GE3 Annual Conference NYC

Making Short-term and tailored Engineering programs WORK
2 programs: IPRO and FAME

Monday, April 8, 2013 4:30 – 5:30 p.m.

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Program I: IIT's IPRO (Interprofessional Project)

What is it?

- Compulsory Research & Development project
- Applicable to ALL undergraduate students at IIT
- A General Education REQUIREMENT for graduation
- Research topics deal with « real-world » problems
- Duration – 2 semesters (2 – 3 ch per semester)

IIT's IPRO program

What should students learn:

- Teamwork within an interdisplinary team
- Communication
- Logically correct reasoning
- Project management
- Ethics

IPRO – Desired outcomes

Students should develop a solution to the problem that is:

- Desirable – solves a key problem & creates value for the customers/users/stakeholders
- Viable – solution is economically sustainable over time
- Feasible – solution is achievable through existing technology – as in a working prototype

How does it work?

- Research problems provided by companies, NGO's and/or partner schools
- Research areas must cover one of the three categories:
- 1. Service-oriented
- 2. Entrepreneurial
- 3. Sustainable

How does it work – Contd.

- Each IPRO project has a faculty supervisor for guidance
- Students must submit their interest in participating in the project
- Scheduled class time for meetings to discuss the project and its implementation weekly
- Presentation of completion of the project at the end of the semester with IPRO day and a jury to evaluate the best IPRO

CHALLENGES

- FIND professors who are willing & motivated « **Champions** » of the endeavor – translation – you do the work and the necessary 'running around'
- **NEED PERSISTENCE & PERSEVERENCE**- following up with professors, administrators to make it happen – DO IT YOURSELF
- Provide « **INCENTIVES** » to faculty
- **Academic calendar** & **semesters vs. quarters**
- **Number balance** - How many students participating in a project are required, to balance receiving or sending 1 exchange student for 1 semester – (**work in progress**)

A necessary alternative to a traditional exchange?

- Better alternative to traditional « exchange » programs – no balance required
- International Partner schools may work with IIT on an IPRO project (non-travel)
- Provides a real learning experience to both sides as regards sensitizing students & faculty to cross-cultural communication, behaviors, academic preparation, cognition etc.
- Encourages closer relationships with faculty and students between the two partners & forges new opportunities for other collaborations

IPRO 318 & other examples

IPRO 318

Techno-Economic analysis of Electric Vehicles as Renewable energy storage components for the Smart Grid

IPRO 350

Prosthetic Solutions for the Working world

IPR0 337

Creating a Smart Hub that enables better Multi-sensor data capture & Management in Manufacturing

IPRO 318 - Example

- With Pforzheim University of Applied Sciences
- 15 IIT students and 10 Pforzheim students working on an IPRO project in their respective countries
- Weekly communication via skype, videoconferencing (recognition if time differences) and regular communication via email
- Upon implementation, differences in academic calendars were taken into consideration

Program II: FAME

- Initially implemented with 3 schools – IIT, Suny Buffalo & ENSEA, France to attract US students to study abroad
- Spring semester at ENSEA, France
- Courses taught in English – Junior-year level pre-validated by schools for transfer credit
- Field – Electrical & Computer engineering
- Tuition Cost – 3,500 Euros for one semester

Program II:

- Difficult to get U.S. engineering students still
- Need to expand the consortium of partner schools further to attain a critical number of students to keep the program open
- Currently – consortium comprises the following schools – 10

  IIT UIUC CSM

  Suny Buffalo U Michigan Georgia Tech

  ENSEA MSU U of Colorado @ Boulder

  University of Pittsburg
- Participants from GE3 are welcome to join

CONCLUSION

Program I – IPRO

- First project with an international partner university
- Need to encourage more partner universities to participate
- An EFFECTIVE ALTERNATIVE to exchanges
- Fosters deeper and more SUSTAINABLE COLLABORATIONS
- NO COST (financial) to either partner
- NO fear of LATE GRADUATION for U.S. students
- Cultural challenges easier to face, when there is concerted effort to work together towards a goal
- An alternative way to train our engineers to be « GLOBAL ENGINEERS »
- U.S. students become acquainted with problems or issues other countries are facing – become less INSULAR-MINDED

CONCLUSION

- IPRO's are an ALTERNATIVE to encouraging students to become curious about the world outside the U.S.

- May encourage students to study abroad the following semester – either as exchange students or on the FAME program or as « visiting » students (non-fee paying to IIT) but fee-paying to another institution

Weblinks

Program I:

IIT IPRO

http://ipro.iit.edu

Program II:

FAME

www-fame.ensea.fr