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IEM
The Institution of Engineers, Malaysia

JURUTERA

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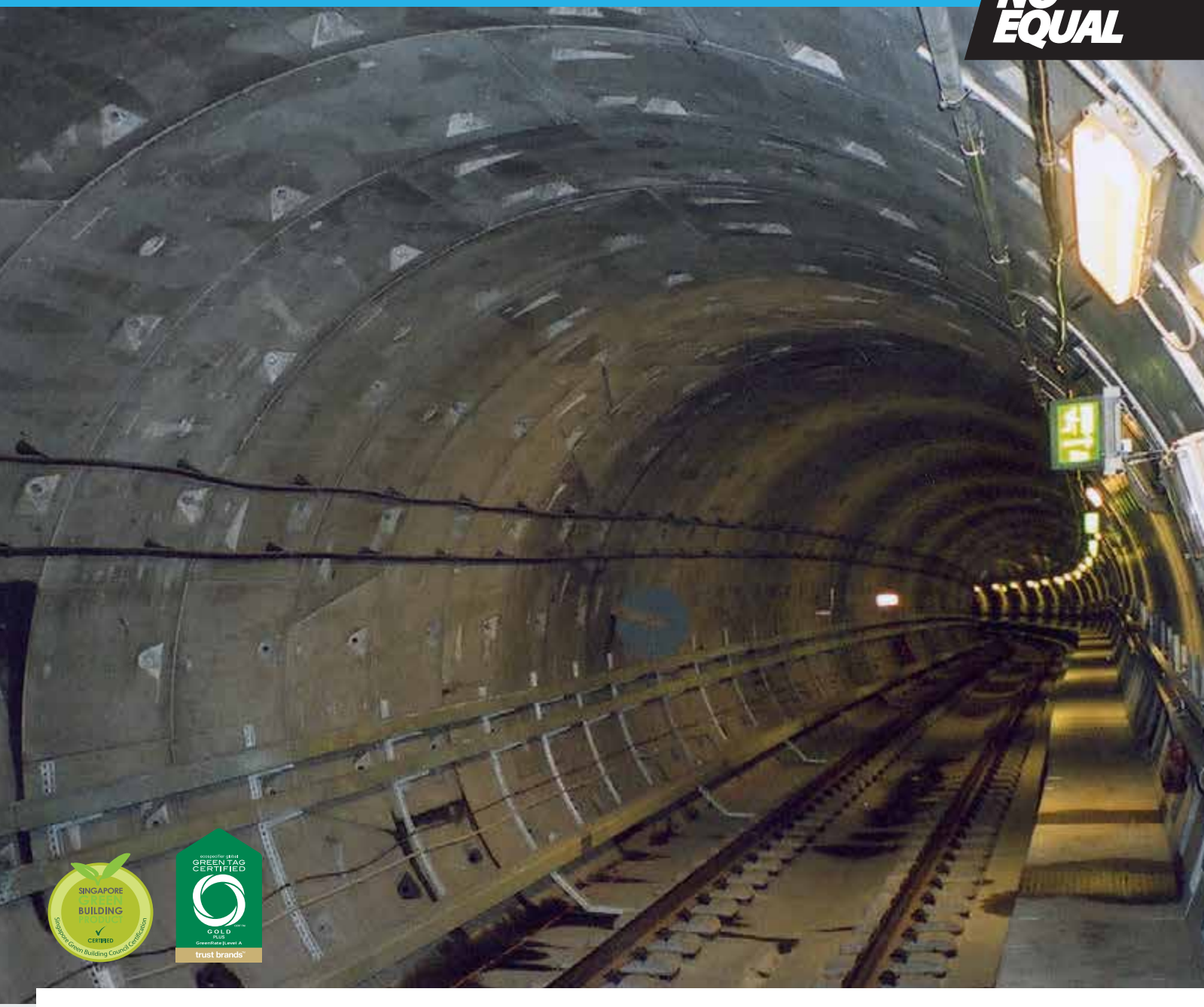

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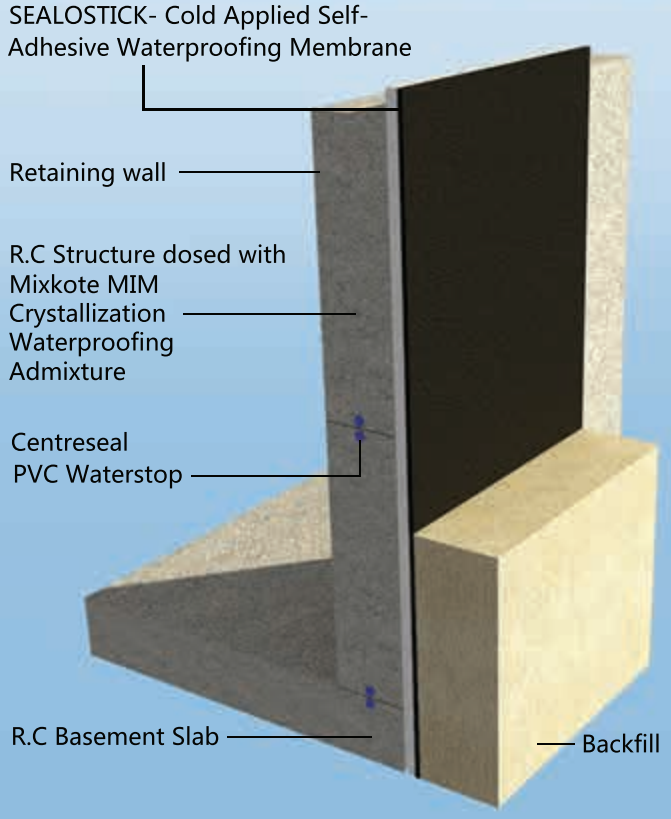
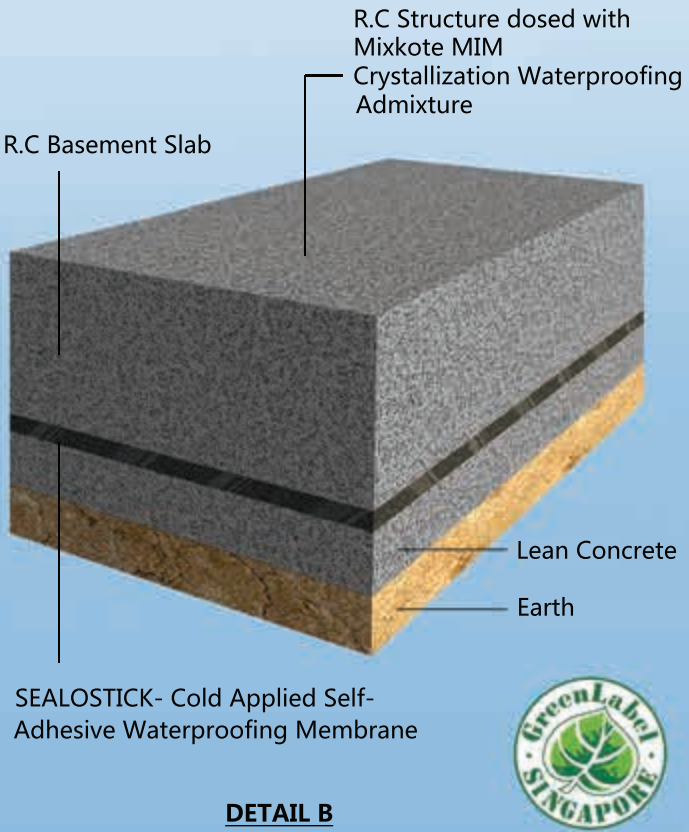
CHEMIND

SUB-STRUCTURE WATERPROOFING SYSTEM



DETAIL A



DETAIL B

Below ground structures are constantly under water pressure. Detailed and intricate waterproofing systems are essential to ensure complete watertightness.
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cover note

IEM 59th Annual Dinner & Awards Night 2018

by Ir. Prof. Dr Ruslan Hassan
Chairman,
Standing Committee on Information and Publications
Session 2018/2019

Welcome once again to members of the Institution of Engineers, Malaysia. The 59th Annual General Meeting and Annual Dinner were successfully held on 21 April, 2018. Congratulations to all our award winners. We are delighted by the co-operation of all those who have made this year's event a memorable one.

We have a new President, Ir. David Lai Kong Phooi, to steer IEM as we move towards 2020. It is without a doubt that we need to invigorate IEM to move to another level with the proper traits and values as presented in the Presidential Address. Our membership has grown to over 46,000, with a large number of Graduate Members who are leaders of the future. Have we nurtured them to become wholesome engineers who are competent and ethical?

Let our learning curve be moved up to another level so that our engineers can reach the heights of competence and can perform efficient design at all levels. We must also not forget that an engineer must find his/her meaning in life – "ikigai", which means we must give more than what we can get. This hinges on the "human side" of engineers, an oft-neglected component. This enhances one's values and practices because there are higher reasons for doing so.

Finally, the Editorial Committee welcomes constructive comments to help sustain ***JURUTERA*** as the premier reading reference for the country's engineering fraternity and, in particular, all IEM members. ■

IEM 59th Annual Dinner & Awards Night 2018

The guest of honour at the recent IEM 59th Annual Dinner & Awards Night 2018 was Y.Bhg. Datuk Seri J. Jayasiri, representing Y.B. Dato' Sri Mustapa bin Mohamed, Minister of International Trade & Industry (MITI). In the Minister's speech, he acknowledged that engineers are the prime movers of nation-building, as well as the catalyst and implementers of infrastructural and economic development.

The event at Sunway Resort Hotel & Spa on April 21 was graced by the presence of Y.Bhg. Datuk Seri J. Jayasiri and VIPs which included Y.Bhg. Dato' Seri Ir. Dr Zaini Ujang, the Secretary General of KeTTHA (Ministry of Energy, Green Technology and Enviornment), Y.Bhg. Dato' Yeo Boon Hai, the Mayor of Kota Kinabalu City Council, Y.Bhg. Dato' Sri Ir. Dr Roslan bin Md Taha, Director General of the Public Works Department, Y.Bhg. Dato' Ir. Hj. Ismail Salleh, Director General of Malaysian Highway Authority, Y.Bhg. Dato' Ir. Dr Md Nasir Md Noh, Director General of the Drainage and Irrigation Department and many more dignitaries representing various government agencies and departments which added splendour to the evening.

Also present were the Presidents and representatives of AFEO (ASEAN Federation of Engineering Organisations) member organisations and FEIAP (Federation of Engineering Institutions of Asia and Pacific) member economies as well as heads and representatives of institutions of higher learning, professional institutions and the industry.

Prior to the start of the official programme for the evening, engineers and invited guests had the opportunity to pose for photographs at a photo booth and to network with each other while being entertained by a performance band, The Voice.

The event commenced with a warm welcome by Nadia Heng, the EMCEE for the evening followed by the opening address of Ir. David Lai Kong Phooi, the new President of IEM. In his speech, Ir. David Lai thanked Immediate Past President, Ir. Dr Tan Yean Chin who led IEM for the past two sessions and said: "I hope to draw inspiration from your legacy and that of Past Presidents to serve IEM and its members to the best of my ability, and to propel IEM to greater heights".

He added that the previous council members, the respective technical divisions, special interest groups, Young Engineers, Women Engineers and the 12 branches nationwide have contributed immensely towards IEM and furthered the vision and interest of the Institution. He gave assurance that the new Council members of session 2018/2019 will continue the good work of the previous Council in bringing more benefits to members and enhancing service to the nation.

Since its formation in 1959, he said, IEM has grown into one of the largest learned civil society organisations in Malaysia, with more than 45,000 members.

"IEM has a vast pool of engineering expertise and can claim due recognition as the voice of engineers in Malaysia and it plays a pivotal role in promoting and upholding our professional status and image at national and international levels," he added.

He invited all members to work closely with IEM and to give their full commitment and support.

"To borrow the words of renowned business magnate Henry Ford, 'if everyone is moving forward together, then

success takes care of itself'. I truly believe that, with our collective efforts, IEM will continue to excel in our excellent tradition that has been laid down in the past, while forging ahead with fresh ideas and a new sense of purpose to face the new challenges ahead, thus ensuring the continued success of our beloved Institution," he said.

At the end of his speech, the President invited the main office bearers of IEM comprising the Vice Presidents and Honorary Secretary on stage for a group photo. The list of IEM Council Members for 2018/2019 was also flashed on the screen for information of the guests.

The Guest of Honour, Y.Bhg. Datuk Seri J. Jayasiri took the stage thereafter to read the speech from the Minister. He conveyed Y.B. Dato' Sri Mustapa Mohamed's sincere apology for not being able to attend the dinner due to his tight and hectic schedule with the impending 14th General Elections around the corner. He then congratulated IEM for celebrating its 59th anniversary.

