



Internationalizing an Industrial Energy Management Course

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Outline

- Internationalizing a course in Energy Management ?
- International Module
- Study Abroad: Not Good Enough !
- A New Course - IIEC:

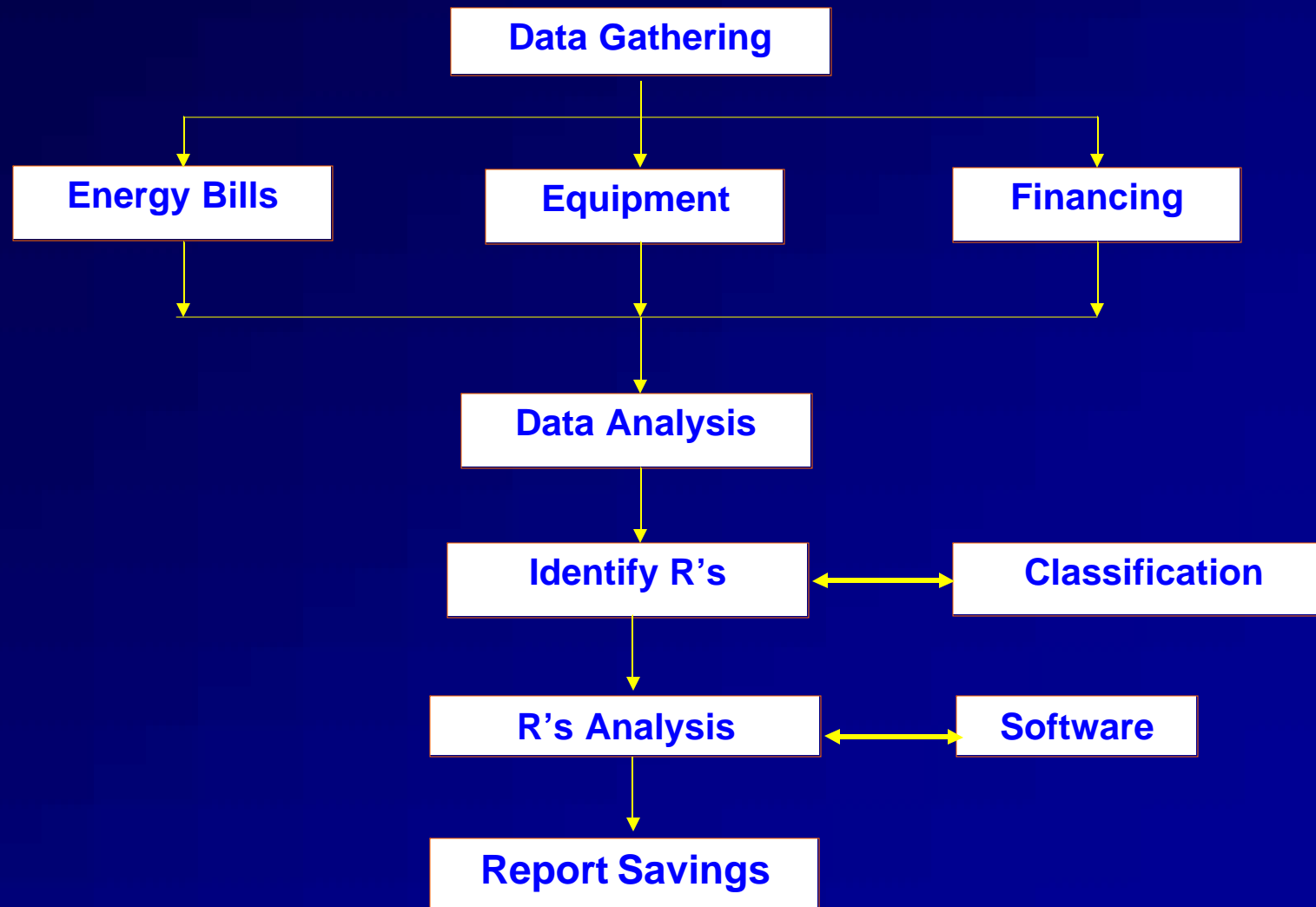
International Industrial Energy Consulting

- Program Objectives
- Program Evaluation
- Conclusions

Why Internationalizing a Course in EM ?

- To provide insight on real world engineering problems
- Students get to look at energy issues in other countries
- To provide a Global Perspective to the course
- Provide insight on Energy Consulting abroad
- International exposure on Energy Management issues
- Global vision to industries that they will not be able to visit
- Comparison of industries in 3 different countries in America
- Introduction to International Industrial Energy Consulting

The Industrial Energy Management Course



The International Module

Three Case studies in 3 different countries

I) A Cardboard Boxes manufacturing facility in the U.S.



The Corrugator is shown on the left.

The Flexo machine with final product are shown on the right.

The International Module

II) A Stainless Steel facility in Ecuador.



The galvanizing process, and water recovery on the left.

The International Module

III) A Copper based Pesticides & Fertilizers Plant in Chile.



The plant and the Copper dissolving process

Study Abroad: Not Good Enough !

