International Programs at Rensselaer

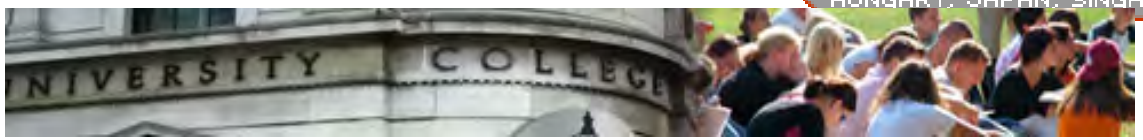
Global Engineering Education Exchange Program
85 institutions in 21 countries

Individual educational opportunities at multiple universities worldwide

***REACH*: Rensselaer Engineering Education Across Cultural Horizons**

- **Denmark Technical University**
- **Nanyang Technical University, Singapore**
- **Hong Kong University of Science and Technology**
- **Queensland University of Technology**
- **Other partnerships under development**

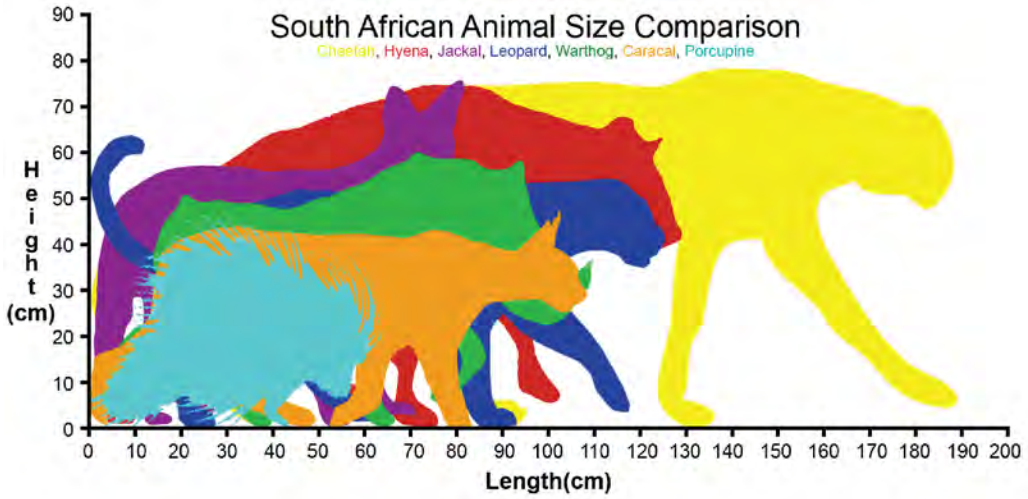
OPPORTUNITIES EXIST AT THE TOP TECHNOLOGICAL UNIVERSITIES IN COUNTRIES INCLUDING: AUSTRALIA, AUSTRIA, DENMARK, FRANCE, GERMANY, HONG KONG, HUNGARY, JAPAN, SINGAPORE, SOUTH KOREA, TURKEY, UNITED KINGDOM, U.S.A.>>