"I believe that, in the 59 years since its inception in 1959, IEM has successfully grown into a premier professional organisation and will continue to play a significant role in the promotion and advancement of the Engineering profession in the country," he said.

The Government has undertaken many initiatives to push for liberalisation of goods and services including professional services, he said, adding that "liberalisation will have a positive effect when firms are pushed to improve their competitiveness by eliminating unnecessary cost components and by exploiting economies of scale and adopting more innovative technologies and better management practices. Liberalisation also means citizenship will no longer be a barrier for engineers from any part of the world to practise and to set up consultation services here as long as they espouse the same fair play rules that we adopt".

He said Malaysia continued to register a trade surplus of RM9.02 billion in February 2018, the 244th consecutive month of trade surplus since November 1997 and had also improved her ranking in the Global Competitiveness Report 2017/2018 to 23rd from the previous 25th position.

With regards to ASEAN, and IEM being the permanent secretariat of the AFEO, he was pleased that IEM plays an important role in the initiative formed to establish and develop an ASEAN baseline standard for the engineering profession with the objective to facilitate the mobility of the engineers within ASEAN countries.

Datuk Seri J. Jayasiri, Secretary-General, Ministry of International Trade and Industry

He added that AEC (ASEAN Economic Community) primarily advocates and embraces a regional environment that is business-friendly and supports innovation. The adoption of standard frameworks, standards and mutual co-operation across crucial areas, such as in agriculture and financial services, competition policy, intellectual property rights and consumer protection, are but a few examples of the significant strides we have made together as a region.

Datuk Seri J. Jayasiri said Malaysia too has embarked on numerous initiatives to facilitate the transformation of ASEAN into a highly competitive region, a region of equitable economic development and a region that is fully integrated into the global economy.

"With the free movement of goods, services, skilled labour and more open flow of capital, this is, indeed, a proper business preparation for the engineering fraternity," he said, adding that AFEO could play a significant role in supporting liberalisation and the facilitation of free flow of skilled labour, particularly engineering within ASEAN.

"In this regard, I welcome the role of the ASEAN Engineering Register (AER) as a database for finding and mobilising engineers within the ASEAN region. As the permanent secretariat of AFEO and AER, IEM should leverage on this and I urge IEM to spread the message to the rest of the ASEAN nations."

He said IEM's status as AFEO permanent secretariat is indeed a significant milestone for Malaysia to further strengthen regional integration and cooperation.

"I am confident that IEM will ensure the right initiatives are inducted into the ASEAN community. I fully support any move made towards the development and progress of ASEAN engineers, particularly Malaysian engineers, as Engineering is a key ingredient in economic integration in ASEAN," he said.

He reiterated that engineers will benefit from the opening up of services markets through various bilateral and regional FTA initiatives.

"For instance, the ASEAN Mutual Recognition Arrangement (MRA) on Engineering Services and Movement of Natural Person (MNP) regime will provide market access for Malaysian engineering service providers to venture into the ASEAN market."

> "I am pleased to note that IEM has provided valuable input and feedback to the Government through dialogues and has brought about various reforms and transformation, especially in the delivery of engineering services."

Datuk Seri J. Jayasiri, Secretary-General, Ministry of International Trade and Industry said when he delivered a speech on behalf of the Minister during the 59th Annual Dinner and Awards Night of The Institution of Engineers, Malaysia (IEM).

Datuk Seri J. Jayasiri reminded all engineers that we are in the middle of a real revolution – the 4th Industrial Revolution – which will change not just the way we work, but also the way we live. Developed countries are now moving or have moved towards Industry 4.0 and Malaysia is joining the bandwagon by riding on the wave of technological changes made possible by robotics & automation, Industrial Internet of Things (IIOT) and smart manufacturing technologies. These have helped boost productivity and increase competitiveness, particularly in exports, by focusing on complex and high-value products.

"We need to sow the seeds today if we want to reap the fruits and Malaysia has much to gain from the implementation of our model of Industry 4.0. We need to relook and reinvent the way of doing things by incorporating technology into the whole process, from manufacturing and supply chain to customer relationship management," he said.

He told engineers that MITI has taken the responsibility to facilitate industries to be a part of this revolution and to ensure that the principles of Industry 4.0 are being brought along to industries, organisations and businesses.

"The Digital Free Trade Zone, launched on 22 March, 2017, by the Prime Minister, combines physical and virtual zones with added online and digital services to facilitate international e-commerce and to spur internet-based innovation. The National Strategic Plan on the Internet of Things (IoT), headed by MIMOS, is projected to generate GNI worth RM9.5 billion by 2020 and to create 14,270 high-skill jobs."

He said Malaysia has a strong manufacturing base, particularly the E&E and M&E industries. To make Malaysia the leading industrial hub for high technology products and activities in the region, MITI and its agencies have undertaken several measures to promote productivity and innovation, as well as to familiarise our companies with smart manufacturing technologies.

"Malaysia already has a strong starting base in the manufacturing sector to foster the development of high technology ecosystems. This is in addition to the good engineering capabilities, highly educated and skilled workforce, and strategic location in the region."

Besides listening to enlightening speeches, VIPs and guests also enjoyed a lovely dinner prepared by the hotel chefs. Keeping everyone entertained throughout the evening was The Voice band, with its delightful repertoire of live entertainment.

The highlight of the event began with the IEM Gold Medal Awards 2017 presentation ceremony. The Best

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BUILDING TRUST

Engineering Students from 35 local universities received the award from the President, Ir. David Lai (refer Table 1 for the full list).

Next was the prestigious Presidential Awards of Excellence 2017 for the Most Active Technical Division in terms of activities, organising of seminars, courses and generating income for IEM. The Most Improved Technical Division for 2017 award went to the Engineering Education Technical Division while the Merit Award went to the Project Management Technical Division (5th Place). The Mechanical Engineering Technical Division was placed 4th while the Civil & Structural Engineering Technical Division was the second runner-up and Electrical Engineering Technical Division was 1st Runner-Up.

The Geotechnical Engineering Technical Division was Champion for the Year 2017 and won the Most Active Technical Division award. All the awardees were given certificates while the Champion received a trophy.

Ir. David Lai also presented the Most Supportive Organisation/Individual Awards 2017. The primary purpose of this award is to recognise individuals or organisations who have assisted IEM in its endeavour to increase membership. The five winners of the various categories were Ir. Associate Professor Dr Khoo Hooi Ling (Graduate Membership for Individual Category), Ir. Professor Dr Norlida Buniyamin (Corporate Membership for Individual Category), Prasarana Malaysia Berhad (Graduate Membership for Organisation Category) and Tenaga Nasional Berhad (TNB) (Corporate Membership for Organisation Category and Most Active Organisation).

The IEM Honorary Fellowship award which is conferred to an individual who had rendered outstanding services to the engineering profession, the Institution and the country was also another highlight of the evening's award presentation. For the year 2017, the IEM Honorary Fellow award was conferred on Ir. Khoo Choong Keow, a former Vice President of IEM in the 1980s and chaired the Standing Committee on Professional Practice as well as Sub Committee on Dispute Resolution. Ir. Khoo has more than 50 years ' experience in Civil engineering covering a wide range of engineering projects such as dams, tunnels, water supply, sewerage, drainage & irrigation, flood control, highways, residential, commercial & industrial buildings, aquaculture, land reclamation and project management.

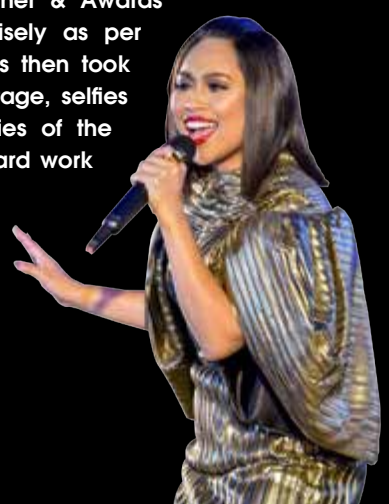
The IEM Awards for Contribution to Engineering Industry in Malaysia was the main attraction of the evening's programme. Eight corporations received the conferment namely, Bina Initiatives Sdn. Bhd. (IT & Communication Category), BSG Construction (M) Sdn. Bhd. (Bachy Solentache) (Construction and Proprietary System Category), Daikin Malaysia Sales & Service Sdn. Bhd. (Energy Power Category), Ekovest Berhad (Property Development Category), One Smart Engineering Sdn. Bhd. (Consultancy Engineering Practicing Category), TenCate Geosynthetics Asia Sdn. Bhd. (Material & Proprietary System Category), T&T Pacific Sdn. Bhd. (Water & Wastewater Category) and UEM Edgenta Berhad (Facilities Management Category).

During the Annual General Meeting held earlier, IEM also presented the Best Technical Paper Awards to Y.Bhg. Dato' Ir. Ha Tiing Tai for his paper entitled "Positioning to Undertake Underground Works Contracts – A Malaysian Experience" and to Ir. Dr Dominic Ong Ek Leong for his paper "Severe Damage of a Pile Group Due to Slope Failure". The Woman Engineer Award 2017 was presented to Ir. Prof. Dr Leong Wai Yie.

Befitting the atmosphere of the event which saw the gathering of the crème de la crème of the engineering industry, Dayang Nurfaizah, the Malaysian Queen of Ballads and one of Malaysia's hottest artistes currently, took to the stage with renditions of some of her famous numbers. As the winner of Best Malaysia Vocal at Anugerah Juara Lagu 29, 30 & 31, who also bagged the Best Female Artiste award for Anugerah Planet Muzik 2017 and the Best Song (Malaysia) award at Anugerah Planet Muzik 2017 with her song entitled "Lelaki Teragung", her performance was much welcomed and befitting the evening of splendour.

The much awaited Mystery Draw was held thereafter with the President's wife, Mrs Lai, being invited on stage to draw the lucky numbers. The smashing prizes included a Vivo V9 (3rd Prize), Samsung Galaxy 8.0 Tab S2 VE with book cover (2nd Prize) and IPad 9.7 WiFi 32GB 2017 with book cover (1st Prize).

The IEM 59th Annual Dinner & Awards Night 2018 concluded precisely as per the programme. Many guests then took countless group photos on stage, selfies and wefies to bring memories of the night home with them. The hard work of the organising committee had paid off well as award recipients and guests waved goodbye and left the venue with smiles of satisfaction.



IEM GOLD MEDAL AWARDS 2017

BEST ENGINEERING STUDENTS IN LOCAL UNIVERSITIES

NO	STUDENT NAME	UNIVERSITY
1	Abdul Syakir bin Abdul Wahab	Malaysia – Japan International Institute of Technology (MJIT)
2	Alcent Teoh Hoe Chuan	Asian Institute Of Medicine, Science and Technology (AIMST)
3	Brian Mooy Chi Ho	Asia Pacific University of Technology & Innovation (APU)
4	Chan Hao Jie	Universiti Sains Malaysia (USM)
5	Cheng Beng Tatt	Universiti Malaysia Perlis (UNIMAP)
6	Chia Ying Yin	Taylor's University
7	Chow Chan Khye	KDU University College
8	Fahizan bin Mahmud	Universiti Malaysia Sarawak (UNIMAS)
9	Fatin Nadhirah binti Muhammad Royani	Infrastructure University Kuala Lumpur (IUKL)
10	Florence Lim Jing En	Universiti Pertahanan Nasional Malaysia (UPNM)
11	Ika Amira binti Mohamad Basri	Universiti Malaya (UM)
12	Josiah Wong Siew Kai	Universiti Teknologi Malaysia (UTM)
13	Justin Looi Su Min	Nilai University Main Campus
14	Kenneth Boo Beng Wee	INTI International University (IU)
15	Khairul bin Anuar	Universiti Teknologi PETRONAS (UTP)
16	Koay Mei Yuan	Tunku Abdul Rahman University College (TARUC)
17	Lee Kah Seng	Manipal International University
18	Lubna Mohamed	SEGI University
19	Matthew Ting Zhi Yeon	Curtin University of Technology Malaysia (Sarawak Campus)
20	Michelle Gian Kah Shin	Swinburne University of Technology
21	Muhammad Hariz bin Mohd. Sharif	Universiti Tun Hussein Onn Malaysia (UTHM)
22	Muhammad Ikmal Hakim bin Shamsul Bahrin	International Islamic University Malaysia (IIUM)
23	Ng Yong Jie	Universiti Teknikal Malaysia Melaka (UTeM)
24	Nor Aida binti Ali	Universiti Tenaga Nasional (UNITEN)
25	Nor Syafirah binti Abdul Samat	Universiti Teknologi MARA (UiTM)
26	Nur Farina binti Abd Halim	Universiti Kuala Lumpur (UNIKL)
27	Sethala Devi A/P Velusamy	Universiti Selangor (UNISEL)
28	Siti Nuraisyah binti Mohamad Othman	Universiti Putra Malaysia (UPM)
29	Siti Rahmah binti Rahim	Universiti Malaysia Pahang (UMP)
30	Syarifah Nur Afiqah	Universiti Kebangsaan Malaysia (UKM)
31	Tey Su-Yi	The University of Nottingham
32	Wan Kin Mun	Universiti Tunku Abdul Rahman (UTAR)
33	Wong Chang Sheng	University College of Technology Sarawak (UCTS)
34	Yap Kah Yung	UCSI University of Kuala Lumpur (South Wing)
35	Yeoh Chin Vern	MONASH University Malaysia (Sunway Kampus)

