

Engineer's Newsletter

from the UCD Engineering Graduates Association

Issue 5 | Summer 2016



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Date for your Diary

Monday 13th June

Annual Dinner & Distinguished Graduate Award Ceremony (National Concert Hall)

10% reduction for Corporate Member Tables

UCD Engineering Students Dominate Intel "Women in Technology" Scholarships

On Wednesday November 18th, Intel Ireland unveiled their 17 Women in Technology scholars at a special awards presentation held in Dublin, of which seven were UCD Engineering students. This is the fourth year of the Women in Technology program for Intel in Leixlip where the initiative was introduced following the success of the same program which has been supported by Intel in Shannon since 2006.



The scholarship program aims to encourage a new generation of high-achieving women to take up the challenge of a career in science and technology. The program forms part of a wider focus by Intel on empowering girls and women by fostering educational opportunities and encouraging women to participate, prosper, and lead in the global economy. This year Intel was delighted to award their highest number of scholarships to date - 17 in total - which brings the overall number of scholars currently in the program to 34 with a total investment since 2012 of over €160,000. The 17 new scholars were unveiled at a special event which was attended by Ann Kelleher, Intel Corporate Vice President and General Manager of Fab/Sort Manufacturing, Fab 24 Factory Manager Ann-Marie Holmes and Quark Engineering Manager Noel Murphy who helped present the scholarships to the new recipients. Each of the participants is studying a Science, Engineering or Technology course in either University College Dublin, Trinity College Dublin, Dublin City University, University College Cork, University of Limerick, Maynooth University or Dublin Institute of Technology.

Speaking about the initiative at the presentation event, Ann-Marie Holmes said "At Intel we are very passionate about workforce diversity, particularly gender diversity because we fundamentally believe, and it is proven, that our business benefits from having diverse employees. We are delighted to present these accolades and to congratulate and welcome these young women as Intel scholars. Women are under-represented in the technology workplace and this program creates an important opportunity for us to encourage more young women to pursue careers in science and technology, as well as giving them first-hand experience of the career opportunities at Intel".

The 7 UCD Engineering 2015 Intel Women in Technology scholars are: Aoife McMenamin, Aileen McCabe, Fiona Maguire, Ruth Quinn, Orlaith Hickey, Eimear Murphy and Caoimhe Rose Martin. All 7 are currently in 1st year Engineering. The scholarship program offers a monetary grant valued at €2,000 per annum as well as opportunities for work placements at the Intel Leixlip campus. Each scholar is also assigned a mentor who is an Intel Leixlip employee to assist and provide advice on managing their academic career. The program is open to school leavers entering undergraduate degrees in relevant courses.

President's Corner

Welcome to the 5th edition of our Engineer's Newsletter and thanks to Vincent Hargaden EGA Hon Sec for collating all the stories since last Summer's edition. As you can see we had a very exciting year!



It is very apt to feature the Intel 'Women in Technology' Scholarships which UCD first year engineers dominate. The EGA are now working closely with Engineers Ireland on the important issue of achieving Gender Balance in this area critical to our growing economy. Both organisations have come together for a Round Table discussion on this issue recently and to chart a way forward in a focused complimentary way. This is reported later in this Newsletter

This edition also highlights the many awards achieved by students and staff of UCD Engineering in academic, industrial and sporting terms especially the 2015 Engineering

Alumnus Award to Dr Dave Burke Vice President Engineering of Google. Dave qualified in Electronic Engineering in UCD in 1997 and now heads up a cutting edge Android team in the US headquarters at Silicon Valley, California.

As Google's Vice President EMEA Ronan Harris remarked to us last Autumn at the EGA Panel Discussion on the Digital Future - 'we are only at the dawn of possibilities in the digital future and we are not yet aware of what the enfolding day will bring'. Finally this Spring we had another Panel Discussion, this time on the topical issue of Flooding. We cover this event also in this Newsletter.

