It has been a busy start to 2015. In April members had an opportunity to experience a new generation of technology that can help transform distance education. In June we take the opportunity to support engineering casual teaching staff, and in July we get to advance engineering education research.

We hope that you take the opportunity to participate in our events and more importantly promote events of interest to your colleges.

If you have any suggestions to help enhance the chapter, please feel free to contact me.

Sasha Nikolic

Message from the Chair

Upcoming Technical Meeting:
1st NSW IEEE Casual Teacher Forum—9 June 2015

Casual teaching staff play a very important role in engineering education. The forum will allow casuals from all NSW universities to come together and share experiences, tips and achievements.

The 1st IEEE NSW wide casual teacher forum will be held at Macquarie University on Tuesday the 9th of June 3pm to 6pm. The forum will be undertaken by speakers from a number of NSW universities, many of them being casuals themselves.

Experienced casual teachers will discuss tips and tricks, share ideas and experiences, and talk about the contribution casual teachers make to enhancing and improving engineering education. In addition, the importance of women in engineering education will be raised.

To register:
https://meetings.vtools.ieee.org/m/34667

George Chilcott
Topic: Lean on me—Critical Support Structures for Successful Tutoring

Dr Nicholas Tse

Carl Svensson
Topic: Moving goalposts - the roles of an engineering tutor in an ever changing learning ecosystem
Talk title: A new perspective and approach to an old discipline.

Presenter: Nicholas M.K. Tse

Abstract:

Engineering has been around for a long time. Traditional teaching approach to such complex discipline has been to overemphasize the technical competency and understate the transferable soft-skills. Such skills include the ability to manage time and resources effectively, professional behaviours and the desire for continual strive for knowledge. The importance of these abilities are often understated until the end of the degree, resulting in potential missed opportunities for students to fully develop these skills prior to entering into the workforce. These professional competency are desirable to all potential employers in the ever evolving work field. Formal introduction of these skills early on in their degree will therefore be an immense benefit to students, allowing sufficient time for the mastery of these abilities. At Macquarie University, we begin the educational journey of all engineering students with the formal introduction of the graduate attributes and emphasising its importance. Thus creating a framework for students to develop the needed skills, in addition to the technical competency in the four years of education they receive. A case study of the first year course will illustrate how this revamped approach is beneficial to students’ learning experience and in creating an all-round engineer.

Talk Title: Moving goalposts - the roles of an engineering tutor in an ever changing learning ecosystem

Presenter: Carl Svensson

Abstract:

In a world where anyone with an Internet connection can self-educate using online videos and courses, the value-proposition of universities is continuing to shift. Some key differentiating factors that universities can leverage to prospective candidates include research opportunities, access to facilities, social & professional gatherings, and curated learning experiences by academic staff including tutors. For a long time now, we have known that there is a wide spread of learning styles among student cohorts. Students may absorb information better in one mode over another, but there is no single "student learning profile" that can be applied as a template. This means that tutors today need to be capable of many different teaching approaches in order to be adaptable to varying learning styles within the same student cohort. Focusing on the value-add that teaching staff can provide in a university experience for students, I look at different learning modes that students adopt and how that can affect the tutor's role in a multi-mode curated learning experience.
Offer closes 9th of June!

This is your last chance to use your IEEE Education Society Membership to give you a $200 rebate offer for AAEE Winter School

The chapter has formed an alliance with AAEE to offer members a great opportunity to develop a better understanding of how to conduct research in engineering education. Have you ever wanted to conduct research in engineering education, but were unsure how? Have you ever desired to learn more about qualitative research designs? Want to network with other like minded engineering education researchers? If you answered yes to any of these questions then the AAEE Winter School would be of great interest. As an added bonus, for the first time ever IEEE NSW Education Chapter members may receive a $200 rebate in attending the winter school. This rebate will be provided on a first come, first serve basis. You will be able to monitor the number of rebates given via the chapters LinkedIn group. To be eligible:

- If you do not belong to the IEEE Education Society, become a member.
- Join the chapters, LinkedIn group

To claim one of the five rebates:

- From the 1st of March: Within the chapters LinkedIn group start a discussion with the text “I would like to take advantage of the $200 rebate to attend the AAEE Winter School on engineering education”
- You then have three weeks to pay for the balance of the cost.

To find out more about the winter school:


Fees (excluding $200 rebate):

- $500 for PhD students (who are not full-time academics)
- $800 for academic staff

AAEE Winter School 2015 Topics

Q: What is covered at the Winter School?

Attendees will learn about:

- Designing and undertaking effective education research projects
- Evaluating teaching and curriculum
- Positioning evaluation and research activities in light of current trends
- Appreciating and responding to national and local grant opportunities
- Building collaborative research partnerships across Australia and beyond
Chapters members were invited to participate in a trial of using a video based 3D virtual world (via a software platform called iSee), as a mechanism to encourage transnational student engagement and industry participation. Students from a UOW third year project based subject were required to pitch their favourite idea to the audience in a trade show styled environment. The audience consisted of students from the Dubai campus, enrolled in the same subject as well as industry guests and staff. The goal of the audience was to provide feedback and identify any positives or negatives to aid the team before they did a pitch to an academic panel.

The advantage of iSee compared to other Multi User Virtual Environments (MUVE) is that it is video based. This means you get to see the facial expressions of the people you are speaking to.

To find out more about iSee have a look at their website:

http://www.isee-meetings.com/
Women play an important role in today's science and technology. One of our aims at the IEEE NSW WIEE team is to encourage more female engineers to make themselves visible in meetings like engineering conferences and workshops. This will allow us to meet several inspiring women leaders, who in one way or another are making their own contribution in today's emerging technology. Meeting fellow women technologists would be a great opportunity to know their current works and research in their respective fields, get inspired by their own stories of success and failures (as the very nature of science involves experimentations and failures), and learn how they overcome obstacles and persevere to continue to work in their endeavours of making a difference. Our effort is to support female engineering educators and to show that you are not alone in your chosen profession and that there are other women who want to have a successful careers with the knowledge that we have the ability to change the world.