PRESIDENTIAL AWARDS OF EXCELLENCE

MOST IMPROVED TECHNICAL DIVISION

NO	NAME
1	Engineering Education Technical Division

NO	NAME	REMARKS (CERTIFICATE, *TROPHY)
1	Ir. Vincent Wong Khien Ngie	*5th Place* Project Management Technical Division
2	Ir. Loo Chee Kin	*4th Place* Mechanical Engineering Technical Division
3	Ir. Dr Ng Soon Ching	*2nd Runner-Up* Civil & Structural Engineering Technical Division
4	Ir. Chong Chew Fan	*1st Runner-Up* Electrical Engineering Technical Division
5	Ir. Lee Peir Tien	*Champion* Geotechnical Engineering Division

MOST SUPPORTIVE AWARD

NO	NAME	DESCRIPTION
1	Ir. Assoc. Prof. Dr Khoo Hooi Ling	Graduate Membership, Individual Category
2	Prasarana Malaysia Berhad	Graduate Membership, Organisation Category
3	Ir. Prof. Dr Norlida Binti Buniyamin	Corporate Membership, Individual Category
4	Tenaga Nasional Berhad (TNB)	Corporate Membership, Organisation Category
5	Tenaga Nasional Berhad (TNB)	Most Active Organisation

IEM HONORARY FELLOW AWARD

NO	NAME	DESCRIPTION
1	Ir. Khoo Choong Keow	IEM Honorary Fellow Award

CONTRIBUTION TO ENGINEERING INDUSTRY

NO	NAME	DESCRIPTION
1	Bina Initiatives Sdn. Bhd.	IT & Communications
2	BSG Construction (Malaysia) Sdn. Bhd. (Bachy Solentache)	Construction & Proprietary System
3	Daikin Malaysia Sales & Services	Energy - Power
4	Ekovest Berhad	Property Development
5	One Smart Engineering Sdn. Bhd.	Consulting Engineering Practice
6	T&T Pacific Sdn. Bhd.	Water & Wastewater
7	Tencate Geosynthetics	Material & Proprietary System
8	UEM Edgenta Berhad	Facilities Management

BEST TECHNICAL PAPER AWARD

NO	AUTHOR	TITLE OF PAPER
1	Dato' Ir. Ha Tiing Tai	Positioning to Undertake Underground Works Contracts – A Malaysian Experience
2	Ir. Dr Ong Ek Leong, Dominic	Severe Damage of a Pile Group Due to Slope Failure

WOMAN ENGINEER AWARD

NO	NAME
1	Ir. Prof. Dr Leong Wai Yie

Biodata of Ir. David Lai Kong Phooi

Ir. David Lai Kong Phooi, President of The Institution of Engineers Malaysia (IEM), was a Board Member of the Board of Engineers Malaysia (BEM) for 2016-2017 and Past Chairman of the IEM Perak Branch. Currently a Board Member of SIRIM Berhad and a member of BEM National Monitoring Committee, he was Chairman of BEM IT Committee and Alternative Chairman of the BEM Application Committee.

Ir. David Lai obtained his Bachelor of Science Degree with Honours in Civil Engineering from The City University, London, in 1980. He later pursued the Executive Finance & Management Programme at the Golden Gate University, San Francisco USA (1987) and the Project Management Programme at the School of Housing, Building and Planning at Universiti Sains Malaysia, Penang (2000) and Legal Studies External Programme at the University of London (2010). He is a Chartered Professional Engineer registered with BEM as well as Board of Engineers Australia.

He started his career as a Highway Design Engineer with a Civil and Architectural consultancy firm in London. Then he worked as PWD District Engineer in Taiping, Perak. He is currently Director of Perunding Muhibbah, a multi-civil, structural and project rehabilitation consultancy firm.

For 7 years (2009-2016), he was a Senior Ipoh City Hall (MBI) Councillor and served as Deputy Chairman for the Project Privatisation, Road and Traffic and Community Committees. He was also a member of the Tender, Planning OSC, Finance, Town Cleanliness and Special Project Task Force committees. He won the Outstanding City Councillor KPI Achiever Award, MBI, in 2013 and represented MBI at the ASIAN Mayor Conference in Nanning, China, in 2015.

Ir. David Lai's hobbies include golf, swimming, mountain trekking, hunting, travelling, reading and music.

ARE WE QUINTESSENTIAL ENGINEERS?

My Fellow Engineers,

I am deeply honoured and humbled by the responsibility that has been passed on to me this morning as the new President of this eminent Institution. My first task is to thank Ir. Dr Tan Yean Chin for his staunch support and the Council that elected me two years ago as Deputy President, for its trust. Ir. Dr Tan, you can look back on your session with pride and satisfaction for a job well done.

I stand in front of you today humbled, as I am fully aware of the responsibilities that lie before me. As President, I will embrace and continue the good works of our Past Presidents. I will endeavour to do my utmost for the Institution and the engineering fraternity at large. It is my fervent wish to continue the high standards of leadership set by Past Presidents and to lead IEM to greater heights.

It is a task that is both exciting and challenging, one that will require the collaborative efforts of each and every member of this Institution. I therefore seek your fullest support and cooperation to assist me in the momentous task of not only maintaining the excellent tradition of the Institution but also of making IEM even more relevant and recognised than it is today. I will certainly need the advice of and guidance from each and every one here, as we collectively take IEM to greater heights and lead the way ahead for the engineering profession.

Hence, allow me to humbly share my thoughts with you and impress upon you what I foresee to be the opportunities and challenges that lie ahead for us.

My Fellow Engineers,

(1) STRENGTHENING THE BOND WITH IEM BRANCHES

1. As we are all aware, in addition to our Headquarters in Petaling Jaya, Selangor, IEM has 12 branches in Peninsular Malaysia, Sabah and Sarawak. In view of the government's efforts to elevate our nation to developed status by 2050, our membership has also grown in tandem with this trend in development, not only in the Klang Valley but also in the various States. This has brought tremendous challenges to IEM branches to keep pace with the increase in the number of members and their expectations.
2. Therefore, it is important to shift our attention to upgrading the branches and enabling them to provide the necessary support and services to State members. Our focus shall now be not just on what the Headquarters can do but also on what we can provide the branches for them to do as well, if not better. In essence, we must strive to do collectively what cannot be done individually.
3. But an Institution with a

membership that spans the width and breadth of the nation, needs an active personal connexion. We at IEM Headquarters must take determined steps to strengthen our bond with the branches. For this reason, I look forward to visiting the various branches during my tenure as President. In particular, I would like to look into the sustainability aspects of branch membership, such as maintaining the value of membership, promoting ethics, channelling engineering and technical advice to the authorities where required, and being an influential mouthpiece from the engineers' perspective.

(2) TO BOLSTER VALUE-ADDED SERVICES TO MEMBERS

4. Our members are the *raison d'être* for the existence of IEM and are our most valuable asset and core strength. We must ensure that the primary services provided to our members are good, so we will be looking at ways to bolster value-added services to what we already offer.
5. Our "Enhanced" Professional Interview is in the midst of implementation; it is aimed at bringing the assessment for Corporate membership of the Institution to a new and higher level. Constant surveillance for other ways to improve or for new initiatives to help our Graduate members achieve Corporate membership will always be considered. We will be conducting more talks, courses and conferences with local and foreign experts which will not only assist our members accumulate CPD hours but also to improve their knowledge and network as these will be of value in their professional practice.
6. Our vast membership also lends itself well to other benefits which should be pursued for the benefit of our members. Our affinity programmes are being expanded to include a wider range of merchandise and services, and more can be expected in the future. However, while every effort is being made to bring new and innovative benefits to our members, our core services – such as our benevolent fund and what it means to many of our members will not be neglected.

(3) IEM'S ROLE IN THE ADVENT OF INDUSTRY 4.0

My Fellow Engineers,

7. With world population expected to increase to 8.9 billion people in 2050, a better world brings challenges. These challenges will require Science, Engineering and Technology to provide food, water, energy and raw materials to feed, clothe and shelter the people as well as to prevent and cure diseases. We will need to do all these in a manner that can sustain natural resources upon which life, as we know it, depends.
8. As we are all aware, new technologies are transforming the world and how people are living their lives. We are now in the current digital age, better known as the 4th Industrial Revolution, where science and technology are strongly impacting society with computing power, connectivity, Artificial Intelligence and biotechnology. The 4th Industrial Revolution is the path that Malaysia has taken in the Economic Transformation Programme, *en route* to the 2050 National Transformation or TN50, which is the country's vision of being among the top countries in the world in economic development, citizen well-being and innovation.
9. To keep pace with the technologies of Industry 4.0 and the opportunities that come with it, our Government has focused not only on universities but also on Technical and Vocational Education & Training (TVET) as a strategy to help the future workforce achieve TN50. The government has allocated RM50 million from 30% of Human Resources Development Fund funds collected for the purpose of TVET, to increase competitiveness as well as improve the calibre of the workforce and the nation's economic development.
10. With this in mind, IEM will need to work closely with and to align itself with all institutions of learning to chart a course that sets the foundation for today's generation in order to equip them with the right tools to become the engineers, technologists and technicians of tomorrow. Drawing from the experience and extensive knowledge base of its large pool of members, IEM is well placed to offer its views on the attributes and competencies required of engineering students and the mentorship of the next generation of engineers.
11. While much has been accomplished in this direction, much more needs to be done. Currently, IEM has 6 members on the Engineering Accreditation Council and many members have been nominated to sit on Industry Advisory Panels or to serve in advisory roles at various institutions of learning, government agencies and professional organisations. IEM has also signed 23 MOUs with institutions of learning which formalises the relationship and provides the basis for collaboration.

(4) BUILDING INTEREST IN STEM

12. In line with the Government's aspirations under Industry 4.0, IEM has the duty and responsibility to build the younger generation's interest in Science, Technology, Engineering and Mathematics or STEM. We must develop their knowledge and skills to meet the demands of fast-changing technologies in a rapidly evolving economy. Thus, we will have to step up our game with increased career guidance talks in schools. Through these, we will convey to the younger generation the joy of innovation and creation as well as the pleasures of engineering. We will need to be more proactive in engaging with vocational schools, technical colleges and universities, providing mentorship and leadership for young students to be sufficiently motivated and guided to become successful engineering professionals.
13. IEM is a major stakeholder in the Asia Science Camp and KL Engineering Science Fair. The International Chem-e-Car competition is an annual IEM project that successful engages with universities to create interest in Science, Engineering, Technology and Innovation. I understand that

at present, the Women Engineers Section and the Young Engineers Section as well as certain Technical Divisions have made inroads to intensify the initiative to engage with young students but I trust that much more should be done. Our branches can also do more to contribute in this regard, by conducting community-based activities for the benefit of local residents and students.

(5) FOSTERING CLOSER RELATIONSHIPS WITH INDUSTRY AND ACADEMIA

14. The need for universities to engage with industry is continuously increasing. Universities and other institutions of higher learning are constantly striving to produce graduates who are more industry-aware and relevant and, within the industry, there is a need for higher level research and development. A key factor to achieve success in both these aims is collaboration and partnership between universities and industry.
15. The industry should develop staff motivation and skill for engagement in engineering education, make real materials and resources freely available and invest in engagement activities. In turn, universities should develop motivation and skills for industrial engagement in engineering education among their staff and make strategic use of academics' and industrialists' time.
16. As such, IEM is a natural meeting place for both academia and industrial players. It plays an important role in fostering positive relationships between the two. The events that IEM organises nationwide as well as at branches, provide good opportunities for academics and industrialists to meet. Our extensive network is ideal for promoting such initiatives.
17. In addition, one way for IEM to engage both industry and the academia is to jointly organise engineering-themed events. Such initiatives are opportunities for industry and academia to work together to shape the learning process. For example, we are currently co-organising the KL International Rail Eng ineering Conference 2018 with Rapid Rail and the focus is on knowledge sharing. There are also plans to engage with Jabatan Kerja Raya on training and assessment and more such collaborations can be expected.