P.J. Rudden
President

EGA Gold Medal Ceremony

The EGA hosted the Gold Medals ceremony on Monday 31st August last. At this annual event, a gold medal is awarded to a student from each of the engineering disciplines who has demonstrated academic excellence.

The 2015 Gold Medal Recipients were: Darragh Hanlon (RPS Civil Engineering Medal), Richard Jenkinson (Arup

Structural Engineering with Architecture Medal), Conor Waldron (BMS Chemical Engineering Medal), Irene Danti Lopez (SSE Airtricity Electrical Engineering Medal), Ronan Scally (S3 Electronic Engineering Medal), Cathy Swanton (Crospon Biomedical Engineering Medal), Niall Donnelly (CRH Mechanical Engineering Medal), Eanna McHugh (Biosystems Engineering Medal),

Shane Gubbins (AbbVie Engineering with Business Medal).

The Association simultaneously hosted the presentation of the Architecture Graduates Association Gold Medal, the James G. Lacy Award, the Pat McAdam Scholarship, the Deloitte Gold Medal in Engineering Management and other undergraduate Engineering awards. This year also saw the inaugural presentation of the Abbvie Achievement award in Chemical & Bioprocess Engineering Practice.



Left to Right: John Waldron, Chemical Engineering (father of Conor), Richard Jenkinson, Structural Engineering with Architecture, Darragh Hanlon, Civil Engineering, Professor David FitzPatrick, UCD Dean of Engineering, Shane Gubbins, Engineering with Business, PJ Rudden, EGA President, Irene Danti Lopez, Cathy Swanton, Biomedical Engineering and Cillian Briody, Architecture

UCD Festival



University College Dublin invites you our alumni back to Belfield to the first ever UCD Festival taking place on Saturday June 18th 2016 to re-discover the campus, reconnect with old friends and network with other alumni and members of UCD community.

The Festival will comprise of a packed programme taking place across campus including free events, campus tours, thought provoking talks from leading thinkers, performances and family fun for you, your family and friends to enjoy.

You can register for the event and receive updates on the full programme at <http://www.ucd.ie/alumni/festival/>.



Wall of Frames

Dean of Engineering Professor David FitzPatrick and College Vice-Principal for Research, Innovation and Impact Dr. David Browne officially unveiled the "Wall of Frames" on 2nd December. Located in the atrium of the Engineering & Materials Science Centre, this wall exhibits the outputs from the research portfolio of staff across the six schools in UCD Engineering & Architecture.

The 24 publications on display were identified as being of significance during the 2014 calendar year because of the impact they have made, based on the number of citations, in international peer-review journals. The number of citations which a publication receives is an indication of its world-wide contribution to engineering and science generally. The publications on the wall will be updated annually following analysis of the impact of the research by the College Research, Innovation and Impact Board.

100 New Jobs Created by Spin-Out Company from UCD School of Chemical & Bioprocess Engineering

A spin-out company from UCD's School of Chemical & Bioprocess Engineering has announced the creation of 100 new jobs.

APC was established by Professor Brian Glennon and Dr Mark Barrett in 2011. Born of collaborations in pharmaceutical process and manufacturing optimisation, within Ireland, APC has significantly expanded to become a global pharmaceutical and biotech process research company. APC's research platforms and associated information deliverables are now helping companies accelerate the development and launch of their medicines.

The company won the NovaUCD 2011 Start-up of the Year Award after being declared overall winner of the 16th NovaUCD Campus Company Development Programme, the forerunner of the current UCD VentureLaunch Accelerator Programme. It has recently opened a new world-class, state-of-the-art process research facility in Cherrywood, Dublin. This 6,000m² premises will also serve as the company's new headquarters.



Professor Federico Milano elevated to IEEE Fellow

The IEEE Board of Directors, at its November 2015 meeting, elevated Prof. Federico Milano (UCD School of Electrical and Electronic Engineering) to IEEE Fellow, for contributions to power system modeling and simulation.

