



Welcome to the first issue of EXCITE, Western's School of Engineering Newsletter.

Thank you for subscribing to our newsletter, we hope to keep you updated and informed regarding all the exciting research and projects undertaken at the university and showcase the talent of our amazing staff and students.

We would like to take this opportunity to thank Olivia Mirza, Surendra Shrestha, Samanthika Liyanapathirana, Won Hee Kang, Kejun Dong and Wendy Pham for their contributions to this first newsletter.

School of Engineering's new Dean

As of March 2020, Western Sydney University is pleased to welcome and announce the appointment of Professor Michail (Mike) Kagioglou as the inaugural Dean of the new School of Engineering. Professor Kagioglou will also be the Provost for the University's Penrith campus, and responsible for developing the University's United Kingdom (UK) and Europe engagement strategies.

Engineers Australia Sydney Division President's Address

Australia, as a nation, since late 2019, has observed one of the worst bushfire seasons in recent Australian history, followed by flood and the COVID-19 global health emergency. We are facing unprecedented challenges as an engineering community. But it is heart-warming and assuring to see rapid adaptations from all fields of engineering practices. The way we work and the tools we use to communicate and collaborate to meet the most immediate needs of the society are changing. I can see many groups of engineers already heading out on the front foot now, doing exactly that. Western Sydney University's School of Engineering is one of the prime examples. This is an exciting time to connect our communities, cities, increase resilience to our water, energy and social infrastructure across the country. Step up and take part! - Jessica Qiu





Student Achievement

We would like to convey a huge congratulations to Mr. Emil Johansen, our Honours Student who is the winner of 2020 RTSA (Railway Technical Society Australasia) Railway Engineering Student Thesis Award.

Emil was working in an industry-based project for his thesis titled "Evaluation of Macro synthetic Fibre Reinforced Concrete Sleepers Under Dynamic Loading". This project was collaboration between Associate Professor Olivia Mirza and Mr. Todd Clarke from Barchip Australia. This project was co-supervised by Miss Dayani Kahagala, one of our PhD students. This project looked at implementing a new sustainable material into our current conventional concrete sleepers to increase the post failure behaviour of railway bridges. His work was considered by the judges as a valuable piece of work and well worthy of this year's award.

Celebrating International Women's Day

Earlier this year Associate Professor Olivia Mirza, with assistance from the engagement team organised a morning tea to celebrate the achievements of women in engineering. We would like to acknowledge some key female representatives accomplishments in the past year.

Miss Dayani Kahagala winner of SCCEM 3MT and The Choice Award.

Mrs Maryam Hosseini winner of Zonta Award for Nepean Club.

Miss Chontelle Yousif most outstanding in Industrial Experience award.

Associate Professor Olivia Mirza Regional Achievement Award under GJ Gardner Women Creating Change Award.

A big congratulations to Women of the West ambassadors **Miss Neelam Singh** and **Samantha Stojanovski** who have received the Women in Engineering Scholarship awards.



International News

In February 2020, COVID-19 caused the travel restriction for many of our students. To address this restriction, the University and the School developed strategies to contact all students stranded in other countries to arrange for them to either travel to WSU via the third country or study their courses remotely. This strategy has seen majority of our students maintain their enrolments and continue to study online. We have provided extra help in providing more online consultations and flexible study arrangements.

The School has introduced Peer Mentor Support networks for commencing international students to meet with continuing international students to get peer support in relation to study and how to deal with the new environment as well as enhanced course support by providing multiple consultation times for students to attend over Zoom© and introducing more industry representations in lectures.

Students have given very positive feedback to our support and approach.

Student Support in Learning & Teaching: COVID-19 Experience

No one saw it coming, not at the speed anyway! When the World Health Organisation declared COVID-19 a pandemic on March 11, Western Sydney University was quick to respond to the rapidly changing situation, comforting its staff by reiterating its commitment to “the health, safety and wellbeing of our students, staff and the broader community”. The university began to progressively move all learning and teaching (L&T) activities online from 16th March.

No stones were left unturned as the whole School committed to make online transition a reality. By the end of the month, all units were being delivered fully online using Blackboard Collaborate Ultra© and Zoom © facilities. It was a steep learning curve. Nonetheless, the transition process was a success, as evident from the positive student responses to the effectiveness of online learning.