(6) EMPOWERING ENGINEERING TECHNOLOGISTS AND TECHNICIANS THROUGH IEM

My Fellow Engineers,

18. Engineering technologists and technicians form the backbone of every industry in the world. IEM must do more to promote the membership categories of engineering technologists and technicians who will stand to benefit in terms of career advancement through activities and networking opportunities available in IEM.
19. Industries depend not only on engineers but also on technologists and technicians who play an equal and often critical role in many aspects of engineering. It is therefore only right that we bring these important categories of the engineering team into our fraternity.
20. IEM will pursue the proposal to incorporate Engineering Technologists and Engineering Technicians into the IEM membership. We will set up two new sections: Incorporated and Associate Sections for technologists and technicians. IEM will also look at providing an avenue or pathway for them, especially Incorporated (Technologists) members, to upgrade and qualify as engineers.

(7) ENGAGING YOUNG ENGINEERS

21. IEM has grown in all aspects since it was established in 1959 and the Young Engineers Section has developed along with it, with the number of branches and student sections increasing yearly. Currently IEM YES has 9 branches and 27 student sections in universities throughout the country; this signifies the growth of young engineering professionals in society.
22. Based on membership, engineering graduates and students constitute the majority in IEM. As at 1st March, 2018, we have 34,226 graduate and student members out of the total 45,666 members. With such a sizeable chunk of YES members, it is important that IEM takes note of their development, progress and interests.
23. IEM must make it our mission to involve young engineers in leading engineering activities for them to gain and share knowledge and experience as well as to prepare them to take on leadership roles in the future. We must provide young engineers with opportunities to contribute to society. We must also do more to engage young engineers with practical situations so as to improve their thought process and to develop skills.
24. To this end, IEM will look into organising activities specifically targeted at young engineers, such as networking sessions, workshops and forums. Most importantly, IEM will engage with and provide the support and facilities for these young engineers to qualify for Corporate Membership.
25. I am pleased to say that our commitment to young engineers and women engineers is not just empty talk. The IEM Constitution and Bylaws have been amended to allow for five Companion/ Graduate members and One Woman Engineer to serve on the Council and I am happy to inform that this change comes into force after today's Annual General Meeting.

(8) EMPOWERING WOMEN ENGINEERS

Fellow Engineers,

26. Women play an important role in the development of Science, Engineering and Technology. The ascent of women in Science, Engineering and Technology has been dramatic over the past decades. In fact, their contributions are recognised through prestigious awards such as the Nobel Prize, with 16 women recipients so far, including Madame Marie Curie.
27. More women now enter undergraduate and graduate programmes and pursue careers

in Science, Engineering and Technology than in previous years. With women making up about half the population, there is no reason why they should not comprise at least 50% of all engineers. Anything less implies that we are not utilising human resources effectively; after all, we do appreciate that women scientists and engineers bring with them, not just skills and knowledge but more importantly, positive values, positive character and an outlook that only women will have.

28. In Malaysia, data from the Department of Statistics indicates that women comprise 45% of people employed in the Professional and Technical category. Data from the Ministry of Higher Education indicates that the number of female students in Technical, Engineering, Manufacturing and Construction related courses in universities also stands at 45%.
29. All these indicate that Malaysia is close to having gender equality; a fact that augurs well for the future of Science, Engineering and Technology in the country as women engineers will provide the necessary resource for us to become a developed nation.
30. I believe that, with greater involvement of women in all aspects, the world's technological capacity can be intensified. However, their career experiences are still beset by obstacles and challenges.
31. Like women in other areas, women scientists, engineers and technologists have to work twice as hard as their male counterparts to gain the same recognition. Instead of just increasing their involvement, women should be given the same opportunities to be leaders in their respective fields. We must also look at providing an environment conducive for women to sustain and grow their peak potential and talent.

(9) ENGINEERING MOBILITY

32. Globalisation and advances in international trade and business services have resulted in an increased need for engineers to have their credentials recognised around the world. To maintain the good reputation of the engineering profession, it is essential to ensure that licensure and regulation operate effectively and facilitate international mobility. This way, the public can continue to feel confident that professional engineers, regardless of where they have received their education, have the right skills to practise engineering with competence and integrity.
33. IEM has done well in having the foresight to host the permanent secretariat of Federation of Engineering Institutions of Asia and the Pacific (FEIAP). IEM also hosts the AFEO Secretariat headed by the Secretary General, and continues to serve as permanent treasurer for AFEO and administrate the ASEAN Engineers Register headed by the Head Commissioner. IEM should continue with its success in supporting regional and international organisations and to pursue further in the arena of international professional regulation, standards and recognition.
34. The Federation of Engineering Institutions of Asia and the Pacific, of which IEM is a founding member, is moving into the field of accreditation to help its members improve their standards. FEIAP has established a task force to help member countries set up or to improve formal accreditation systems.
35. Assistance has been provided to Pakistan and Myanmar while similar assistance is in progress for China, a country that recognises the importance of having its engineers internationally accredited and thus be able to work across borders in its Belt & Road Initiative.
36. IEM is also active in the International Engineering Alliance of which the Institution is a signatory to the International Professional Engineers Agreement that establishes the framework for the registration of International Professional Engineers.

CONCLUSION

My Fellow Engineers,
These matters and many more will take up my attention and become my mission during my term in office. With your support and guidance, we can collectively take IEM to greater heights in leading the way for the engineering profession.

Before I end my Address this morning, I would like to leave you this burning question:

What makes a quintessential engineer?

I am sure you all have your own opinions but I believe that the quintessential engineer is one with a long-term, systemic approach to decision-making, one who is guided by ethics, justice, integrity, equality and compassion and has a holistic understanding that goes beyond his or her own field of specialisation, one who is acceptable globally. The quintessential engineer has:

- Universal skills for international mobility.
- An aversion to unethical practices
- Creativity, innovation and is market ready.
- High moral fibre, ethics and integrity.
- An ability to adapt design and work to address the issues of sustainable lifestyles, resource efficiency, pollution prevention and waste management.
- An understanding of how work interacts with society and the environment, locally and globally, in order to identify potential challenges, risks and impacts.
- An ability to participate actively in the discussion and definition of economic, social and technological policies as well as to help redirect society towards sustainable development.
- The ability to apply professional knowledge according to universal values and ethics and
- Tolerance and compassion towards fellow engineers and the well-being of neighbours.

It is up to us to strive to attain these values. Thank you.

Ir. David Lai Kong Phooi
IEM President
Session 2018/2019. ■

Key Points of the Engineering Accreditation Council Engineering Programme Accreditation Manual 2017


Ir. Liew Chia Pao


Ir. Dr Siti Hawa Hamzah


Ir. Dr Vinesh Thiruchelvam

The Board of Engineers Malaysia (BEM) approved the Engineering Accreditation Council Engineering Programme Accreditation Manual 2017 (EAC Manual 2017) on 21 August, 2017. This will be the reference for all engineering programmes, effective 1 September, 2017. All programmes are expected to comply with the new requirements by 31 August, 2018.

This paper focuses on the key changes of the new EAC Manual 2017 in comparison to the 2012 version (EAC Manual 2012) and highlights the 8 qualifying requirements which are meant to screen out programmes which do not meet the core requirements of the assessment criteria. Other major changes or inclusions, such as accreditation cycle, self-assessment report, revisions to accredited programmes, benchmarking, credit exemption and credit transfer, safety, health and environment, continuing and interim programmes accreditation and underpinning courses are also discussed.

This paper is expected to help Institutions of Higher Learning (IHLs) with the implementation of the changes in their programmes.

1. QUALIFYING REQUIREMENTS

The number of qualifying requirements in the EAC Manual 2017 remains at 8, even with the introduction of Integrated Design Project (IDP) as the previous qualifying requirements of Programme Educational Objectives and Programme Outcomes have been categorised as Outcome-based Education (OBE) in the EAC Manual 2017.

Table 1: Qualifying Requirements of the EAC Manual 2017 in comparison to EAC Manual 2012

1. Outcome-based Education Implementation
• Programme Educational Objectives and Programme Outcomes
2. Credit Requirement -CHANGES
• Minimum of 135 SLT credits of which 90 must be engineering courses offered over a period of 4 yeras (changes)
3. Integrated Design Project - NEW
• New requirement
4. Final Year Project
• Minimum 6 credits
5. Industrial Training
• Minimum of 8 weeks
6. Academic Staff - CHANGES
• Minimum of 8 full-time with at least 3 Professional Engineers registered with the BEM or equivalent
7. Staff to Student Ratio
• 1:20 or better
8. External Examiner's Report - CHANGES
• Minimum 1 report every 2 year

Table 1 shows the qualifying requirements of the EAC Manual 2017 in comparison to EAC Manual 2012. The key changes of the qualifying requirements will be discussed in this section.

1.1 Outcome-based Education Implementation

Two qualifying requirements in the earlier EAC Manual 2012, i.e. Programme Educational Objectives (PEO) and Programme Outcomes (PO) have been combined in a single criterion, named Outcome-based Education (OBE) implementation. The EAC Manual 2017 requires that PEOs be considered in the design and review of the curriculum in a top-down approach. The OBE model adopted by the IHLs is expected to drive Continual Quality Improvement (CQI) at both course and programme levels and/or will improve student performance.

The EAC Manual 2017 has also adopted the International Engineering Alliance 2013 Graduate Attributes via the mapping of the Programme Outcomes to the Knowledge Profile, i.e. profiles of graduates (known as WK1

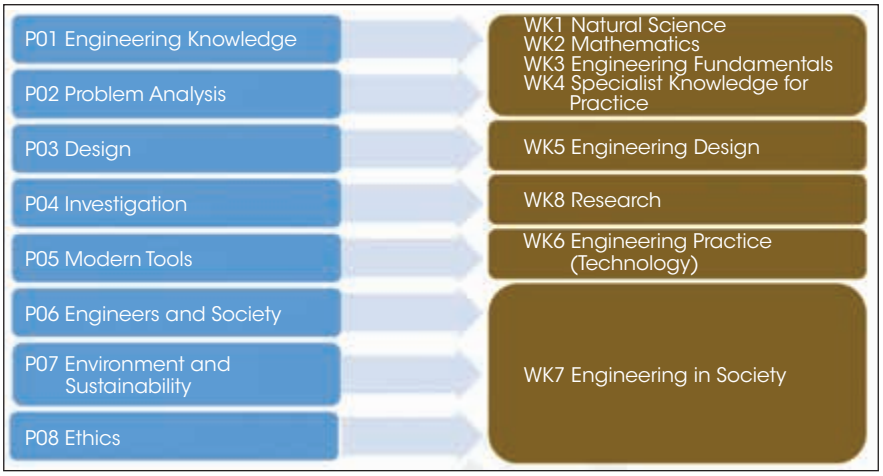


Figure 1: Mapping of EAC Programme Outcomes to Washington Accord Knowledge Profile

to WK8) and complex problem solving is emphasised in the outcomes, Engineers and Society, and Environment and Sustainability. The Programme Outcomes on Engineering Knowledge and Problem Analysis are required to address WK1 to WK4 (Theory-based Natural Sciences, Conceptually-based Mathematics, Theory-based Engineering Fundamentals and Forefront Specialist Knowledge for Practice), Design/Development of Solutions was mapped WK5 (Engineering Design), Investigation is mapped to WK8 (Research Literature), Modern Tools is mapped to WK6 (Engineering Practice (Technology), and Engineer and Society, Ethics, and Environment & Sustainability is mapped to WK7 (Comprehension Engineering in Society) as shown in Figure 1.

The range of complex problem solving and complex engineering activities are shown in Figure 2. It is worth mentioning that complex engineering problems have the characteristic of Depth of Knowledge (known as WP1) and some or all of other characteristics (WP2 to WP7). The attribute, WP1 Depth of Knowledge, means complex problem solving that requires in-depth engineering knowledge at the level of one or more of WK3, WK4, WK5, WK6 or WK8. In the capacity of complex engineering activities, some or all of the five characteristics are to be evident.