Recognising the achievements of its members is an important part of the mission of the IEEE. Each year, following a rigorous evaluation procedure, the IEEE Fellow Committee recommends a select group of recipients for elevation to IEEE Fellow. Less than 0.1% of voting members are selected annually for this member grade elevation.

40th Reunion of the 1975 BE Class

The UCD Engineering Class of 1975 celebrated their 40th reunion in the Shelbourne Hotel on Friday 11th September.

There were 65 former classmates in attendance from all over the world, some of whom travelled from UK, other parts of Europe, Middle East, North America and Australia.

This class supplied 4 of the 12 EGA Presidents who served for a combined total of 14 of the 33 years the EGA has been in existence. These were Colm Bannon (Civil), Simon Kelly (Mechanical), Michael Loughnane (Electrical) and PJ Rudden (Civil). In addition one of the aforementioned was President of Engineers Ireland in 2011 - 2012 and was the Inaugural EGA Distinguished Graduate in 2002. John Power (Electrical) was Director General of Engineers Ireland from 2007 to 2015. Two of the class became members of UCD Engineering academic staff: Michael Bruen (Civil) and Pat Connolly (Mechanical).

The reunion was principally organised by Ed Hanlon and Colm Bannon and tables at the event were named after former Professors Dooge, de Courcy, Dowley, Morrissey, McCabe and O'Donnell.



Morrissey Table: (Front Row L-R) Paddy Cully, John Power and Brian Fitzsimons. (Back Row L-R) Michael Loughnane, Paul Murphy, Niall O'Reilly and Niall Lynch.



Dooge Table (Front row L-R) Joe Collins, Bernard Murray & David O'Flaherty. (Back row L-R) Tom Beglin, Ciaran de Bhaldrathie, Larry Wolohan, Ed Hanlon, Donal O'Dwyer & Jim Hayes

Sporting Success for Engineering Graduates

Cillian Buckley (BE 2015), UCD Ad Astra Academy Elite Athlete Scholar and All-Ireland Hurling Winner with Kilkenny capped off a very successful academic and sporting year by receiving a GAA GPA All-Star Award at the GAA GPA All-Star Awards in November.



Cillian Buckley (BE 2015)

Years of hard work paid off for UCD Ad Astra scholar and Engineering graduate Claire Lambe as she qualified for the Rio Olympics during the double sculls B final at the World Rowing Championships in Aiguebelette, France. Joined by Sinead Jennings, the pair needed to finish in the top 5 of their race. They finished in third place behind China and Poland.



Claire Lambe (left) and Sinead Jennings (right)

David Burke receives UCD Foundation Day Engineering Alumni Award



UCD President Professor Andrew J. Deeks, Dr. David Burke and Dean of Engineering Professor David FitzPatrick

Dr. David Burke (Vice President for Engineering in Google) received the Engineering Alumni Award at the UCD Foundation Day Ceremony in November. The UCD Foundation Day Alumni Awards celebrates the achievements of outstanding alumni. During this event, the President of UCD, Professor Andrew J. Deeks presented awards to 15 notable alumni who have achieved excellence in their field and whose professional achievements are a source of inspiration to students. Those being honoured included some of the University's most distinguished alumni, recognised for

outstanding achievements within their chosen professional field since graduation.

Dr Burke completed three degrees in UCD, a Bachelor of Engineering, a Masters in Engineering Science and a Doctor of Philosophy in Electronic Engineering. While studying for his PhD in UCD, Dr. Burke developed an online service called "Street Wise", one of the world's first mobile maps applications and he now leads a team of over 300 engineers at Google in Silicon Valley.

Autumn Panel Discussion 2015 - What Does the Digital Future Mean for Ireland?



