**UCD Meeting First Day**

Shane brought the meeting to order at 9:35 am

Jerry Byrne, College Principal, Dean of Engineering addressed the group.

Vice Pres., was widely recognized for their engineering background.

UCD Engineering Discussion presented Celebration of Engineering to Tony Kjwyeski

8 of 10 drug companies are located in Ireland and US investment is highly important to Ireland.

Ag and Food sector in Ireland is strong

UCD is the largest university and most recognized International University in Ireland, having been founded in 1854.

Currently, there is lots of development on campus with more to come.

30% of PhDs in Ireland are at UCD.

Total enrollment at UCD is around 25,000 students. Includes 5,000 international students, 25% international staff.

There is a new college being developed in Beijing,

7 colleges in UCD, engineering and architecture at the center, 5 engineering schools of which bio systems is one, 1400 undergrads, 500 grads, 82 FTE faculty, 81 research, 31 technical, EU funding is very important

Funding from Science found in Ireland, and EU programs are the base funding - what competency should Engineers have in the future?

Jerry: creativity must be brought out in the future; creativity now starts in the first year. Global and grand challenges’, looking at other countries to identify new emerging areas in Engineering, Europe has a shortage of Ag Engineers, running fast to be certain engineering will meet the needs.

Must be strong in discipline before can be interdisciplinary, must focus on strength in areas that cross boundaries, large emphasis on industry partnerships.

Ireland – Green Food Island, .333 (33.3%) increase in production by 2020, bio energy

Engineering has energy as a leading emphasis area.

Changing to MS for chartership as an Engineer - in accordance with Washington Accord. Complex program pathways, Engineering will be run as a 3-2 undergrad/MS degree. Exit at year 5 with charter to become an Engineer. Year five fees must be paid by students; fees up to year four are covered. Each school must have an aggressive development plan. Not certain about Biosystems, Agriculture is an appropriate name for Engineering, Three Pillars Innovation is one. Engineers sit at the core of innovation.

QS World rankings – interested in looking at opportunities

450 industry collaborations, 110 industry sponsors History of new company start-ups. Engineering is growing given the financial problems, spending more time on international programs, int. (project with Wuhan)

Would like to explore US-UCD interactions with regard to where UCD Engineering is going. Jerry hopes that we enjoy our time in Dublin

Paul H. 5 year program -- what is a charter, professional societies have special memberships, degree plus work experience (Professional Engineer in US would be similar). Two essays must be written along with an interview. More or less equivalent, Washington Accord specifies how Engineers are recognized between countries, 3 yr BS, 4 yr BSE, and 5 yr MS. Bologna Declaration was implemented to ensure matriculation between programs in EU. 3 yr programs are not terminal, rather preparatory for 2 yr base and MS program. Model popular in EU.

Professor Butler - food risk

UCD - 10 academic staff

20 post doc, grad students, most PhD, 40 graduate students Admin; an undergrad program in Agriculture ASM

School of Public Policy - bridge for food safety.

1964 - First graduate Ag Engineer, 1981 Ag and Food, 2008 Biosystems, 2011 School of Biosystems Engineering.

UCD current landscape - it’s the economy stupid, austerity is the new norm., challenges and opportunities

Refocus of thinking within - post economic bang, Ag seems to be driving recovery, represents things leaving the country. Farmers: global moaners.

Input costs are a big concern, Irish. Cap (Government Organization who handled student admission - demand is up for science, computing and Ag.

Biosystems - still a small number of undergrads, falling research income, confident to maintain PhD numbers, need to box clever,

EU 2020 priorities. - Horizon Program (new). Framework finishes in ‘12, transition to Horizon in 2020.

Europe 2020 priorities are all green, plenty of challenges. Should be able to adopt.

Q. What is the second program? Technology degree through Ag College.

Q. Why is UCD not seeing growth in Biosystems Engineering, problems with managing intake? Need to do a better job of highlighting opportunities. Complex issue. Intake this year in engineering is 275. Certain disciplines lift and fall every year for example, Civil is falling. Not enough interest in Biosystems. Engineering division between disciplines, Civil recently doing the same thing. Interesting areas will be important.

 Q. How does society view Biosystems graduates? Increasing diversity of what is Biosystems is much broader, misunderstanding of the word Biosystems. Food Engineering was moving toward molecular level. Have not come to the end.