Campus wide programs through the Vice Provost's Office

Scientific Animal Tracking and Capture

Stellenbosch University South Africa

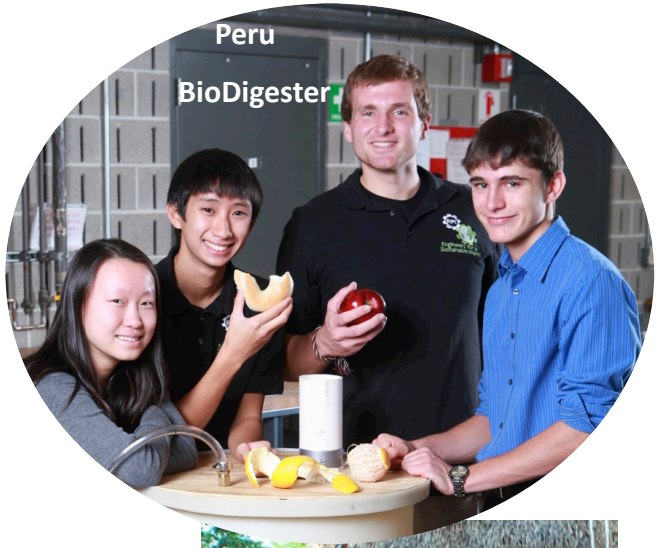


Solar Pyrolysis

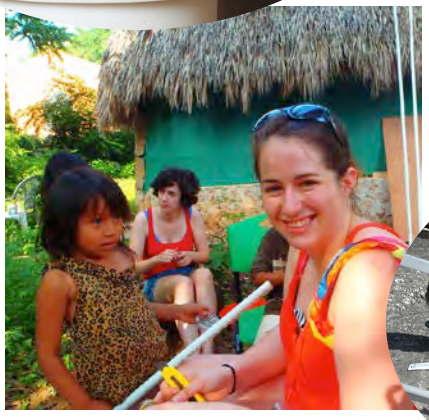
KNUST - RPI

Solar Biomass Project with KNUST, Africa

Collaborative work near home



Portable homes
For Haiti



NTU-DTU-RPI
INNOVATION WORKSHOP
Design, Organization, Outcomes

KURT S. ANDERSON
Associate Dean for Undergraduate Studies
Rensselaer Polytechnic Institute

Global E3 Annual Meeting
May, 2016

Aims

Three Institutions with a Shared Set of Goals

Nanyang Technological University - NTU -

Technical University of Denmark - DTU -

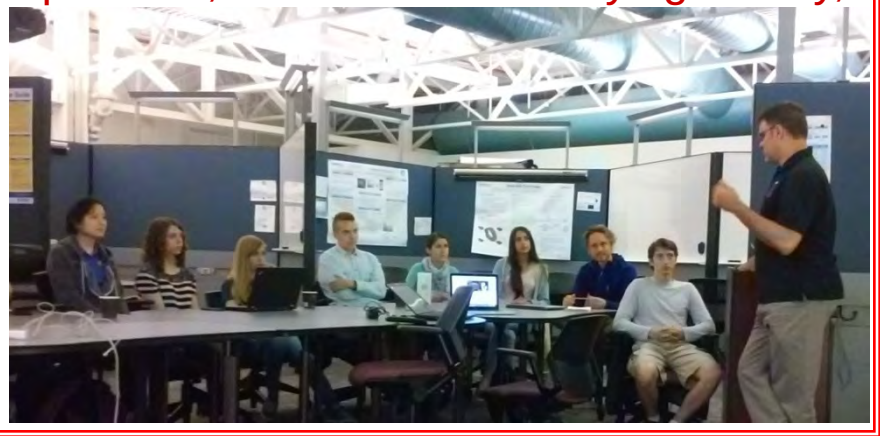
Rensselaer Polytechnic Institute - RPI -

- Promote international co-operation between NTU-DTU-RPI
- Provide the groundwork for future exchanges and collaborative projects for students
- Provide groundwork for researcher collaborations between partner institutions

Desired Outcomes

- Experience the challenges of international research collaboration and project planning
  - Develop understanding of strengths and challenges in working across multiple oceans and time zones
  - Develop appreciation for diversity of experience, perspective, opinion

- Develop skills in the creative application of learnt knowledge for solving real-world research challenges.
  - Develop an understanding of the problem, associated underlying theory, and the current state-of-the-art
  - Develop a suggestion for an innovative idea on how to advance state-of-art, based on a more detailed analysis



Desired Outcomes (cont.)

- Plan and execute your work to the extent possible performing basic experimental or numerical tests to support your idea.
  - Produce a proposal for the advancement of the project
  - Gain experience with the experimental facilities, equipment and techniques
  - Develop appreciation for the difficulties in collecting high quality experimental data
  - Adjust research strategy as experience and data dictates

- Writing a report in international collaboration.
  - Divide responsibilities and effort
  - Leverage team member strengths and skills
  - Take responsibility for individual task while working in fully integrated manner

- Gain experience in presentation, defense, and peer review.