L to R: PJ Rudden UCD EGA President, Prof. David FitzPatrick Dean of Engineering, Anne O'Leary CEO Vodafone Ireland, Ronan Harris, Vice President Google EMEA, Dr. Helen McBreen, Investment Director Atlantic Bridge Capital, Prof. Orla Feely UCD Vice President for Research, Innovation and Impact & Dr. Brian Motherway, CEO SEAI

An expert panel comprising Dr. Brian Motherway, CEO SEAI (keynote speaker), Anne O'Leary, CEO Vodafone Ireland, Ronan Harris, Vice-President Google EMEA, Dr. Eleni Pratsini, Director IBM Research Ireland, and Dr. Helen McBreen, Atlantic Bridge Investment Director joined UCD EGA for a fascinating and wide-ranging event to examine Ireland's Digital Future on October 14th 2015 in Belfield's Clinton Auditorium. Also participating at this year's excellently attended EGA Autumn Panel Discussion were UCD Vice-President for Research, Innovation & Impact Prof. Orla Feely and UCD EGA President PJ Rudden.

Bekaert University Technology Centre Launched at UCD

University College Dublin and Bekaert, a world leader in steel wire transformation and coating technologies, has announced the establishment of the Bekaert University Technology Centre (UTC).

The new joint UCD-Bekaert Centre, to be located within the UCD School of Mechanical and Materials Engineering, will focus on world-class research in characterisation, design and optimisation of materials, components and processes, ultimately leading to advanced next generation wire products.

Bekaert, which is headquartered in Belgium, has invested €500,000 in the establishment of the Centre which includes the appointment of Dr Philip Cardiff as Bekaert Lecturer in Materials Processing, along with PhD project and technical support.

Speaking at the launch event for the Bekaert UTC held at NovaUCD, Professor Orla Feely, UCD Vice-President for Research, Innovation and Impact said, *“Building on core competencies of processing, characterisation, simulation and optimisation, the industrially focused projects to be undertaken at the Centre will combine innovation with world-class research and facilities to provide unique insights into the Bekaert processes and the design of more advanced materials.”*

Bekaert is a global producer and supplier of highly specialised steel wires and solutions for a wide range of applications. Bekaert has a worldwide production and sales network with customers in 120 countries, a combined sales turnover of €4 billion and approximately 30,000 employees worldwide. Geert Van Haver, Chief Technology Officer, Bekaert said, *“The Bekaert University Technology Centre raises our research co-operation to a higher level and it supports a broader scope of fundamental research but it also ensures that the research is rapidly and successfully applied in our process and product applications. Product cycles are becoming shorter and next generation products are coming faster to the market. To support this and to be able to have a leadership position in this evolution, fundamental research and understanding of materials is paramount”*



Prof. Orla Feely, UCD Vice-President for Research, Innovation and Impact, Dr Philip Cardiff, Bekaert Lecturer in Materials Processing at UCD, Geert Van Haver, CTO, Bekaert and Prof. David FitzPatrick, Principal, UCD College of Engineering and Architecture

ESB Engineering Challenge

Third year students from Mechanical and Electrical & Electronic Engineering won the ESB Engineering Challenge event for the second year running.

The ESB Engineering Challenge is a team event which pits leading engineering schools against each other in a fast-paced and demanding competition. The teams of four were given a four-hour design challenge after which they had to present their pitch to an expert panel of dragons. This year's challenge was to turn a ghost estate in rural Wexford into a smart connected community to house researchers and a living lab facility to showcase best practise in energy and waste management. The UCD team were represented by Aaron Collier, Michael Purcell, Robert Fenlon and Daniel Cullen (capt).

The judges agreed that the UCD team worked very well together aided by the blend of electronic, electrical and mechanical students. UCD won a fiercely contested competition by just a single point. The telling factor, according to observers, was that as well as a clear, professional final presentation, the team had a deep knowledge and were able to answer the toughest questions.



In Memoriam - Dr Dan Carroll

Dr Dan Carroll graduated from UCD with a BSc in Chemistry and completed his PhD entitled Mechanistic Studies of Some Metal Carbonyl Complexes in 1964.



While in UCD he met his wife, Nuala, who also graduated with a PhD in Chemistry in 1964, and together they went to the USA where Dan served as postdoctoral student and assistant professor in Louisiana State University.

