IMPORTANCE OF LANGUAGE AND CULTURE FOR GLOBALLY COMPETENT ENGINEERS

Session Chair: Randy Collins, Clemson University

Panelists: **Philippe Marc, ENSEA**

Jane Fines, University of Maryland

2013 Annual Meeting, New York, April 8, 2013

Questions posed to Industry:

1. Is foreign language capability for new hires (particularly new college graduates in engineering) a desired skill or a differentiating advantage? If so, what language(s) and at what level? Basic? Conversational? Technical?
2. Is there a career path that requires some level of foreign language capability?
3. Is a significant cultural experience (such as an extended study abroad or international internship) differentiating advantage for a newly minted engineer? If so, would this experience be desired in a non-English speaking country?

Yes.

- **Any language, any cultural experience is advantageous.**
  - In some companies, the ability to rise in management tied to language competency.
  - Language programs after employment are a distraction to primary job.
  - Most European students have an international experience by High School; different culture in the US.
- **The importance of cultural, interpersonal, and communications skills are underestimated in the US engineering curricula.**
  - “Softskills” have be transferred out of the curriculum and to the employer to develop. Internships, Co-ops, and study-abroad are filling in for this shortcoming.
  - Study-abroad and language skills show initiative, a more-developed person, and adaptability.

A “universal” issue in the US:

How does a student fit language or study-abroad into an inflexible curriculum?

- Let’s take a look at a sample curriculum, Clemson University’s Bachelor of Science in Electrical Engineering.

FRESHMAN YEAR

Fall semester	Cr	Term completed	Spring semester	Cr	Term completed
CES 102 Intro Engr	2		CH 102 Chem II	4	
CH 101 Chem I	4		ENGR 141 Problm Solvng	3	
ENGL 103 Comp I	3		MTHSC 108 Calc II	4	
MTHSC 106 Calc I	4		PHYS 122 Phys I	3	
Hum/Soc Sci req	3		Hum/Soc Sci req	3	
	16			17	

SOPHOMORE YEAR

Fall semester	Cr	Term completed	Spring semester	Cr	Term completed
CP SC 111 C/C++	3		ECE 212 Lab II	1	
ECE 201 Logic	2		ECE 262 Circuits II	3	
ECE 202 Circuits I	3		ECE 272 Comp Org	3	
ECE 209 Logic Lab	1		ECE 273 Comp Org Lab	1	
ECE 211 Lab 1	1		MTHSC 208 Diff Eq	4	
MTHSC 206 Calc III	4		Hum/Soc Sci req OR	3	
PHYS 221 Physics II	3		EE Tech Elec [ECE 222]		
	17			15	

JUNIOR YEAR

Fall semester	Cr	Term completed	Spring semester	Cr	Term completed
ECE 311 Lab III	1		ECE 312 Lab IV	1	
ECE 320 Electronics I	3		ECE 317 Rand Sig	3	
ECE 330 Signals/Sys	3		ECE 321 Electronics II	3	
ECE 360 Power Eng	3		ECE 371 Micro Interfacing	3	
ECE 380 Electromagnetics	3		ECE 372 MicroInterfacing Lab	1	
Adv. Mathematics Elec [1]	3		ECE 381 Fields, Waves	3	
			ENGL 314 Tech Writing	3	
	16			17	

SENIOR YEAR

Fall semester	Cr	Term completed	Spring semester	Cr	Term completed
COMM 150 or 250	3		ECE 496 Systems Design II	2	
E C E 409 Syst. Des	3		EE Tech Elec OR	3	
ECE 427 Comm Systems	3		Hum/Soc Sci req		
E C E 495 Systems Design I	2		EE Tech Depth Elec	3	
E E Tech Elec	3		Hum/Soc Sci req	3	
			Special Elective [2]	3	
	14			14	

How can language and culture be fit into this curriculum?

- Many students come into the university with Advanced Placement (or equiv.) credit.
  - General Education (Humanities/Social Science)
  - Calculus, Physics, Chemistry
- General Education Courses (Hum/SS)
  - One course is from a list called “cross cultural awareness”; an approved study-abroad experience will substitute
  - No freshman or sophomore language classes are approved.

Two incentives – “credentials”

- International Engineering and Science “Minor”
- International Engineering and Science “Certificate” Program
  - This program was initiated in response to Industry

International Engineering and Science Minor

Foreign Language through the 202-Level

-Four semesters

International Experience:

Study Abroad Program (transfer back to Clemson at least nine credits of junior or senior-level *Engineering* and/or *Science courses*)

or

International Internship (minimum 3 months) plus 3 courses (9 credits) of courses from a list of junior or senior-level Economics, Political Science or Foreign Language.

International Engineering and Science Certificate

Foreign Language through the 202-Level

-Four semesters

International Experience:

Study Abroad Program (transfer at least six credits back to Clemson)

or

International Internship (minimum 3 months)

Foreign Language Conversation course

Junior-level course

Current Students Home
Engineering Honor Code
International Programs
Humanities and Social Sciences for Engineering Curricula
Honors & Awards
FE Exam
Academic Advising
Employment Opportunities
Scholarships

Current Students

Michelin Scholarship Established

A new Michelin Scholarship program will help support outstanding Engineering and Science students seeking to develop French language fluency. **Deadline: April 10, 2013**