1. RANGE OF PROBLEM SOLVING

WP1. Depth of knowledge required
- Cannot be resolved without in-depth engineering knowledge at the level of one or more of WK3, WK4, WK5, WK6 or WK8 which allows a fundamentals-based, first principles analytical approach

WP2. Range of conflicting requirements
- Involve wide-ranging or conflicting technical, engineering and other issues

WP3. Depth of analysis required
- Have no obvious solution and require abstract thinking, originality in analysis to formulate suitable models

WP4. Familiarity of issues
- Involve infrequently encountered issues

WP5. Extent of applicable codes
- Are outside problems encompassed by standards and codes of practice for professional engineering

WP6. Extent of stakeholder involvement and conflicting requirements
- Involve diverse groups of stakeholders with widely varying needs

WP7. Interdependence
- Are high level problems including many component parts of sub-problems

2. RANGE OF ENGINEERING ACTIVITIES

EA1. Range of resources
- Involve the use of diverse (and for this purpose resources includes people, money, equipment, materials, information and technologies)

EA2. Level of interactions
- Require resolution of signification problems arising from interactions between wide-ranging or conflicting technical, engineering or other issues

EA3. Innovation
- Involve creative use of engineering principles and research-based knowledge in novel ways

EA4. Consequences to society and the environment
- Have significant consequences in a range of contexts, characterized by difficulty of prediction and mititgation

EA5. Familiarity
- Can extend beyond previous expeiences by applying principles-based approcahes

Figure 2: Range of Problem Solving and Range of Engineering Activities

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1.2 Outcome-based Education Implementation

The EAC Manual 2017 introduces a credit system based on Student Learning Time (SLT), replacing the credit hour system as per EAC Manual 2012. The SLT credit is based on the Student Learning Time (SLT) as defined in the Malaysian Qualification Framework (MQF). The SLT defines that for every one credit hour specified, students need to spend 40 hours of learning. Although the EAC Manual 2012 allocated independent study time for lecture, tutorial, laboratory etc., it did not take into account the time required to prepare for and take assessments. Hence the number of credits has been increased from 120 to 135 to cater to the additional time required for assessments. The number of credits for engineering courses is increased from 80 to 90 in accordance with the increase number of credits of the engineering programmes.

IHLs may consider reducing face-to-face to include non-face-to-face activities and assessment preparation time (and sitting) without compromising on the depth of knowledge or may expand existing credits to include non-face-to-face activities and assessment preparation time (and sitting) without exceeding the recommended student workload of 18-20 credits per semester (assuming a 14-week semester) or mixture of both.

For the purpose of calculation of SLT, Table 2 shows an example for a three-credit course, Engineers & Society, which may consist of two hours of lectures per week for a 14-week semester with a final examination (40% weightage) and three assignments (60% weightage). The average student may spend four hours of preparation for a two-hour lecture, 30 hours of preparation for three assignments of 2000 words and nine hours of preparation for a three-hour final examination. So the total guided learning time is two hours X 14 weeks, the total self-learning time is four hours X 14 weeks, and the total assessment time is 30 hours for preparing assignments and 12 hours for preparing and sitting for the final examination, making the total SLT of 126 hours. Dividing the SLT of 126 hours with 40 notional hours equals to 3.2 credits.

Table 2: Example of SLT Calculation for a three-credit Course (Engineers and Society)

14-WEEK SEMESTER	SLT CREDIT SYSTEM	REMARKS
Lecture	2 hours X 14 weeks	-
Self-learning time	4 hours X 14 weeks	-
Continuous assessment preparation time	30 hours	3 assignments of 2000 words
Examination preparation and sitting time	12 hours	3 hours final examination with 9 hours of preparation
Total SLT	126 hours	-
CREDIT	**126/40 = 3.2**	**A 3-credit course**

1.3 Integrated Design Project

The EAC Manual 2017 includes the Integrated Design Project (IDP) as the new qualifying requirement to emphasise its importance. The IDP shall involve complex engineering problems and design systems, components or processes integrating (culminating) core areas and meeting specified needs for public health and safety, cultural, societal, project management, economy and environmental considerations where appropriate. The IDP acts as the capping stone of fundamental conceptual design knowledge and to emulate industrial practice. Students should be working and managing projects as a group. Although the credit requirement for IDP is not spelt out, the programme is expected to seize the opportunity to deliver and assess many relevant programme outcomes through the IDP.

1.4 Final Year Project

The Final Year Project (FYP) remains one of the best means of introducing an investigative research-oriented approach in engineering studies. It was introduced to seek individual analysis and judgement, and should be assessed independently. Students are expected to develop techniques in literature review and to process technical information as well as to utilise appropriate modern tools in some aspects of work. This requirement remains unchanged.

1.5 Industrial Training

Industrial training remains compulsory for a minimum of eight (8) continuous weeks and must be conducted before the final semester in the fourth year of study. It is worthy to note that the aim is to expose students to professional engineering practices, so they should be placed in relevant engineering organisations. There should be a structured industrial training process in place and supervision done by qualified personnel. This requirement remains unchanged.

1.6 Academic Staff

A viable engineering programme is expected to have a minimum of 8 full-time academic staff whose first degree must be in an engineering discipline relevant to the programme. The EAC Manual 2017 emphasises the need for this in order to have the necessary competencies to cover the required areas of an engineering programme. In addition, every programme shall have at least 3 full-time Professional Engineers who are registered with the BEM or its equivalent, and who are actively teaching the programme. Equivalency includes professional qualifications from the International Professional Engineers Agreement (IPEA), Asia Pacific Economic Co-operation (APEC) and Washington Accord's signatories. All academic staff who are eligible must also register with the BEM, in line with the requirement of the Registration of Engineers Act 1967 (Revised 2015).

1.7 Staff to Student Ratio

The requirement of Staff to Student Ratio remains unchanged at 1:20 or better, ideally, 1:15.

1.8 External Examiner's Report

An external examiner's report is now required for every two years; the earlier requirement of two reports per cycle was subjected to misinterpretation. Although the earlier EAC Manual 2012 preferred that the assessment be carried out during the initial period of the accreditation cycle and another before the accreditation visit, some IHLs conducted two external examiner assessments at the end of the accreditation cycle where the outcomes were not beneficial to programme improvements. The Appendix E of the EAC Manual 2017 was revised to include the assessment, OBE implementation and achievement of the programme outcomes of the students and moderation process of assessments.

2. OTHER MAJOR CHANGES/ INCLUSIONS

a) ***Accreditation Cycle:*** The accreditation cycle was increased from 5 to 6 years to be consistent with the practice in the Engineering Technology and Engineering Technician accreditation manuals and the International Engineering Alliance (IEA). The number of accreditation years awarded to the programme will be based on the number of concerns arising and the decision by EAC.

b) ***Self-Assessment Report:*** A Self-Assessment Report (SAR) is an account of the IHL plan, implementation, assessment and evaluation of the programme conducted. It reflects the processes with results obtained which are used in continual quality improvements at all levels of the programme's activities. The SAR should address the key questions in Section 7 of the manual. In the EAC Manual 2017, the IHL is required to resubmit its application for accreditation visit if it is found to be of unacceptable quality. There were previous cases where the SAR was merely a compilation of information and not self-assessment or did not adhere to the required format as per Section 7 of the manual.

c) ***Revisions to an Accredited Programme:*** The EAC Manual 2017 requires IHLs to update the EAC and the Malaysian Qualifications Agency (MQA) on major changes that may impact an accredited programme. These include changes such as 30% or more of academic curriculum, change of location, pathways, programme name or programme duration, and others.

d) ***Benchmarking:*** The new manual also requires an IHL to demonstrate that appropriate benchmarking has been carried out with similar accredited/recognised programme(s) offered at other IHLs. The benchmarking shall include identifying any gap in the academic curriculum for course or programme improvement.

e) ***Credit Exemption and Credit Transfer:*** The credit and course exemption from lower to higher level, i.e. accredited or recognised Diploma to Bachelor degree, a maximum exemption of 30% of the total programme credits remains unchanged. However, there is a new clause that allows for credit transfer between accredited or recognised programmes of same level, i.e. from Bachelor to Bachelor degree with a maximum transfer of 50% of the total programme credits.

f) ***Health, Safety & Environment (HSE):*** In this area, the IHL is required to demonstrate that there is a system for the management and implementation of HSE. As HSE culture is of utmost importance, it's a major factor that may affect the accreditation decision. The IHL shall demonstrate activities to inculcate the HSE culture among staff and students and to comply with any or all applicable rules or regulations pertaining to safety, health and environment.

g) ***Continuing and Interim Programmes Accreditation:*** For programmes that have been accorded accreditation with

interim conditions or programmes applying for extension of accreditation in the same cycle, the IHL shall submit an addendum in addition to the report related to concerns listed under the accreditation conditions. This addendum shall include updates on the fulfilment of the 8 Qualifying Requirements and a report on how the programme is addressing (closing the gap) newly introduced/revised accreditation requirements by the EAC, among others. The concerns listed under the accreditation conditions must be closed for obtaining the remaining accreditation years to be recommended by the evaluation panel to the EAC.

h) Appendix B: Engineering Contents for Selected Engineering Disciplines and Innovative Programmes: For the Chemical Engineering discipline, the recommended courses, Plant and Equipment Design, have been extended to include Economics while Viability – Legal Framework, Economics, Operability and Reliability have been removed.

For the Electronic Engineering discipline, the recommended course, Multimedia Technology and Applications, has been removed and Digital Signal Processing & Application included.

CONCLUSION

The EAC Manual 2017 was the result of meetings carried out by the various stakeholders in late 2016 and early 2017 which led to an improved version of the EAC Manual 2012. The new manual paves the way for industry involvement with the requirement of Professional Engineers as a qualifier for programme accreditation and introduces SLT for a student-centred approach in the delivery of the curriculum. It also emphasises the importance of IDP for students to apply design knowledge with the spirit of emulating real-work industrial experience, and complex problem-solving in the engineering programmes. These key changes are expected to further improve the attributes and capabilities of graduates, making them more relevant to the industry and fit to undertake a programme of training and experiential learning leading to professional competence and registration. ■

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Authors' Biodata

Ir. Liew Chia Pao *is a Principal Lecturer in the Faculty of Engineering, Tunku Abdul Rahman University College (TAR UC) and currently, an Associate Director (Electronic Engineering) of the Accreditation Department, BEM. He had over 11 years of industry experience, as an R&D Engineer and Project Manager in powerline communication with OCM-Web, a recipient of Industry R&D Grant Scheme, MOSTI, and as an Analyst in industrial and electronics sector with Frost & Sullivan. His research areas are complex problem solving in engineering and programme outcomes assessment.*

Ir. Dr Siti Hawa Hamzah *is currently, an Associate Director (Civil Engineering) Accreditation Department BEM, the IEA mentor to Bangladesh Board of Accreditation for Engineering and Technical Education into Washington Accord Full Signatory Membership, OBE Trainer (CEE UTM - MOHE Afghanistan World Bank Project), BEM Lead Accreditation Evaluator, P.Eng Principle Interviewer, and BEM T&E Committee Member. She had over 33 years teaching and academic experience with 20 years experience managing engineering programmes; accreditation evaluator's experience in more than 100 programmes; completed 21 research projects; authored 11 books in structural engineering, published more than 165 technical papers, and accreditation videos on You Tube.*

Ir. Prof. Dr Vinesh Thiruchelvam *is the advisor in Engineering Education Technical Division (E2TD) and currently, the Dean of Computing, Engineering & Technology at Asia Pacific University of Technology & Innovation (APU). He has a wide industrial design exposure for the property sector, ports, oil & gas and power plant industries. His scholarly research areas are in Sustainable Development, Reliability Engineering using Smart Devices with IoT and Data Analytics with Business Intelligence.*

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ENGINEER'S Lens

Contributed by
Michelle Lau

A step ladder formed by nature juxtaposed against a man-made structure in the same jungle, as seen through an engineer's perspective. ■