In LSU he co-authored the book *Introduction to Applied Quantum Chemistry*. At the invitation of Professor John O'Donnell, he returned from the US to join the staff in the Department of Chemical Engineering in 1968 where he commenced teaching many of our graduates inorganic chemistry which led to topics in environmental chemistry and materials science.

During his time Dan developed many contacts in industry and with Dr John Byrne established a leading research laboratory which assisted many international companies in the development of ultrapure solvents. In the latter stages of his time within the School he served notably as Head of Department before his retirement in 2004.

Dan passed away on 23rd August last. He will be very fondly remembered by all those who worked with him.

Engineering PhD student winner at World Lecture Competition

Kevin Doherty took first prize at the 11th Young Persons' World Lecture Competition, held annually by the Institute of Materials, Minerals and Mining (IOM3), at the final in Drogheda.

This is only the second time a local finalist has won the world final on home turf. His lecture, New Thermal Control Material Systems for Interplanetary and Geosynchronous Spaceflight, fascinated the audience and judges and marked him as a clear winner. Kevin had earlier won the national award in Ireland, and had to compete with winners from the UK, US, Brazil, Malaysia, Australia, Singapore, South Africa and Hong Kong to bag the overall prize. The Young Persons' Lecture Competition is an annual competition that



Primary sponsor CMBB representative, Georgia Gomes Bemfica and winner Kevin Doherty

invites students and professionals up to the age of 28 to deliver a short lecture on a materials, minerals, mining, packaging, clay technology and wood science subjects. Entrants participate in local heats that culminate in a world final.

Spring Panel Discussion on 'Tackling Ireland's Flooding Challenge

On April 21st last UCD EGA held the Spring Panel Discussion 'Tackling Ireland's Flooding Challenge'.

Flooding was an enduring public and media event last winter so it was very appropriate to address it this Spring. Other years the EGA focused on the Banking Bailout, Water, Manufacturing Jobs, Energy, Food, Engineering Education and the Digital Future last year.

Unknown to many outsiders, there was very severe flooding across The Netherlands in 1953 which after levee barriers failed in the south, some 136,500 hectares were inundated which claimed over 1800 lives and caused some 200,000 people evacuated from their homes and some 750,000 people to be effected! Some 10,000 buildings were lost and another 37,300 buildings were damaged. This happened after a spring tide coincided with a flood surge and there no warning systems in place.

The impact was catastrophic requiring urgent Government action as much of the country is below sea level and even marginal rises impact on additional very large land areas. In addition to make matters worst, most of the high population areas and areas of principal economic activity (like The Hague and other major cities together with the Port of Rotherdam) are sited in the most vulnerable areas to flooding.

In fact even currently, some 30% of the country is below sea level and areas supporting some 60% of GDP are vulnerable without very robust engineering defences. Coastal flooding from the North Sea can be severe but equally problematic is fluvial flooding from rivers like the Rhine and the Meuse.

(Continued on page 8)

Tackling Ireland's Flood Challenge (Continued)

So what was the Dutch Government response to these disasters? Economic factors drove a dramatic response to include shortening of the coastline through new barriers closing off gaps in the coastline. In addition a 'risk based approach was adopted to flood protection' in accordance with a new national plan - The Delta Plan and a new company called Deltares out of Delft University was set up to design the flood defences. These barriers were only completed some 50 years later in 2010 and cost tens of billions to construct.

In the 1960s a new national risk based strategy was put in place in The Netherlands where the country was divided into different 'risk zone' categories and new flood defences designed to cater for the designated risk. Areas of high economy activity and areas of high population were prioritised and all dykes and levees raised accordingly.

Tony Smyth is Chief Engineer of the Office of Public Works the statutory body charged with implementation of the EU Floods Directive. They too have adopted a 'risk management approach' following a major National Flood Policy Review in 2004. Thus they have identified some 300 areas which 'are potentially at risk'. These projects now all form part of the Catchment Flood Risk Assessment & Management (CFRAM) process which will be completed during 2016 and implemented thereafter. Already parts of Dublin City in Drumcondra on the Tolka and Ballsbridge on the Dodder together with Clonmel, Carlow, Fermoy, Ennis and Waterford City have formal flood defences and more now planned.