 Q. Chemical Engineering has Bio-Processing. Should this be on Biosystems plate? Always a difficult to develop though Civil is doing the same thing with Environmental. Simon, Ag thrown out in the past. Perhaps it should be brought back in.

Da-Wen Sun incoming CIGR President established in 1930. Commission. Internationale du genius rural, CIGR is now the largest Engineering organization. In 2008, named International Organization on Agricultural and Biological Engineers.

CIGR structure - General Assembly, Presidium, Executive Board, Auditors, Tech Session and Working Groups. Presidency is 6 years.

Seven Technical Sessions, 11 Working groups, latter works on issues not covered in Tech Sessions

CIGR Congress every 4 years (1500) conferences every four years, symposiums (200), workshop (100 people)

Symposium South Africa in November, 2012

Afternoon Session

Darrin drool linger

ASABE founded in 1907

Discussions of initial founders’ discussions not much different from today. How do we differentiate disciplines Executive Director, OSU Graduate Agricultural Engineer Longevity in profession?

Darrin will focus on research conducted by ASABE Looking for strategic partner working in organization identify with Me, Myers and non-members

Shared presentation - ASABE has seen a decline in membership. Optimistic the end of this year will change the course

Reached out to representative universities ISU, MSU, and VPI

Three focus groups: Awareness, Engagement and Connection

Strengths and challenges

Opportunities

Awareness, Engagement, Connection

Apps for ASABE contest

Task group out of McKinley Study.

Several task groups were developed

Three letters to NCEES to ask to change dates of meeting, ask for change in exam title, and will back out of the consortium; we must be successful with the PE

ASABE deadline for awards and fellows --- Washington State nicer SITU want to develop a new student chapter.

Missing from the McKinley Report was the word water.

Moving on with the agenda.

Mark Riley

North America Programs

Brief history and where we are today.

Who are we and who are we trying to train.

Definition....

1981 Higher Ed Challenge Grant

Five areas

Biology for Engineering

Transport processes

Roy Young collected a lot of information. Published article Amy Kaletunc (ISU) Amy and Raj have a publication in review

Interpretation is Marks

Young’s paper table 1

Decreases Topics Vs. Increases

Amy - curricula depends on locality

Looked at 37 institutions with 44 programs and 14 degree names

Decrease in the number of degree names, since Rohy's Study Common Instrumentation Thermodynamics of Living Systems Degree programs require 4 topic names most frequent

Changes in required courses

Look at decreases

What are we requiring in the life science

ABET descriptions

Ag vs. Bio vs. Biomed

Great distinction between subject matter covered Search on textbooks with regard to topics Art Johnson - text on Biology.

More texts on instrumentation.

Q some data on slides to be shared.

Q. Dick non-Ag Departments have increased Bio in programs although many programs are removing these courses. Mark having paths of electives allow some student to meet these, Ecology is also a direction, O-Chem has moved to an elective, third Paul integrating Bio into our own courses, shift from math to statistics. Data may not be a fair comparison

Lourdes reig Barcelona

Fourth year of program, change from Ag to Bio.

Experience

1911 start of University, first Polytechnic in Spain, 30,000 BS, 11campuses, 3,000 MS, 3,000 PhD

First Higher Ed center in Spain

Jan 2005 moved to new building

Spain Ag schools experienced a drop in student numbers receiving the worst students, Developed new Biological Systems Engineering Simplified names Ag to Biosystems Engineering

Before explaining the names

Now up to

They b

Ranking of Ag schools in Spain,

 Expanded syllabus is a requirement. Must learn to use…

Must share several, degree (Bio) has been separated.

Some degrees in US seem to be

Only degree curriculum to be shown was Bio

Elective subjects are all new, teaching for elective subbing

What is their evaluation at this point in time. Scores on common subjective Negative things to be explained do not know they wiki do as a Ag Engineer, some teachers have problems, difficulty for elective subjective must be on Teachers and employee

Q Biological Systems Degree is a separate degree, similar instruction for first few years.

Q difference in gender. - food comes after. FST Quark career paths in industry - looking for paths. Working with existing employees. Titles dropping agriculture resulted in more students and a change in demographics from rural to city.