All academic staff, supported by the professional staff, are currently getting ready to face the challenges of assessing student learning. They are busy in preparation of final examinations, to be administered and proctored online. There is increasing confidence on the ability of the L&T staff in the School to be able to prepare and deploy online assessments that will test learning outcomes as envisaged in the original learning guide.



Diverse Research Efforts

We started 2020 with high hopes and a lot of energy with a new school for Engineering. However, in late March, everything changed in the face of COVID-19 pandemic. All our research facilities were closed, and access was granted only for critical projects after carefully evaluating the Work Health and Safety of our students and technical staff. Although our university closure was a major setback, staff worked hard, applying for funding via Australian Research Council (ARC) and other external bodies. We would like to congratulate all researchers who secured over \$1.3 million in 2020. These new Research Projects are funded via Innovation Connection Fund (ICF), Australia-Africa Universities Network (AAUN), Minimum Viable Product (MVP) Grant, Transport NSW and Offshore Wind Consultants Ltd, UK. The major highlight is the Cooperative Research Centre, SmartCrete, with potential \$ 21 million funding from the ARC over 7 years, for which the Centre for Infrastructure Engineering (CIE), is a partner. Although the administering organisation is Macquarie University, our research staff will be able to apply for funding through the CRC. We warmly congratulate Ehsan and Syed on their successful completion of PhD in electrical engineering under the supervision of Dr Ali Hellany, Dr Jamal Rizk and A/Prof Mahmood Nagrial in 2020.

Student Hardship Fund

The Student Hardship Fund urgently supports Western students experiencing financial hardship because of COVID-19. Many have lost their jobs. Buying food and paying rent has become unaffordable.

Donations to the Student Hardship Fund are tax-deductible and will help us support the next generation of engineers through this crisis. The University will match donations.



Development of novel spray-applied fire-resistive material

Collaborating with Nu-Rock Technology Pty Ltd, researchers from Centre for Infrastructure Engineering is developing a novel spray-applied fire-resistive material (SFRM) with improved bond strength and cost-effectiveness from conventional SFRM in the market.

This project is part of ARC NanoComm Hub Program.

Further to the conventional SFRM commonly used for passive fire protection of steel structures, the novel SFRM developed at WSU converts waste fly ash into binder with improved performance and reduced carbon emissions. - Professor Zhong Tao



Structural Evaluation of AMP building 50 Bridge Street, Sydney

This is a 48-storey office building and perhaps the most notable and iconic building in Australia to benefit from Structural Health Monitoring. The building is under renovation in 2018-2020, and the new building will be a hybrid building, which uses the existing (50-year-old) core walls in conjunction with new concrete core walls.

Together with our client, BG&E

Consulting Engineers, we have addressed the following:

- Uncertainty issues during the demolition and renovation;
- Design and analysis of the building using Finite Element Software;
- Application of structural health monitoring methods during demolition and reconstruction phases.

-Professor Bijan Simali.



Feasibility of using Innovative and Sustainable Composite Fibre Technology to Replace Conventional Reinforced Concrete Transoms for Sydney Harbour Bridge

In this modern world the development of technology and sustainable materials is increasingly pertinent to construction industries especially materials that can address the deteriorating infrastructure. Wagners Composite Fibre Technology is a promising example that demands a wide focus from research to its application. The performance of Wagners Composite Fibre Technology sections retrofitted onto existing steel structures to act as newly developed transoms. This industry project focuses its suitability for application on the Sydney Harbour Bridge's railway component as a collaboration between Transport for New South Wales, Sydney Trains and Wagners.



**Associate Professor
Olivia Mirza**

Facilities

Our structural testing laboratory has multiple state of the art testing equipment that is capable of dynamic and static testing. Whether it be compression, tension or bending testing required, we can do it all on our multi-configurable testing strong floor. Our highly specialised technicians can conduct tests and provide comprehensive reports on all test results. One of our testing machines is capable of testing

columns 3.6m in height with a cross-section of 900mm x 900mm or a diameter of 900mm. With a capacity of 10000kN, there isn't much this test machine can't break! We've recently purchased a dynamic testing machine that can be used for either compression or tension that has a load capacity of 400kN and is able to run cyclic tests at a frequency of 3Hz. We also have our large-scale

furnace that can place columns 2m high with a cross-section of 250mm x 250mm or 250mm in diameter in the furnace and then heat the column, under load or without load, up to 1000 degrees Celsius.