We see the importance of planting the seed of STEM (Science Technology Engineering and Mathematics) to girls and women's education. Given the right venue and opportunity to encourage more women and increase their interest in science and technology related fields we can increase women's visibility. The WIEE teams is looking forward for more activities and programs that encourage women to pursue STEM career through tutoring, mentoring and internship programs. By sharing our passion about the wonders of science and engineering and help young students to understand the real world.

To find out more about WiEE please visit the chapters website or please email Azadeh Safari at azadehsafari2008@gmail.com to join our team!

**Discount offer on IEEE Education Society Membership fee!**

If you are an engineer that is passionate for teaching engineering, it is time to join the IEEE Education Society with 50% discount offer on membership fee!

To join the IEEE Education Chapter; follow below steps and add the Education Society to your IEEE Membership.

Browse to the [https://www.ieee.org/index.html](https://www.ieee.org/index.html)

Log in to your IEEE account using your username and password

Go to “My Account” at the top right hand side of the page

At the left bottom of the page under headline “My membership and subscriptions” click on “Add membership/subscriptions”

Click on “Societies” at left column

Type “education society” in the search catalogue

Click on “IEEE Education Society Membership” and add the membership to your account. The fee is on sale now and for student members is $5 only (normally $10).
Progress on Achieving Our Goals

The Chapter is well on track to achieving its 2015 goals. To get their we need your help, to participate and promote our activities

Members:
At the end of May membership stood at thirty-two, rising by four since the end of December. This result means we are on target to reach our growth target.

LinkedIn:
With forty-three members, the chapters LinkedIn group has already exceeded this years target. We encourage all members to post and promote using this medium.

Activities:
Our first technical meeting on virtual worlds occurred in April. In June we have casual teaching forums at Macquarie University and the University of Wollongong. In July we have the AAEE Winter School with $200 rebates available.

Chapter Goals

2014 Goals

Increase chapter members by 30%

| 01 Jan - 20 members | 31 Dec - 28 members | 40% increase |

Develop resources for chapter members

- Chapter website developed and deployed
- Chapter LinkedIn group established

Create alliance with AAEE

- Alliance established for the promotion of AAEE Winter School

2015 Goals

Increase chapter members by 30%

- Reach 36 members by Dec 2015

Grow group membership to LinkedIn group

- Reach 30 members by Dec 2015

Encourage member contributions

- Afternoon get together in the city
- At least two technical meetings
- Promotion of member publications

Encourage IEEE participation at AAEE Winter School

- Fund a rebate program for chapter members
Improving the Laboratory Learning Experience: A Process to Train and Manage Teaching Assistants


This paper describes in detail a successful training program developed for sessional (part-time or nonpermanent) laboratory demonstrators employed in the Electrical Engineering Department of an Australian university. Such demonstrators play an important role in teaching practical concepts and skills in engineering. The success of the program relies on a centralized approach coordinated by a carefully selected Laboratory Manager responsible for the recruitment, allocation, training, and development of sessional teachers, and for assessing student satisfaction with them. The paper examines the overall impact of the program on these teachers: 1) introducing laboratory material; 2) preparation; 3) communication; 4) interest in student learning; 5) ability to respond to questions; and 6) overall effectiveness. Sessional teacher satisfaction with the training program is also examined, and the data were used to inform the program's further development. The results show that the training program successfully improved the demonstrators' teaching skills and thus led to greater satisfaction and hence learning experience of both students and demonstrators.

On the viability of supporting institutional sharing of remote laboratory


Laboratories are generally regarded as critical to engineering education, and yet educational institutions face significant challenges in developing and maintaining high-quality laboratory facilities. Remote laboratories are increasingly being explored as a partial solution to this challenge, with research showing that – for the right learning outcomes – they can be viable adjuncts or alternatives to conventional hands-on laboratories. One consequential opportunity arising from the inherent support for distributed access is the possibility of cross-institutional shared facilities. While both technical feasibility and pedagogic implications of remote laboratories have been well studied within the literature, the organisational and logistical issues associated with shared facilities have received limited consideration. This paper uses an existing national-scale laboratory sharing initiative, along with a related survey and laboratory sharing data, to analyse a range of factors that can affect engagement in laboratory sharing. The paper also discusses the implications for supporting ongoing laboratory sharing.
There is a worldwide trend to modernize old power grid infrastructures to form future smart grids, which will achieve efficient, flexible energy consumption by using the latest technologies in communication, computing, and control. Smart grid initiatives are moving power systems curricula toward smart grids. Although the components of smart grids fall within the broader discipline of electrical and computer engineering, undergraduate students are rarely assigned single design projects that require classic power systems knowledge combined with communication, computing, and control. Therefore, as a significant step toward potential curriculum changes, this paper presents such a project, a smart home test bed based on the pedagogical model of project-based learning (PBL) for undergraduate education. The proposed test bed allows undergraduates to gain key knowledge in smart grid topics, such as flattening demand peaks, real-time price response, wireless sensor networks, machine learning, pattern recognition, embedded system programming, user interface design, circuit design, and databases. This is well aligned with smart grid initiatives and provides a platform for students to develop their creativity in engineering design. It also offers real-life examples to be used for raising general public awareness of energy conservation. Link

More Resources

To get access to more resources in regards to engineering education, and educational research please visit the chapters website.

About this Newsletter

This newsletter was created by the IEEE NSW Education Chapter Chair: Sasha Nikolic

June 2015