivation) domaines / projets...
3. Durée :
  - été : 6 à 8 semaines
  - PFE : 5 à 6 mois ou +

NB Les stages en laboratoire universitaire ne sont pas rémunérés

# 3e Année à l'Etranger

**QUESTIONS ?**