Design & Organization

Preliminaries (3-6 month prior)

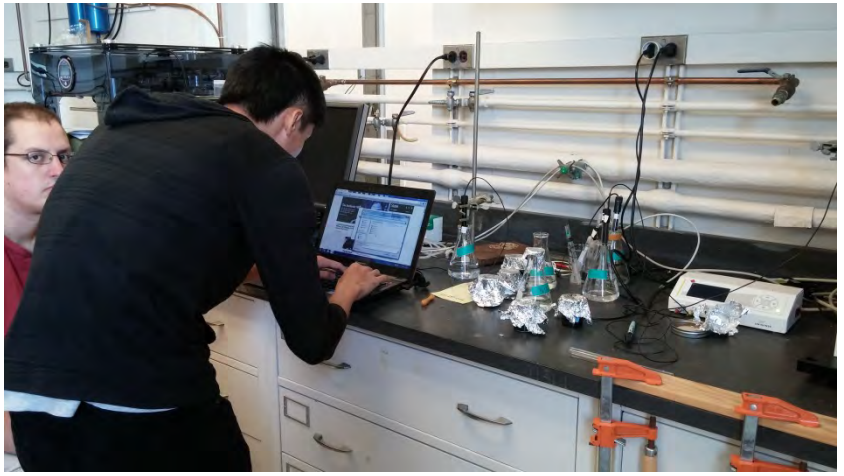
- Seek out potential faculty and associated projects
  - Emphasis on topics of broad interest
  - Emphasis on building project pool which cuts across multiple disciplines and can be served by students from diverse technical backgrounds
  - Emphasis on hands of experimental component using advanced, if not unique, experimental facilities
  - Emphasize work which can lead to increase collaboration between institutes
- Construct flyer and advertise to students.
  - Share with all three institutions
- Select students and projects
  - Emphasis on diversity of disciplines and experience
  - Focus on top candidates (fourth and fifth year) ideally with prior research experience
- Travel arrangements, visas, housing arrangements by host institution.

Design & Organization

2-4 weeks prior to visiting host institution

- Students perform dedicated project focused work at home institutions
  - Establish communication between each other and associated faculty
  - Read background materials and direct questions toward project manager/faculty member
  - Prepare rough proposal of work to be done at host institution

- Provide teams with project assignments team information
  - Project description and background materials
  - Description of experimental facilities
  - Define expectations and task



Design & Organization

~ 2 weeks at host institution

- Presentations on each project by each project manager/faculty
  - Why is the project important, what are the challenges
- Introduction to experimental apparatus
  - Safety training, use of the equipment
- First social event
  - Have some fun before the long hours begin.
- Planning, proposal presentation
  - Formal written proposal for advancing work and associated presentation
  - Critical review by faculty and students

Design & Organization

at host institution

- Collect, reduce and analyze data
  - Develop experimental protocol for pursuing your idea demonstrating (or not) its viability.
- Produce draft report and associated presentation
  - Receive critical feed back (written and oral) on report and presentation by faculty and other project groups
- Work on revision
  - Collect additional data if necessary
- Final reports and presentation
  - Formal written report and associated presentation
  - Critical review by faculty and students

Design & Organization

wrapping things up

- Assessments
  - Feedback provided to students at defense by other groups (and later by researchers).
  - Projects are judged by all participating students and researchers
  - Final judging based on report, presentation and defense of project.
  - Pass/fail assessment
  - Written (through on-line questionnaire) and orally (project group de-briefing) assessment of Workshop/course provided by student and faculty.
  - Optional Green Challenge (GRØN DYST) participation (one group one a prize in 2014)
- Final social events
  - Group outings
  - Barbeques
  - Dinner as a group before the departures
  - Sightseeing by students as they wish