Scenes from
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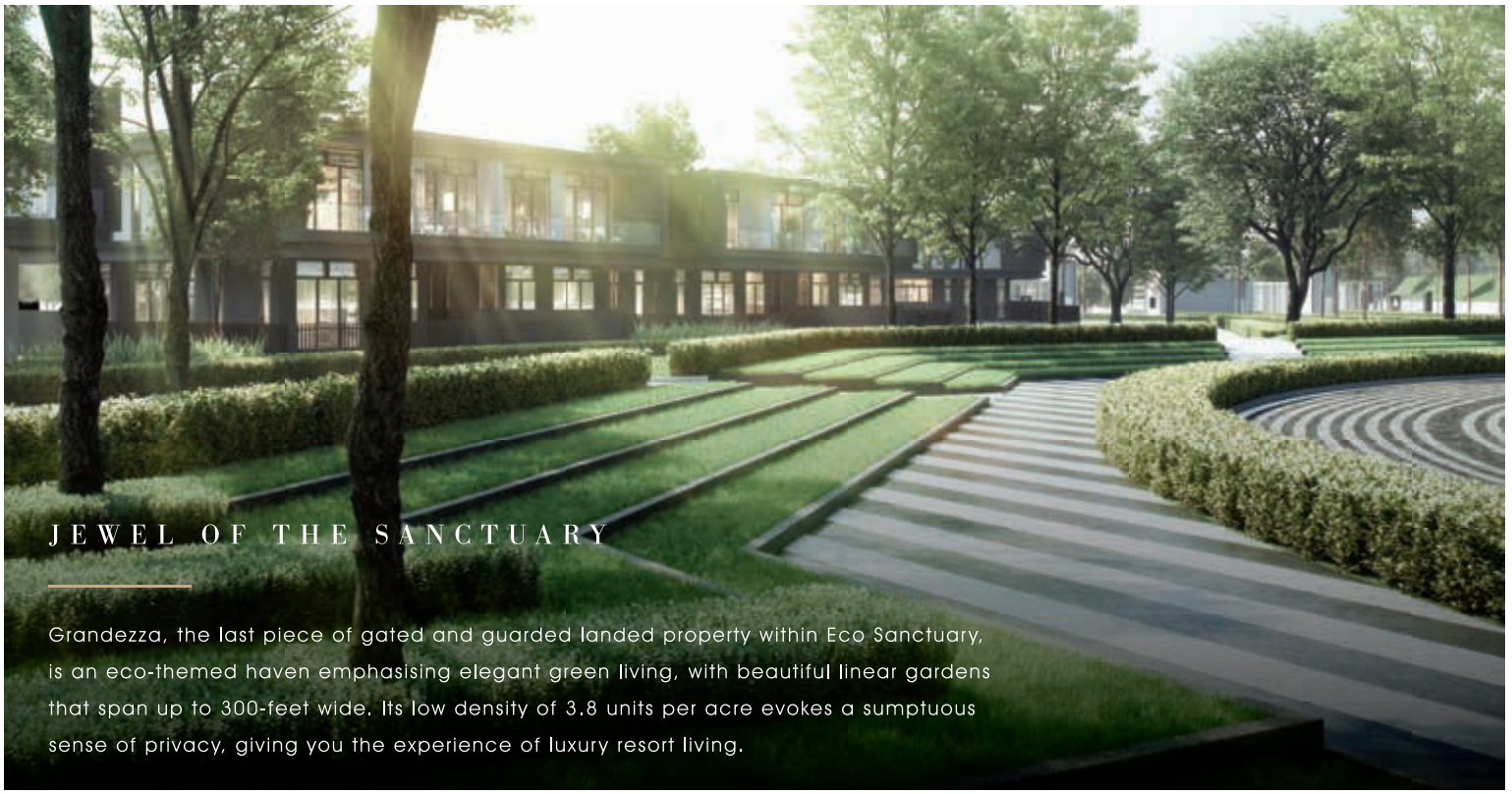

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CAFEO 35 BANGKOK, THAILAND
Towards a Sufficiency Economy Pathways to Sustainable Development

YOUNG ENGINEERS SECTION

reported by

Ms. Ong Chew Yi

The 35th Conference of the ASEAN Federation of Engineering Organisations (CAFEO), organised by The Engineering Institution of Thailand (EIT) under H.E. The King's patronage, was held in conjunction with 24th YEAFEO and 6th WE-AFEO.

It was held in Bangkok, Thailand from 16 to 18 November, 2017, at Queen Sirikit National Convention Centre (QSNCC). More than 1,066 participants attended the event, mainly from ASEAN with FEIAP member economy, non-ASEAN countries such as Japan, South Korea, Taiwan, Tunisia, Canada, Papua New Guinea, Pakistan, India, Australia and China. The biggest delegation was from The Philippines Technological Council (PTC) with 261 delegates, followed by Myanmar Engineering Society (MES) with 226 delegates, Persatuan Insinyour Indonesia (PII) with 158 delegates, IEM with 114 delegates, Board of Engineers Cambodia (BEC) with 66 delegates, The Engineering Institute of Thailand under The King's Patronage (EIT) with 58 delegates, The Institution of Engineers Singapore (IES) with 37 delegates, Pertubuhan Ukur Jurutera & Arkitek (PUJA) with 22 delegates, Vietnam Union of Science & Technology Associations (VUSTA) with 21 delegates and 114 Malaysian delegation led by IEM President, Ir. Dr Tan Yean Chin.

15 November 2017

Prior to the official beginning of the conference, EIT organised a friendly game of golf at Krungthep Kreetha Sport Club. IEM Deputy President Ir. David Lai Kong Phooi represented the Institution, together with some members from IEM Sarawak Branch. At 7.00 p.m., IEM YES met up with HKIE YMC for dinner, mainly to renew ties. After dinner, IEM YES moved on to the Rot Fai Night Market to hunt for street food and delicacies. Some IEM members who are the officials of AFEO/ AER and Secretariat arrived at noon and made their way to QSNCC to set up the rooms for the following days' meetings.

16 November 2017

On the first day of conference, registration took more than 2 hours due to the overwhelming response; nearly half of the participants were walk-ins. All registered participants received a door gift comprising a laptop bag, a scarf bearing the CAFEO 35 and EIT emblem and a programme handbook. Meanwhile, YES delegates were busy setting up the exhibition booth at the Plenary Hall of QSNCC to showcase and sell IEM-AFEO products.

The day started with three different Working Groups (WGs), namely *"Transportation & Logistics"*, *"Education & Capacity Building"*, and *"Energy"*, which reconvened from the past AFEO.

These WGs focused on the discussions on the standards available in their respective countries, issues of concern, and proposals for new initiatives. It was also a platform for exchanging ideas as well as sharing information, knowledge and expertise. Held concurrently with the WGs was the WE-AFEO Governing Board meeting.

At 10.30 a.m., the boardrooms were re-arranged to accommodate another three WGs, namely "Disaster Preparedness & Mitigation", "Sustainable Cities" and "Environmental Engineering". The ASEAN Engineering Inspectorate Register meeting was also held at the same time. This sub-committee of the ASEAN Engineering Register looks into the setting up of an Electrical Inspectorate Register to unify the codes and practices in ASEAN and to have a register of Electrical Inspectors and Experts.

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After lunch, the programmes were also divided into two sets. Officials of AFEO continued with another three important WG meetings, namely Award Meeting, WE-AFEO presenting Country Reports and ASEAN Engineering Inspectorate Register setting up guidelines for the registering of Boilers Inspectors and Building Inspectors. At the same time, YEAFEO delegates went to G-Tower for a technical visit. Upon arrival at the 9th Towers Grand Rama IX, they were briefed by the client, Grand Canal Land, on G-Land development, followed by a presentation by the Director of the KCS & Associates Co., Ltd, Dr Karoon Chandrangsu, who shared information on key structural components, challenges faced and lesson learnt from the G-Tower development.

At the YEAFEO Governing Board Meeting, discussions were held on how a better ASEAN collaboration could be forged. The discussions were then devoted entirely to the YEAFEO constitutional issues. The meeting was adjourned for the opening ceremony, with consent to re-commence the following day for discussions on the constitution amendment.

The opening ceremony of CAFEO 35 took place in the evening in the QSNCC Ballroom. Only a limited audience was allowed admission into the hall due to security reasons. The ceremony officially preluded with the Thai Royal Anthem, followed by the arrival of The King's representative, General Bundit Malaiarisoon; who is also President of the Thai-Korean War Veterans Association Under Royal Patronage. After the General took the Royal Seat, EIT President Assistant Professor Dr Thanes Weerasiri, gave his welcome speech.

General Malaiarisoon then gave the Royal Opening Remarks and concluded the opening ceremony by cutting the opening silk band. He declared the exhibition opened and visited the exhibition booths.

The day ended with a welcome dinner at Retro Live Café where a live music band entertained everyone.

17 November 2017

On the second day, the morning started with the AFEO Country Report Presentation by presidents of the respective member organisations. Before that, Thailand's Director-General of Energy Policy and Planning Office (EPPO), Dr Twarath Sutabutr (representing the Minister of Energy), presented the Keynote Address of CAFEO 35, followed by the Streaming of Colours, with Presidents of all member organisations walking on to the stage with the ASEAN flags to perform the famous ASEAN Handshake. Delegates from YEAFEO, WE-AFEO and FEIAP witnessed the event.

A welcome speech was given by the AFEO Chairman, followed by a keynote address from Dr Sutabutr on the theme of the conference, "Towards a Sufficiency Economy: Pathways to Sustainable Development". All member countries were given 10 minutes to present their country reports, covering the introduction of their respective organisations, major engineering events, on-going and upcoming megaprojects and the challenges faced. The Malaysian country report was presented by IEM President Ir. Dr Tan Yean Chin.

Parallel to the Country Report Presentation was the technical paper presentation, with a total of 74 papers presented under 10 themes such as, sustainability in engineering education, energy, environment, transportation as well as occupational health and safety. Some 100 Malaysian delegates attended this session, presenting technical papers and sharing ideas with fellow participants.

The Committee of the FEIAP Education Engineering Task Force also held two meetings at the same time to discuss guidelines for engineers, engineering technologists and engineering technicians. After the morning session, everyone adjourned for a buffet lunch at Zone C1 of QSNCC.

Delegates at the discussion

Group photo session

After lunch, the AER certificate presentation took place. Delegations from the ASEAN countries collected their membership certificates and medallions; the biggest group was from the Philippines.

Parallel to the AER certificate presentation was the YEAFEO country report presentation, during which representatives from each country took turns to present their respective reports. As per past practice, YEAFEO also recorded the participation of young engineers from Japan, Hong Kong and Taiwan. The symbolic exchanging of souvenirs was carried out at the end of the meeting as a pledge of friendship between nations.

The day concluded with a networking dinner at Asiatique The Riverfront for the Young Engineers. The highlight was a puppet show performed by five talented puppeteers who later posed for pictures with the Young Engineers. Meanwhile, the various Presidents and AFEO officials were treated to a river cruise dinner hosted by the EIT President.

18 November 2017

On the third day, the programmes were relatively free and easy. EIT had organised special outdoor activities for YEAFEO and WE-AFEO. Delegates were allowed to join in the special activities.

Most of the Young Engineers took the opportunity to stroll around Bangkok's city centre. That was not so for AFEO and FEIAP as delegates from ASIA and the Pacific took part in the FEIAP Exco, followed by dialogue with the China Association of Science and Technology (CAST) to discuss Belt & Road issues in ASEAN, and the AFEO Governing Board meeting.

The event continued with the signing of the Bangkok Declaration to call for mobility of engineers within ASEAN and to champion economic growth among ASEAN member states. The event continued with Business Networking sessions with speakers Er. Chong Kee Sen from Singapore, Ir. Ellias Saidin, the AER Head Commissioner, and a speaker from Thailand who provided information on business opportunities in their respective countries.

The time had come to say goodbye. The farewell banquet was held in the evening in the Ballroom of QSNCC and most of the delegates came in their respective national costumes. The ceremony kicked off with a Thai cultural dance performance. Then the AFEO Chairman and Presidents of Member Organisations marched in. EIT President Assistant Professor Dr Thanes Weerasiri then declared CAFEO 35 closed. The AFEO Flag and the President's pin were presented to Singapore to signify the handing over of the event to The Institution of Engineers, Singapore, the host for CAFEO 36 in 2018.

Each country then gave a performance and the Malaysian delegation sang "*Aku Negaraku*".

On the whole, everyone had an enjoyable evening and left with fond memories of the time in Bangkok. IEM YES and its Excomm would like to thank EIT for organising CAFEO 35 and we look forward to CAFEO 36 in Singapore! ■

Half-Day Workshop on Energy Storage Application in Smart Power Systems

ELECTRONIC ENGINEERING TECHNICAL DIVISION

reported by

Ir. Bhuvendhraa Rudrusamy

Group photo of the speakers and workshop participants

The Electronic Engineering Technical Division and Electrical Engineering Technical, in collaboration with the Institution of Electrical Engineers Japan (IEEJ), jointly organised a half-day workshop on "Energy Storage Application in Smart Power Systems" on 5 November, 2017, at Penang Skill Development Centre (PSDC).

The programme chairman, Alex Looi Tink Huey, extended a warm welcome to the four speakers from Japan: Prof. Toshihisa Funabashi (Nagoya University), Prof. Masahide Hojo (Tokushima University), Assoc. Prof. Ryoichi Hara (Hokkaido University) and Dr Yoshinobu Ueda (Meidensha Corporation).

Prof. Toshihisa Funabashi introduced renewable energy sources and smart power systems. The domestic power supply in Japan comes from two major energy sources: Fossil (oil, coal, natural gas) and non-fossil fuel (nuclear, hydroelectric, geothermal, photovoltaic, wind).

The supply voltages are 100 ± 6V and 202 ± 20V, ranging from 50-60 Hz (depending on power traffic of the day) and are controlled by a battery energy storage system (BESS) which regulates variable output of energy source and power system to meet the energy demand in a distribution system.

The BESS system is able to meet the demand for fast charge and

discharge of power, is also easily installed and freely controlled by power conversion system (PCS).

The second topic, delivered by Prof. Masahide Hojo, was on the stabilisation of small-scale power systems using inverter control. Various renewable energy sources, such as photovoltaic and wind power injected to the main power grid, are difficult to balance the voltage phase. This is because renewable power generation is unpredictable and depends on energy source rather than demand.

The conventional voltage phasor control is unable to synchronise voltage phase at the coupling terminal point. So, to improve power quality in microgrid effectively, Prof. Hojo proposed voltage phasor regulation to overcome this shortcoming.