Dr Jan Verkade, Deltares, Professor Micheal Bruen UCD, Tony Smyth OPW, PJ Rudden, President of EGA, Dr Amanda Gibney UCD, Evelyn Cusack RTE and Professor David FitzPatrick, Dean of Engineering UCD

Round Table Discussion on Gender Balance with Engineers Ireland

Recently UCD EGA hosted a Round Table Discussion on Gender Balance with Engineers Ireland. Jane Grimson former President of Engineers Ireland chaired the event and Caroline Spillane Director General Engineers Ireland also attended.

Present also was UCD Dean of Engineering Professor David FitzPatrick and Michael Loughnane Immediate Past President EGA who chairs the Subcommittee on Gender Balance and author of our Reports on the subject together with his Subcommittee Members Killian McKenna PhD student in Electronic Engineering and Katie O'Neill Marketing Manager UCD College of Engineering and Architecture.

'Less than 40% of girls are in all girls schools but we equally must target the larger mixed schools which teach the greater range of subjects' Majella Henchion from ESB stated. Michael Loughnane referred to Career Guidance Teachers who invariably do not have a STEM teaching background. Majella noted the high preference for Biology as a subject and Biology Teachers in girls schools with greatly reduced interest in Physics. Students/parents are then dependent on external classes to learn physics and chemistry suffers in the same way. This reduces the steer towards engineering. Chair Jane Grimson stated that engineers are at the heart of a thriving economy and it challenges us all to change work environments to suit female engineers.

David Fitzpatrick outlined the improving situation of 27% females in UCD First Year Engineering in 2015 and the need for more role models. Katie O'Neill said that UCD had a radical new approach in their Open Day for Engineering sessions geared towards better gender balance and instanced that the winners of Final Year Gold Medals in recent years have disproportionately been awarded to females. She also mentioned the EGA 2015 Autumn Panel Discussion on the Digital Economy where there was 60% females on the speaker panel and 40% at the 2016 Spring Panel Discussion on Flooding. The youngest member of the Round Table Caitlin McDonnell Final Masters student in Structural Engineering with Architecture described her journey towards engineering from second level to UCD driven by her love of mathematics.



PJ Rudden, UCD EGA, David FitzPatrick, UCD EGA, Caroline Spillane, Engineers Ireland, Jane Grimson, Engineers Ireland and Michael Loughnane, UCD EGA

UCD EGA Corporate Members



Join the EGA [Click here](#)

Once you've graduated, you don't have to say goodbye to UCD Engineering for good - with UCD's EGA (Engineering Graduates Association) you can still benefit from many of UCD's facilities and maintain a connection with UCD Engineering, its staff and your classmates while you venture into further study or the working world.

To qualify as an Engineering alumnus and apply for EGA membership, you need to be a UCD Engineering graduate or have studied Engineering at University College Dublin for at least one year at either undergrad or postgrad level. Current and former members of staff are also eligible to apply.

Membership of the EGA entitles members to be informed of and attend Engineering-specific events (Annual Lecture, Distinguished Graduate Award, EGA Gold Medal Ceremony, Autumn Panel Discussion), receive the regular EGA newsletter in addition to receiving a copy of UCD's unique alumni magazine, UCD Connections. The magazine is published annually and is a great way to keep in touch with UCD, find out news and stay informed.

As well as this, EGA members can avail of discounted rates on adult education courses and discounted access to UCD's indoor and outdoor courts - tennis, squash, handball amongst other activities. You are also entitled to reduced membership of the new 50 metre pool - we can arrange a free day pass if you would like to try it out before joining.

Membership rates are as follows: €25 - member; €20 - overseas member, €250 / €500 - corporate members. We look forward to welcoming you at an EGA event very soon!

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