Q mechanics questions, can Ag enter and take a Biological Engineering course. Must keep degrees well separated Electives are reserved for majors in discipline Jesse - name recognition is similar for many programs in European institutions, some 4 to 3 while Barcelona went 3to4

60 academics for 4 degrees

Common problems with situation in Italy, lots of problems with faculty from Engineering faculty of Academics from Engineering

New engineers that are not in the constitution. They cannot sign projects for the government.

Q Dorota - students study for 18 mos. Regardless of four degrees.

Q why not calls it Environmental -Civil Engineers were faster. Point of clarification - instructors teach everything.

MS program presentation

Masters limitation - started before undergrad. Redesign MS for one year MS of agriculture, MAS landscaping, MS plant improvement, tech for human development and cooperation 4 total. Academic portion of MS, students spend 1.5 to 2.0 years w/ thesis

Q students in MS program - min 25.

BS after 3 years, students are not prepared for industry, must complete MS (?)

Walter Leaven

1425, 39,000 students

Science Tech and Engineering

Teaching under faculties,

Research under dept.

Fundamental research, applied research,

New Biosystems Engineering program

Reformation of initial program.

Tech for Argo food structure

Bio-nanotechnology

Third major - Healthy Human Projector

Interest is growing, has quite a future, one BS of Bioscience Engineering, phase I and II

Still have a major/minor, 10 credits free, 20 minor, and 30credits thesis

Examples of courses

Religion and Philosophy

Major Technology

Major of Bio-Nanotechnology

Ocher at nano scale

Human Health Data Program

Well defined groups of courses.

Major/minor system, not aligned

Some background coursework

 How many courses -- 15-17 over two years

3 yr BS, 2 yr MS

Are many people leaving at 3 year level -no

Europe moving to 5+ 0 model. No PE in Europe.

What about countries applying to Bologna Accord?

Agricultural Engineering program in University. - Yes

Steve, Engineer was more of a degree than a professional title

In other countries, Engineers are very technical, state recognizes Engineers

Courses taught specifically for Engineers. How many teach Biology for Engineers. Several Universities versus university college - some countries doing away with UC designation

Universities - 5 year degrees

More teachers are engineers in MS, half and half for BS

Do you have requirements on who teaches which course? We try, not always the case.

Ajiit MSU post graduate education in the US

Quite clear about variation with undergraduate education. US all four year degree programs. Some college preparation, allowing them to start in calculus.

Will Show numbers

BS to PhD is rare but does happen.

MS 41 programs in US and Canada

36 PhD programs in US and Canada

Good slide of application process

Most student hold a BS in the same discipline, or a science based program with significant math (calculus) and science.

Majors with Bio background are being brought into the major; this is good because of our shift to Biology

For PhD - BS and MS in Engineering

Most students are supported on an Assistantship with 90% coming from grants

Degree requirements 30 credit beyond BS

8, 3 credit courses along with 6 credit hours Biomass

Now, must submit papers for per review before scheduling final oral defense,.

Difficulty attracting domestic students

Linked BS-MS programs where up to 9 credits double counted.

PhD requirements 38 additional hours past the BS.

Lots of flexibility and power to advising committee and major professor.

Must take exams in units where you declare a minor. Submit two papers for publications. Now may require accepted journal articles.

Qualifying and comprehensive exams.

Committee will ask you follow-up questions on exam. Want to be certain you are prepared for PhD research.

PhD from two colleges, need a minimum of one from either college along with two from the department.

Out of State tuition can be problematic for foreign students.

Other considerations

National needs fellowship program

NSF Reuben

Summer internships

International exchange programs

Sandwich program

Joint degrees

Dual degrees

Dual degrees

Assistantship money comes from grants, and other programs with other fellowships, graduate school gives fellowships.

Recruiting graduate students is similar to faculty members.

Models of dual degrees -- are there good models? One from McGill may be available. General format for joint degree may have some value.

Belgium will share their model.

Claus - Aarhus University Denmark presentation Reorganizing Ag research - All Ag research now belongs to Science and Technology faculty. Problems with different cultures. Some programs related to Ag.

Dept. of Engineering is Divided into a research group and

Danish Center for Agricultural Research

Consulting firm was hired to evaluate opportunities for graduates. Program started up in 2008-2009

Automation and data analysis, and an environmental group.

Goal was to integrate technical knowledge into environmental

Life cycle assessment becomes a very important part of the curriculum.