The third speaker, Assoc. Prof. Ryoichi Hara, talked about energy storage applications in microgrids. He said a local power and energy supply, equipped with distributed generations (DGs), energy storage system and information and communications technology (ICT) based distribution system, can improve power quality. Such a method also encourages renewable power supplies such as wind turbine and photovoltaic to be locally generated and stored in batteries. Therefore, a continuous power supply from a local energy management system can be assured in the event of power interruption in the main distribution system during an emergency.

The last speaker, Dr Yoshinobu Ueda, talked about successful power supply generation in rural areas. Initially, diesel engine-based power generation with a rating of 58kW was used for limited-time energy supply to 4 villages in central Laos.

A geographical study was then conducted and the existing power generator was replaced with a small-scale and local independent hybrid power system using cross-flow hydro turbine and photovoltaic systems. The new power generator supplied 110kW at 400V ± 10% with 50Hz ± 2%. Electrical double layer capacitor (ELDC) was used to stabilise variations in voltage and frequency for good power quality. The project took approximately 3 years to complete. Currently, it provides 24-hour power supply to 10 villages in Laos.

The 15 participants raised questions and exchanged ideas, especially about renewable energy such as bio-diesel since this was abundantly available in Malaysia. It was also in line with local policies that encouraged bio-diesel generation in reducing palm oil waste.

Before the workshop ended, Ir. Ting Chek Choon and Ir. Bhuvendhraa Rudrusamy, representing IEM Penang branch and Electronic Engineering Technical Division respectively, presented tokens of appreciation to the speakers. ■

Ir. Ting Chek Choon and Ir. Bhuvendhraa Rudrusamy representing a certification of appreciation to Prof. Toshihisa Funabashi and Assoc. Prof. Ryoichi Hara, respectively. Looking on is Alex Looi

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One-Day Seminar on Electrical Safety

ELECTRICAL ENGINEERING TECHNICAL DIVISION

reported by


Siow Chun Lim


Alex Looi Tink Huey

The Electrical Engineering Technical Division (EETD) and Suruhanjaya Tenaga (ST) jointly organised a one-day seminar on Electrical Safety on 7 December, 2017, at Wisma IEM. It was attended by over 70 participants.

The aim was to present a holistic view of the evolving electrical safety landscape by bringing together regulators, industrial experts, equipment manufacturers and suppliers, building and plant owners, developers, engineering firms and the academia.

After IEM Vice President Ir. Prof. Dr Jeffrey Chiang Choong Luin welcomed the participants, Encik Mohd. Elmi bin Anas, ST's Director of Safety Regulation, presented electrical safety statistics accumulated in studies done by ST. He also thanked EETD for its support in promoting electrical safety through awareness seminars, workshops and forums.

He then presented the roadmap for electrical safety enhancement which encompassed enhancing permit to work, ironing out issues with registration and tracing back the certificates issuance to competent persons especially via manual registration at one time. He also stressed that 11kV was now defined as MV (medium voltage) and 132kV and above as HV (high voltage). He then talked about ST's on-going initiatives, such as integrated registration with CIDB, enforcement on failure consignment test, increasing the frequency of written exams (from once to twice annually), a clear definition of high/low risk equipment, suspension and revocation of certificate of competency as well as accreditation of institution.

Next, he provided an overview of the way forward for ST, which included establishing guidelines for live working procedure, overseeing cable colour coding transition to as per IEC standards, mitigating the issue of insufficiency of competent persons in utilities, conducting root cause analysis of electrical accidents and crafting guidelines for high risk special locations. Finally, he concluded by reiterating the importance of electrical safety.

The second speaker, Encik Shahrilnazim, head of Unit Undang-Undang, spoke on Electricity Supply Act 1990 (Act 447) amendment 2015, saying that this was the second amendment; the first was in 2001. The amendment was done to ensure relevancy of the Act, to optimise electrical supply infrastructure to increase economic return, to improve competitiveness in electricity supply as well as to enhance safety aspects, customer protection and law enforcement. The amendment included governance framework, electrical safety management system, consumer protection, law enforcement, changing the term equipment to consumer electrical appliance, defining electrical product as other than electrical appliance, function and responsibility of ST, allowance of utilising electrical supply line for communication purposes and increasing the penalty for negligence and power theft. He ended his presentation by summarising the way forward for his unit.

The head of electrical safety development unit, Iffah Hannah Muluk, then presented facts and statistics on electrical safety: 35.5% of electrical incidents were due to improper installation and maintenance while 30.4% were due to the failure to practise safety work procedures. ST had been collecting this data from 2002.

She elaborated on the guidelines for electrical safety management plan and programme. The custodian, legal requirement, design and selection of material and equipment of installation have to be clearly defined. She emphasised that safety was paramount in installation design. Means of isolation have to be provisioned. Safety considerations according to relevant standards and regulations have to be given. To compute Maximum Demand, suitable diversity factors should be applied at design stage.

Three phase symmetrical short circuit current has to be calculated at the design stage. Electromagnetic disturbance, overcurrent and earth fault current should also be taken into consideration. Mechanical protection for cables inside walls, space factor, different circuit for different voltage level, cross sectional area of neutral and protective conductor and earth

The speakers

Ir. Prof. Dr Jeffrey Chiang Choong Luin presenting a token of appreciation to En. Mohd. Elmi bin Anas

wires, allowable voltage drop and cable colour should also not be omitted.

She also spoke about permit to work, Hazard Identification Risk Assessment and Risk Control (HIRARC) and emphasised that all electrical and fire incidents must be reported to ST.

Next, Ir. Rocky Wong delivered a talk on "ASEAN Standards-centric Arrangements for an Integrated and Cohesive AEC". AEC replaced AFTA since 31 December, 2015. This was accompanied by AEC Blueprint 2025. He highlighted the Agreement on the ASEAN Harmonised Electrical and Electronic Equipment (EEE) Regulatory Regime aimed at deepening and broadening cooperation in the electrical and electronic sectors to contribute to the realisation of the ASEAN Economic Community. He concluded by stressing on the aspirations of ASEAN stakeholders. This involves the mobility of electrical engineering works which requires electrical engineering services professionals certified to have the skills sets to deliver electrical engineering works power generation, electrical installations in buildings, electrical facilities as well as repair, overhaul and maintenance (ROM) services.

This was followed by a talk by TEEAM President Ir. Yong Ah Huat on "Electrical Safety – Contractors' Perspective". Electrical engineering contracting is a regulated industry. The handling of electricity must be done by competent, skilled and experienced electrical engineering services professionals. Electrical contractors must take heed of OSHE at work. Ir. Yong also highlighted a vital point, that the electrical engineering industry needs a team of certified skilled workers under the supervision of professional engineers. But the reality is that the industry is highly dependent on foreign workers, so the registration of these foreign workers must be enforced.

After the lunch break, Ir. Lim Kim Ten presented "Electrical Installations Standards & Electrical Safety Engineering" by introducing a wide range of standards pertaining to electrical installation such as protection, energy efficiency, power quality and installations in special locations, just to name a few. He then emphasised the importance of adherence to MS IEC 60364, MS 1979 and MS 1936.

After this, Ir. Ng Win Siau delivered a presentation on "Improving Electrical Safety Management in Operation and Maintenance". He talked about regulatory requirements, key considerations, strategies and competency. The level of risk shall be pre-determined before strategising on operation and maintenance works. He said engineers should continue to improve the electrical safety management process by keeping abreast with available technology and methodology.

Next, Puan Sharifah binti Jusoh, the head of Electrical & Electronics II Section in SIRIM QAS International Sdn. Bhd., presented "Electrical Products Testing and Certifications". She showed videos of how testing was carried out at SIRIM.

The last speaker, Prof. Dr Chandima Gomes from Universiti Putra Malaysia, presented "Safe Lightning Protection System" and explained the fundamentals of a lightning protection system which consisted of air termination, down conductor and earthing. He demonstrated a simple calculation to compare the potential which may build up when lightning strikes concrete or a conductor. He then gave a brief explanation on how surge protective devices (SPD) work and how these should be installed.

IEM EETD presented tokens of appreciation to the speakers. ■

Tan Sri Ir. Yusoff Best Final Year Project Competition 2017

IEM EDUCATION FUND

reported by

Ir. Dr Wang Hong Kok

The first Tan Sri Ir. Yusoff Best Final Year Project (FYP) Competition was initiated by IEM Education Fund and jointly conducted by IEM and The Institution of Engineering and Technology Malaysia (IET). The objective was to encourage engineering undergraduates to produce quality FYPs.

The competition was opened to all universities with accredited engineering programmes and each university could nominate its best FYP for participation.

The organising committee comprised Ir. Mohd. Khir bin Muhammad and Ir. Dr Wang Hong Kok (both from IEM) as well as Assoc. Prof. Dr Lai Weng Kin and Ir. Prof. Dr Leong Wai Yie (both from IET).

Invitation letters were sent to 37 accredited universities in August 2017, with responses from 24 universities when submissions closed.

All submissions were evaluated based on the aim, research objective, research questions, knowledge gap and major findings of their research.

The Organising Committee would like to thank the following judges for their contributions:

NO.	NAME	POST	UNIVERSITY
1.	Ir. Prof. Dr Jeffrey Chiang Choong Luin	Dean	SEGI University
2.	Assistant Professor Pang Jia Yew	Assistant Professor	Heriot-Watt University Malaysia
3.	Professor Madya Dr Kok Swee Leong	Associate Professor	Universiti Teknikal Malaysia Melaka
4.	Dr Baskaran Kasi	Senior Lecturer	Infrastructure University Kuala Lumpur
5.	Assistant Prof. Ir. Dr Idris Ismail	Associate Professor	Universiti Teknologi Petronas
6.	Ir. Prof. Dr Tee Tiam Ting	Professor	Universiti Tunku Abdul Rahman
7.	Ir. Dr Roslan bin Abdul Rahman	Adjunct Professor	Universiti Teknologi Malaysia

The President, Ir. Dr Tan Yean Chin presenting the Best Final Year Project Competition award to the winner

1ST TAN SRI IR. YUSOFF BEST FINAL YEAR PROJECT COMPETITION

Winner (RM1,000 + Certificate + Trophy)

Name : Yap Kian Kun
Universities: Malaysia – Japan International Institute of Technology (MJIIT), Universiti Teknologi Malaysia Kuala Lumpur (UTM)
FYP Title : Influences of Adsorbed Water on Adhesive Wear.
Discipline : Mechanical

SPECIAL PRIZE:

Major disciplines (RM300 cash + certificate)

1. Electronic
Name : Zech Chan Sze Zher
Universities: Universiti Tunku Abdul Rahman (UTAR)
FYP Title : Skin-Alike Soft Sensing Wearable Device.

2. Civil
Name : Foo Swee Wen
Universities: Universiti Malaysia Sarawak (UNIMAS)
FYP Title : 3D Modelling using solidworks – Wall-Mounted Rainwater Tank for Stormwater Detention in Commercial Areas.

3. Chemical
Name : Nur Fatin Ajeera binti Mohd Isa
Universities: Universiti Kebangsaan Malaysia (UKM)
FYP Title : Proses Penulenan Asid Suksinik Dari Medium Sintetik dan Campuran Kaldu Fermentasi Melalui Kedah Penghabluran.

There was no winner in the Electrical category. The Prize Giving ceremony was held on 21 April, 2018, during the IEM Annual General Meeting. ■

THE MONTHLY BULLETIN OF THE INSTITUTION OF ENGINEERS, MALAYSIA

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Turda Underground Salt Mine: A Major Tourist Attraction in Romania

Ir. Chin Mee Poon | *www.facebook.com/chinmeepoon*

Ir. Chin Mee Poon *is a retired civil engineer who derives a great deal of joy and satisfaction from travelling to different parts of the globe, capturing fascinating insights of the places and people he encounters and sharing his experiences with others through his photographs and writing.*

When my wife and I went backpacking in Romania and Bulgaria with a friend in 2017, we visited the Turda underground salt mine. Turda is a town with about 58,000 people and is located in Transylvania, Romania. This is the second underground salt mine I have visited, the first being Khewra Salt Mine in northern Pakistan which I visited in August 2001. Khewra is the oldest and second largest salt mine in the world.

Salt is now plentiful, but until the industrial revolution which began in mid-18th century, it was a rare commodity. In ancient Rome, salt was a symbol of prosperity and guests who sat near the host during a feast were said to be "above the salt" while those less favoured were "below the salt". In the Roman Empire, soldiers were given salarium (sal is the Latin word for salt) for the purchase of salt, and the word "salary" was derived therefrom. The English idiom "worth one's salt" simply means "deserving of one's pay" and to take a statement with "a grain (or pinch) of salt" means to accept it while maintaining a degree of scepticism about its truth. This phrase stems from the fact that food is more easily swallowed if taken with a small amount of salt.