- The Study Abroad Goal
- Today's Job market demands on Engineering education
- New trends and results shows that study abroad is the path
- At UF-COE, this is not enough. Why ?
- New programs that make the difference in Engineering
- Consulting for a company and go abroad
- Treat students as professional engineers
- Give a broader international, global and professional education

International Industrial Energy Consulting Course

Outline

- Promoting the course
- Description and Objectives
- The Trip to Chile
- Benefits for Participating Students
- Topics Covered
- Additional Considerations



Learn and Enjoy International Industrial Energy Management Consulting in **CHILE**



3 Credits: EIN 4905 or ESI 6912
GPA = 3.0 Do 2 Industrial Energy
Audits in CHILE, the new NAFTA
country: The Real South Pacific
Instructor: Dr. Cristián Cárdenas

Is Natural Light Used ?



Find out how different & advanced are engineers and manufacturing in Chile. The imagination, the processes, the history, the ideas.

Who were they ?



How is Chilean fruit processed ?



The Andes Influence & the Spanish Tradition

SPECIAL UNIQUE OPPORTUNITY

Add 3 credits & 2 week trip to Santiago-CHILE, Summer C 2004. Come with the instructor to enhance, learn, and get experience in International Industrial Energy Consulting

For updates & requisites look at the following website:

www.ise.ufl.edu/cardenas

then click in **“CHILE”**

Or write: cardenas@ise.ufl.edu or Call: 392-1464

CHILE

Where to Go:	UF-IC - Grinter Hall
Pre-Requisites:	EIN 4321, Thermo, or similar
Capacity:	12 UF-COE Students
When:	Summer C 2004
Cost:	\$1,500/student + Airfare
Financial Aid:	YES !, but HURRY
Application Deadline:	March 31, 2004

What do You Get ?

- *International Experience in Consulting (resume ?)*
- *Certificate of Participation*
- *Ambassador of UF -COE at ABET COE in Chile*
- *3 Credits, Fees, Hotel, Conferences, etc., Included*
- *UF-COE Polo –Shirt, and much, much more.*



International Industrial Energy Consulting Course

The Particular Course Set-up

- a) You are not a student anymore, but a professional engineer.
- b) This is an international consulting company in industrial energy management. The instructor is the president, and you work for him.
- c) As engineer working in international consulting, the most of you is the minimum expected.
- d) You will work with the president as a peer engineer.
- e) There will be regular meetings and work will be assigned. You cannot miss a meeting or a deadline.
- f) Additional considerations: Remember, by working abroad, you will be an ambassador of your country. Hence, the most of you is expected, and you must conduct yourself in a professional manner always!

Topics Covered

<ul style="list-style-type: none"> - Introduction - Industrial Energy Management: A Review 	<ul style="list-style-type: none"> - Companies to be Audited: <ul style="list-style-type: none"> General Background Energy Bills Analysis - Latin America Economic Environment - Energy Consumption in Latin America
<p>Chile: New NAFTA Member</p> <p>Geographic Influence: Climate</p>	<p>Preparing the Trip to Chile</p> <p>Local Industries, Utilities & Incentives, Energy Cost - Distribution/Consumption</p>
<p>The Trip to Chile:</p> <p>Safety Issues and Notes of Caution (clothing, equipment, etc.)</p> <p>Recommendations from UF International Center</p> <p>Interview and work with Faculty and students at local University (ABET)</p> <p>Visit to Local Utilities , Auditing the Clients , Industrial visits</p> <p>Environmental Effects , Lectures at Pontificia Universidad Catolica COE</p>	
Work on, and Submit Reports	Exam

In CHILE



The team in El Mercurio, Quimetal and After Lecturing at Pontificia Universidad Catolica de Chile (bottom)

Additional Industries Visited in CHILE



Pellets for Boars facility

Boars farm & Biogas Generation



Additional Industries Visited in CHILE

Viña Ventisquero



How is Chile's favorite fruit
processed & tasted

Program Evaluation

The IEM Module Evaluation (56/60 students answer)

QUESTION	YES	STUDENTS COMMENTS
1) Were useful/interesting international industrial cases ?	100	Yes, especially because they are real world examples.
2) Do you believe that the case studies help you with your project ?	98	Yes, gives ideas on what to look for.
3) Where they useful so to provide a Global Perspective to the course ?	98	- Yes but what about Europe ? - Important to learn about other countries - Energy Affects us all.
4) Did these examples and the one in the US help you to better understand the course ?	98	- Yes because it puts pictures to words - Gives good idea on how to do audits
5) Did these examples provide you insight on Energy Consulting abroad ?	96	- Helps understand the subject more - Most definitely
6) Do you feel that you could go to other countries and perform energy audits with what you learned in class and the case studies shown ?	90	- I might need some extra help, but I think I have a good idea on how to do it - Yes but with guidance

IEM Teacher Evaluation

The 25% Increase in Course Evaluation

	Report for College			Report for Department			Report for Section		
Spring Term	Instr. Eval	Instr. Overall	Course Overall	Instr. Eval	Instr. Overall	Course Overall	Instr. Eval	Instr. Overall	Course Overall
2004	4.06	4.12	3.97	4.01	4.08	3.95	4.56	4.73	4.52
2003	3.98	4.01	3.90	3.97	3.99	3.92	3.59	3.55	3.26
2002	3.99	4.03	3.92	3.89	3.92	3.82	3.79	3.89	3.62
2001	4.01	4.06	3.95	3.81	3.85	3.79	3.56	3.53	3.50

Conclusions

- Benefits of Internationalizing the curriculum
- Effect of an International Module in a course
- Generation of additional programs
- Exchange of students and faculty promotion
- Attracts international students to UF College of Engineering
- Strengthen relations between UF and Universities abroad
- Inherent benefits for students, UF, and the country.



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