Similar structure to automation program.

Biogas production

Evaluation on program

Difficult to attract students

Will need to do some more promotion.

Student numbers are too low.

Will come up for review next year.

Very positive for some faculty

BioSystems capitalization - intended to highlight conjunction of words

Search

MS level programs are prescribed, more freedom in US. Why?

Paul - conversation at lunch, adding on the MS. US system is prescribed at the fourth year level.

British government has limited PhD to three years.

Pushing for non-thesis program at McGill.

Taught MS with minor project, MS w/ thesis.

**UCD Meeting Second Day**

Overview of UCD

International collaboration

Study abroad programs for engineering students

Overseas offices

Erasmus Program - highest outgoing student numbers freshman study abroad program - less restrictive Irish culture program interesting mix if study abroad 15 students now participating interested in forming good relationships with institutions most single semesters many from US minimum GPA of 3.0 up to six modules most from Engineering with one based on history of Ireland, can take courses across years of program

Erasmusmondus is graduate - group of universities Erasmus is undergraduate

We need to think about this as a grouping we must think imaginatively PhD level. Europe has the training networks opportunities that are links between universities menu of student wants and funding opportunities

Nick Holden

TABE.NET

Atlantis Funded Network

Exchange with VT in the late 90s.

One to one exchange working nicely

now external funding provides new developments and some scholarships program proposal put together over Skype, two US partners. Mary Leigh and Rich Gates EU-US-Atlantis Project goal - advance internationalization of Biosystems Engineering and global awareness students need a better global view

Specific objectives

Student mobility

EU sending 6 students each to US

US sending 12 students each to EU

Life of project

2-3 students per year

19 students over 25 semesters

Difference in the start of semesters between US and EU. One semester stay requires spring semester timing challenges rest with the language of instruction.

Greece has been problematic; students will follow those who go before. Repeat participation is not a problem.

Athens will bend over backwards to help students -- extra instruction and attention demands of US English proficiency should not be hung up on entry requirements. Past the credit transfer concern faculty mobility -- money to send faculty back and forth. Must spend a week in either location

Curriculum development activities

Anyone can join in the development at this point.

Development of common threads

What is Biosystems engineering - not a freshman course?

70-80 years of collaboration

Talk regularly

The have a protocol for communicating

Have differences in approach staff-faculty, module-course would like people to become involved development of curriculum material - wants many people to be involved

 Q. do you have a list of the curriculum developed at this point A. three have been developed and innovation and entrepreneurship -- ASABE conference materials, intro - ASABE, innovation representative from each of the partners

 q How do you assess if students are globally aware/ a developed a questionnaire which assess the students knowledge base, not perfect, continuing to emerge. Send the same questionnaire at the end of the training periods. Also look at what students have done or are doing

Q. funding from FIPSE US and EU in Europe, in the future we will be looking at other sources of funding. Q access to modules in the future hopes to have content up on the web by end of year.

Q entrepreneurship is hot and many approaches too this area seems to be appropriate. A... addressing concerns by including many people who are doing the

 Q. equivalency between UCT and VT courses were reviewed, now there is a policy within the University rigid mapping of courses between universities encourage students to take one course on culture familiarity with collaboration over time.

 Q when the project ends and there is no more money, will there be a barrier A. Working with students now to help them understand the changes to funding opportunities both UOGI and VT had students who participated without outside money.

Many of external factors are more problematic --- it’s not the money

Q how will the design module work. A. Has been delegated to other people in the program. Preconceived notion -- online course. Not going to happen. Must look for ways to stich things together, Rich now looking to include international design experience into existing courses.

Texas A&M - Dean has suggested sending lower level students may be better off in the long run.

Mary Leigh - Bari was more of an emersion experience. University has set goals for students having experiences. Nick program was funded because program was Biosystems Engineering Nick we decided students participation was limited to junior

Many students did not want to study abroad during summers as they did not want to give up internship opportunities.

Dan- another shopping list item for development. Parent’s side is safety and well being of students. Nick, they have experiences with students that are good and bad.

Panel Discussion

Visibility and Future of Profession

Rebranded Biossystems Engineering

class sizes have been single digits, last year no graduates, peak in the early to mid 90s Newcastle and Silso closed Harper Adams is developing its program surmised and prospered on graduate program parents do not see the discipline as a road to a good career.