Alumni Achievement

Mrs. Kate Kukla | Project Manager, Sydney Airport Corporation

When asked to introduce herself, Kate replies "I'm self-motivated, love challenging work opportunities but also enjoy a balance in work-life." Kate is Western Engineering alumni who graduated in 2014 with a Bachelor of Civil Engineering. She worked for Penrith Lakes Development Corporation and VSL Australia as project manager during her study. Currently she works as a project manager for Sydney Airport Corporation. She facilitates the delivery of work in the airfield, terminal for civil, structural, building services or automation. Kate chose Western so she could work full-time while maintaining a part-time study load. She was accepted into Sydney University; however, a city location could not offer the convenience and opportunity that WSU provides. Below photos as shows Kate working on site. The experiences Kate had at WSU were very positive, stating that "WSU offered modern amenities, academics with high level of teaching ability and experiences. Living so close to university also allowed me to take full advantage of university's facilities." Her last words regarding how Western prepared her for industry are "Every subject offered included a real-world application. I was armed with all of the knowledge to get me started; the School of Engineering helped me to gain confidence moving forward."



UPCOMING EVENTS

Life After Uni | Wednesday 23 July | 5PM Online Event

This event will showcase the journey of two graduates from the School of Engineering, Adriana Assey and Micah Fountain. They will speak about their career path and what life after university is like for an engineer according to them.

3MT Competition | June - July 2020

Three Minute Thesis (3MT) is a competition that celebrates the exciting research conducted by higher degree research students. It is a skills development opportunity that challenges students to explain their research project to a non-specialist audience in three minutes using only one slide.

We look forward to seeing you! For more information & events, visit our website.

PEOPLE WHO INSPIRE

I am an Integrated Systems Engineer. Almost, 30 years I had the privilege of working in a variety of institutions and roles in academic leadership positions. Being the first person in my family to go to University I am acutely aware of the transformative power of Higher Education and am passionate in creating opportunities for students to succeed. I enjoy working with people and get inspired by listening to new ideas and seeing the impact of academic work. Our role as academics is catalytic in driving society forward and we should always remind ourselves of the potential we have for doing good through our work.

Why did you choose the School of Engineering, Western Sydney University, Australia?

I was very impressed by the University's ambition and commitment to transformative education, located within an area with a particular socio-demographic profile which means our impact can be very significant. My visit before Christmas, meeting the school executive, taking a tour of the facilities and meeting the University's Senior Executive Group, cemented my view that the School had great potential and some excellent practice, and the University is a great place to be.



Mike Kagioglou
Dean, School of Engineering

What are your thoughts on Engineering at Western, and your initial impression of our academic and professional engineering staff.

I have to say I am very impressed, the amount of good will, professionalism and commitment to excellence is amazing. I have to say, that over the last couple of months, everyone has pulled together to deliver what at times seemed impossible. I look forward to working with everyone in realising this potential. I do not take good will for granted and I know that if we all work together we can overcome any challenges.

What is your vision for our school in next 5 years and 10 years?

Universities are great places where the success of individuals translates to institutional success. This can only be achieved though if we are all pulling in the same direction. As such it is not so much about what my vision is but rather what is our vision. Inevitably, this vision has to be informed by the context within which we operate in, locally, regionally, nationally and globally and by our approach to de-risking our income streams, increasing and varying our portfolios of programs based on market demand and differentiating from our competition. These are the areas we all have to work together to identify and maximise for our success. Research and engagement with industry/stakeholders will be critical components of how we can differentiate ourselves in making a strong contribution to society and beat our competition. Over the next 5 years I see us becoming globally leading in 1-2 key areas, continue our commitment to SDGs, and enrich our portfolio and student offerings.

What do you think about gender balance at engineering community? What are the key drivers to improving gender balance in the engineering industry?

When I undertook my UG degree the whole class was full of males! Although this was 30 years ago I am sorry to say that things have not changed dramatically since then. ATHENA SWAN initiatives in Universities around the world do indicate that there is a strong gender imbalance in our sector. The key issue for me is to break down the stereotype barriers of the profession and make Engineering more accessible to all genders. Education is inevitably the number one driver that we can influence starting from primary schools. As I have indicated to the School this is key priority area for me and my first meeting in the school was to celebrate Women's Day. I am pleased that we have focus in this area in the School Executive and under the leadership of Olivia I am sure we will make a transformational shift in years to come. It will not happen over-night, but I am confident that we will make a difference.

In 2020, Mike Kagioglou was appointed as the new Dean of the School of Engineering at Western Sydney University. We warmly welcome him to the university and are excited to support his efforts.