Some programs have hired specific recruiters. Shiv Prosor Canada hiring a recruitment officer and

Tony industry perspective - universities are to teach and do research. To do that we must find funds to do this. Must find money from government grants how many have all the students you need and like the quality. Most everyone. Ag side has come back because farmers are making money. Farm ground is up in Iowa 33%; our profession is food, water fibers energy in an environmentally sustainable way. How do we tell the world what we do? We talk among ourselves, but not outside of the disciplines.

Shiv food security, food availability, water quality, we do not do a very good job of marketing ourselves. Steve - 27-9-3 rule crisis management. Agronomist will say the same thing. Tony we are problem solvers, easier to teach Engineers business. Problem solving comes first. Last - we need to do a better job of telling our story, ands have uniform story. We do not know how to tell our story. Darrin - Deere would be a bit of anomaly -- how does HR stay on top of terminology. Engineers do the recruiting; Deere has 200 different engineering positions. HR is smart enough that they send engineers to career fairs. Dorota - member for over 20 years, this is the same discussion. We are defining ourselves in a very selfish way. How about thinking differently and finding one or two words to describe the profession. It should be more different that any other engineering discipline. The public need a term they can hang onto and associate with the discipline. We need a symbol/ Dan - Spanner in the Works. Perspective -0 this cannot be solved with a magic bullet must be multipronged and something we all buy into. We must be better at being advocates of our program. We’ve done these great things, we are good, come find us. We worked ourselves out of a job. We were too good, and that is the reason we have few programs. We will not have a single worldwide name and program. ASCE - civil engineers are telling the story that they created the infrastructure and the results when the infrastructure fails. We need to make certain the politicians know what we have don3 and how we have imnpacted society. We are in competition with each other. Multipronged attack, be aware, define advocacy in a mode that is acceptable, train our students, students must be trained to be advocates from themselves (be bold and eructating Engineers without bards -- need someone to lead a team, someone with passion to lead the effort.

Messages that we are trying to communicate. Rich Illinois require students you go to a career fair to figure out who they are professionally. They need to understand that recruiting process and be advocates for themselves. Dick Straub - why do graduate not identify with the profession after graduation. Record high numbers of graduate across NA, and yet we do not see ASABE growing. Ag students talking ion TV -- nag is a bad environmental partner. Steve, getting North American centric in our conversation. We need a global vision for our programs. What we do in the US may be distributed among many depts. in the EU. Sue: sometimes we're our own worst enemy. Our people may be our own worst enemy. Students feel the negative sentiments. Many of us host students from other countries. Darrin - real some good news items to report. We need to challenge ourselves, lots of good action we look to take, to despite the number of ways to reach out to professional meetings may be the most important thing we do. Over 200 on linked in. What is an Ag Engineer? International involvement is overwhelming and has continued. Mike - i think we talk about areas of the discipline general DNA of the profession and what we do. Ajit: Shane made a comment regarding a change from Ag to Bio. First we had not changed we would not have survived. Word is getting around and people find this profession appealing. We are position ourselves for the future. We have a tendency to define us with a flavor of Ag engineering. We may want to look in another direction. Trains students with a strong engineering and biology background. Finally, have a simple method. People begin to associate this discipline.

European - biologist - not taught to solve problems; first job was to solve problems. Engineers are problem solvers in biology. Clear to say you like biology and like solving problems. Demetrius - work on definition of agricultural engineering in Europe, discovered Ag engineering was associated with all other Ag professions. We succeeded in establishing - first time in history of Europe a methods of assuring Ag Engineering programs were true engineering those programs were true engineering programs. Biosystems engineering in Europe was to support the new emerging discipline in. Question about names should not confuse the new discipline with the names of existing discipline. Ag Engineering now involves Biosystems engineering. Should not be confused with biomedical or biological engineer. Should not be confusing in the labor market. Shane summarized is there a way with the way the discipline is portrayed. Majority felt so when polled.

Trina McCormick

Opportunities for Collaborative Research strategy -based in schools thematic areas - involving many disciplines earth science - energy and environment health and health care information computation and communications global Ireland

Research institutes and center

Showed research story board

UCD Sciences programs are co-located to promote interaction UCD Energy Institute

 Centered around engineering

European bio-economy and sustainability will be important in the EU funding future EU Bilat Link2US Science Foundation Ireland US IRL program

Horizon /20 funding will be very similar to existing programs. Energy, food and environment

US, Northern and Southern Ireland Partners (NSF or NIH)

Examples or recent project - program in diabetes - approved by NIH - very successful program, joint funding from DOE on programs on smart grid and NREL on becoming an NREL site.

Research focuses area - focus on food and health, organize to deliver in these areas, biology group that focuses on animal health, review strategy in food and Ag.

Any programs with Canada - US IRL program - does this involve Canada.

USAID is a way of collaborating on development issue with the US.

 Dorota presentation

Looked at the future of Ag production and the need to meet energy demands as well.

Sustainability - everything to us -- it is in all of our projects.

Socio-economic complexity

Third generation fuels, looking more at byproducts as well interdisciplinary topics we have an edge in this area

Agro climate - making decisions based on data from weather stations.

Discussion regarding follow-up to meeting

Steve - Listserve to identify collaborative relationships.

Nestle - European company that should be interested in collaboration Identify companies and form a team around these companies Global team worldwide network team to focus on emerging problems. Projects start with human relationships.

Make an effort to identify collaboration efforts produce something that everyone can share We should start with a mall project that could aggregate and benefit all people Another mechanism exists in NA -- multi-state project meetings regional and national groups come together to meet and discuss projects. Multi-state research groups meet and we would love to have participation from other countries.

Shiv/Ajit - multi-national companies we approach and ask they

Dan Thomas Steve Nicholson- invites someone from European side to look for visibility of profession. Some things are simple. One idea to carry one. Pull together a list

Shane - has heard nothing g new over the last few days. Some initiative that is wow. Rich - Little bang proposal - make an award each year. Shane- lets address the brand issue situation though a global team. Team needs leadership and interaction with industry. 27/9/3. Need to pay a company today someone to develop the brand. The heads from around the world would be the team.

 Message may not make it back to the people who are most important -- faculty members. Need to start with a message and engage a company. We develop a message and then build a marketing campaign around the tag line. We should be cautious that what we do is not tied to the past. It should be new and not linked to an existing organization. Be careful that we do not link with the past. Rich: agreed to pay an agency to get us in front of the public.

Have all the heads from around the world join a list would be a great start in terms of communication. Does CIGR have a list of heads? Mary Leigh -- should we have our own social web site? UCD administrators the CIGR website.

If was going to develop a global team, then we need to expand beyond this meeting. Save the world concept -- a global team to address food and energy needs to support an expanding population. Very dramatic problems. It is different on a world scale -- we have never seen this kind of problem before.

Steve - global team concept, civil engineering society puts out a report card each year, the UN is the only organization. Can we give a report card on meeting world food, waters and energy needs? Develop a white paper on the state of agricultural production. Create a task force. General terms -- potentially interesting concept.

This groups is not a team, it is a representative of universities. We are a group of professional teaching the same degree. If we are trying to do something, we are reinventing the wheel. Perhaps we should work to improve the profession image through CIGR and ASABE, etc. In many countries, the sources of research funding is declining and therefore jeopardizing the future of Ag research.

Final session

In the final analysis what is the novelty of this meeting? What we need to do is to keep the EU-US interaction.

Dorota: maybe we could work on the base of what we heard this morning. We should present the opportunity of being involved in creating the curriculum. Perhaps we focus on the curriculum development. Perhaps we meet again next year in Italy. For branding we should work on awards

Mike - need to look at summarizing these efforts. Needs to be a faculty research and education exchange.

Global team idea. task force with white paper. Foundations that support these initiative. So much of the collaboration can be provide on line. Bill gates foundation.

Save the world situation... the core of the team would come from this group. The concept brand Biosystems engineering in the world. Highly professional, get a tender out and get a quote.

On a global scale this cannot be tied to a specific organization. Big bang theory, real problem in the world. Fits within our domain. Industry linking in.

Everybody heard the reservations. On the straw poll l the vote for this should be volunteering to work on this. Those on balance who feel this is a worthy goal. Many hands went up. Can we summarize?

Initiative Summary

Communication Site/Clearing House

chairs will fund travel for development of collaborative relations Tabe.net award every two years Global Team task force and white paper - Score card concept Tony ASABE effort Committees within ASABE on international collaboration?