Turda was an important salt-mining town from the 13th century to 1932, when the main mine was shut down. In 1992, the underground salt mine was turned into a tourist attraction. Access to the mine is by way of a 917m-long horizontal tunnel known as Franz Joseph Transportation Gallery. The tunnel was used to transport salt from the mine to the warehouses in Turda Noua. After the mine was shut down in 1932, the tunnel and mine chambers were used as a place of refuge by the people of Turda during WWII. From 1948 to 1992, these were used to store telemea, a Romanian specialty cheese.

Walking along the Franz Joseph Transportation Gallery, one will come across 6 individual mine chambers and a trolley room. The largest chamber, Rudolf Mine, is in the shape of a parallelepiped, with a rectangular base measuring 85m long and 50m wide. It now houses an amusement park. Access to the park from the Gallery some 40m above is by two stairways constructed during the operation of the mine and a lift that was erected in 2009.

The adjoining bell-shaped Terezia Mine has a 75m-diameter base and is 10m lower than Rudolf Mine. Once used for the disposal of rejected and unusable salt blocks, the base is now covered by a lake formed by the build-up of infiltration water, with a salt island in the centre. The lake has a maximum depth of 8m and is used for boating. The salt island is connected to the main amusement park level by a wooden footbridge.

Another chamber, Ghizela Mine near the Turda Noua end of the tunnel, has been adapted for balneal treatment since 2008.

Since its opening in 1992, Turda Underground Salt Mine has attracted millions of Romanian and foreign tourists. ■

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Updated May 2018

Tarikh: 24 April 2018

Kepada Semua Ahli,

SENARAI CALON-CALON YANG LAYAK MENDUDUKI TEMUDUGA PROFESIONAL TAHUN 2018

Berikut adalah senarai calon yang layak untuk menduduki Temuduga Profesional bagi tahun 2018.

Mengikut Undang-Undang Kecil IEM, Seksyen 3.8, nama-nama seperti tersenarai berikut diterbitkan sebagai calon-calon yang layak untuk menjadi Ahli Institusi, dengan syarat bahawa mereka lulus Temuduga Profesional tahun 2018.

Sekiranya terdapat Ahli Korporat yang mempunyai bantahan terhadap mana-mana calon yang didapati tidak sesuai untuk menduduki Temuduga Profesional, surat bantahan boleh dikemukakan kepada Setiausaha Kehormat, IEM. Surat bantahan hendaklah dikemukakan sebulan dari tarikh penerbitan dikeluarkan.

Ir. Mohd Khir bin Muhammad
Setiausaha Kehormat, IEM

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WEE LI KHUAN	BE HONS (UM) (MECHANICAL, 2013)
SHAHRUL BIN KAMARUDDIN	BE HONS (STRATHCLYDE) (MANUFACTURING & MANAGEMENT, 1996) MSc (BIRMINGHAM) (INTEGRATED MANUFACTURING SYSTEMS, 1999) PhD (BIRMINGHAM) (2003)
MUHAMMAD FAIRUZ BIN ABDUL JALAL	DIPL.-ING (RAVENSBURG-WEINGARTEN) (MECHANICAL, 2008) MSc (RAVENSBURG-WEINGARTEN) (MECHATRONICS, 2010)
MOHD KHAIRUL FADZLY BIN ABU BAKAR	BE HONS (UTHM) (MECHANICAL, 2005) ME (UTHM) (MECHANICAL, 2016)
MOHAMED FAZLY BIN EUSOFF	BSc HONS (THE OHIO STATE) (MECHANICAL, 1992)
MOHD ZORAIDI BIN IDRIS YAAHAP	BE HONS (UTM) (MECHANICAL, 2007)
YAP LEE LIP	BE HONS (UM) (MECHANICAL, 2014)
NUR AZURA BINTI ZEOL	BE HONS (USM) (MECHANICAL, 2007)
MOHD HAFIZAL BIN MATON	BE HONS (UNITEN) (MECHANICAL, 2006)
MUHAMMAD NAZMI BIN MAT NA'AIN	BE HONS (UTM) (MECHANICAL-AUTOMOTIVE, 2009)
NASROL BIN MANSOR	BE HONS (UiTM) (MECHANICAL, 2004)
NORAINI BINTI MOHD RAZALI	BE HONS (STRATHCLYDE) (MECHANICAL, 1997)
MOHD ASLAM BIN JUSOH	BE HONS (UMP) (MECHANICAL WITH MANUFACTURING, 2008)
MOHD SUDIN BIN MAT ISA	BE HONS (USM) (MECHANICAL, 2005)
RAHIZAR BIN RAMLI	BSc HONS (HARTFORD) (MECHANICAL, 1992) MESc (MALAYA) (STRUCTURAL DYNAMICS & ACOUSTICS, 1999) PhD (CARDIFF) (SYSTEMS ENGINEERING, 2006)
MOHD FAISAL BIN BAHARUDDIN	BE HONS (UiTM) (MECHANICAL, 2012)
MOHD MUSHRIF BIN ABD RAZAK	BE HONS (UTeM) (MECHANICAL-THERMAL FLUIDS, 2008)
AHMAD HUMAIZI BIN MOHAMAD	BSc HONS (CALIFORNIA STATE) (MECHANICAL, 2001)
NORRASMI BIN MOHAMED	BE HONS (UPM) (MECHANICAL/SYSTEM, 1996) ME (UTM) (ASSET MANAGEMENT AND FACILITY, 2011)
MOHAMED FATHUL HAKIMI B. MOHAMED HANAN	BE HONS (UNISEL) (MECHANICAL, 2008)
ARBAAH BINTI ABU	BE HONS (UPM) (MECHANICAL/SYSTEM, 1998)
NORMAH BINTI ISMAIL	BE HONS (UTM) (MECHANICAL, 1994)
NOOR AZLINA BINTI MOHD. SALLEH	BE HONS (IIUM) (MECHATRONICS, 2003) PhD (UiTM) (2014)
SIDEK BIN RASHID	BE HONS (UPM) (MECHANICAL/SYSTEM, 1996)
NORIZALUDIN BIN ABD KARIM	BE HONS (UiTM) (MECHANICAL, 2003) ME (UTM) (PROJECT & MANAGEMENT, 2014)
ABDUL RAHMAN BIN ABDULLAH	BE HONS (UNITEN) (MECHANICAL, 2007)
AHMAD SHAHRUZI BIN AHMAD	BE HONS (UKM) (MECHANICAL & MATERIALS, 1995)
LAM KEN MENG	ME (BIRMINGHAM) (MECHANICAL, 2010)
BOO TAU KUAN	BE HONS (GLAMORGAN) (MECHANICAL, 1995)
HO CHEE SIANG	BE HONS (SWINBURNE) (MECHANICAL, 2012)
AZMAN BIN ARIFIN	BE HONS (UiTM) (MECHANICAL, 2003)

KEJURUTERAAN CAD/CAM

KHODIJAH BINTI YAACUB	BE HONS (UM) (CAD/CAM, 2004)

KEJURUTERAAN BIOMEDIKAL

SABARIAH BINTI ABDULLAH	BE HONS (USM) (ELECTRONIC, 2006)

KEJURUTERAAN KOMPUTER

SITI NUR THAZLIAH BINTI MOHD THAZALI	BE HONS (UTM) (COMPUTER, 2004)

KEJURUTERAAN SUMBER AIR

MUHAMMAD ISKANDAR BIN SAPONG	BE HONS (UPM) (CIVIL, 2003)

PERPINDAHAN AHLI

No. Ahli	Nama	Kelayakan
KEJURUTERAAN AWAM		
38584	HERMANIZAH BINTI SA'ADON	BE HONS (UTM) (CIVIL, 2010)
88812	MOHD NAZIR BIN MOHD SIDEK	BE HONS (UiTM) (CIVIL, 2009)
46777	MOHD NASRI BIN MAAN	BE HONS (UTM) (CIVIL, 2010)
37238	RAFIZUL IN RAMLI	BE HONS (UTM) (CIVIL, 2006)
32142	HUN SIA WEN	BE HONS (USM) (CIVIL, 2011)
42279	TAN KAH KEAT	BE HONS (UMS) (CIVIL, 2010)
56558	WAN ZAIDI BIN WAN MAHAMOOD	BSc HONS (UTM) (CIVIL, 2011)
37209	ANUAR BIN NGAH	BE HONS (PORTSMOUTH) (CIVIL, 1997)
27881	LEONG KING YAP	BE HONS (USM) (CIVIL, 2007)
22596	TEH LIH PENG	BE HONS (ADELAIDE) (CIVIL, 2000)
81317	CHE MAT NAWI BIN MAT DAUD	BE HONS (UiTM) (CIVIL, 2001)
27430	AHMAD NAZMI BIN ZAIM	BE HONS (LIVERPOOL) (CIVIL, 2007) ME (UKM) (CIVIL, 2011)
54572	AHMAD AMIRUL AMIN BIN CHEK AYOB	BE HONS (UTM) (CIVIL, 2010)
90012	LIM WOOI KEONG	BE HONS (UTM) (CIVIL, 2013)
22720	MOHD SHAHROL BIN MD. SHARIF	BE HONS (UTM) (CIVIL, 2000)
43570	AHMAD ZAFUAN IBRAHIM BIN AHMAD ZAKI	BE HONS (UNITEN) (CIVIL 2009)
39196	SAIFUL ADLI BIN ABDUL KARIM	BE HONS (UTM) (CIVIL, 2007)
59114	ADAM HUSSARY BIN AHMAD	BE HONS (UNIMAS) (CIVIL, 2010)
29784	MOHD SAYUTI BIN YUSOF	BE HONS (UNITEN) (CIVIL, 2004)
42036	NOR AZIYATIMAH BINTI ABD MUTALIB	BE HONS (UiTM) (CIVIL, 2007) MSc (UiTM) (GEOTECHNICAL, 2013)
24295	RAMLI BIN ISHAK	BE HONS (UiTM) (CIVIL, 2004)
28218	WAN NOOR ATIMMI BINTI WAN AB MAJID	BE HONS (UTM) (CIVIL, 2008) ME (UTM) (STRUCTURAL, 2010)
26382	EDNA LUNCHI	BE HONS (USM) (CIVIL, 2001)
73278	ATHIRA BINTI ABDULLAH	BE HONS (UTM) (CIVIL, 2011) MSc (UTM) (CONSTRUCTION MANAGEMENT, 2012)
37241	ROSMAWATI BINTI MAMAT	BE HONS (UMP) (CIVIL, 2007) ME (UTM) (TRANSPORTATION & HIGHWAY, 2009)
37214	HAFEZAA DZULIEANAA BINTI MD. PUZI	BE HONS (UiTM) (CIVIL, 2006)
42000	AISHAHTURIZDAH BINTI ASHGUL	BE HONS (USM) (CIVIL, 2005) ME (UPM) (HIGHWAY & TRANSPORTATION, 2013)
23347	NOORHAYATI BINTI ABD HAMID	BE HONS (UiTM) (CIVIL, 2005)
56145	HAFIZAN BIN MOHD SALLEH	BE HONS (UTHM) (CIVIL, 2012)
55878	EDGAR JR. JOE	BE HONS (UNIMAS) (CIVIL, 2010)
43457	WAN NOORUL HAFILAH BT WAN ARIFFIN	BE HONS (UPM) (CIVIL, 2004)
28808	ROZIANA BINTI MAHMOOD	BE HONS (USM) (CIVIL, 2002) ME (UPM) (STRUCTURAL & CONSTRUCTION, 2011)
25848	ROSHIDY NASROL BIN ABU BAKAR	BE HONS (UTM) (CIVIL, 2002)
13665	MOHD PAKHARI BIN CHIK	BSc (ALABAMA) (CIVIL, 1987)
78465	MOHD FAHKERY BIN HASSAN	BE HONS (UiTM) (CIVIL, 2012)
38649	MUN YEW FAI	BE HONS (MALAYA) (CIVIL, 2008)
33539	AZMAN BIN AHMAD	BE HONS (UiTM) (CIVIL, 2011)
76834	LEE JEY HWAN	BE HONS (NOTTINGHAM) (CIVIL, 2010)
60045	CHIN WOON KHEONG	BE HONS (KLiUC) (CIVIL, 2010)
KEJURUTERAAN ELEKTRIKAL		
52439	ZULKARNAIN BIN IBRAHIM	BE HONS (UNITEN) (ELECTRICAL POWER, 2011)
72729	ZAHID BIN JAMUDIN	BE HONS (UMP) (POWER SYSTEMS, 2012)
79022	MOHD AMIRUL FAHMI BIN MOHD LAZIM	BE HONS (RYUKYUS) (ELECTRICAL & ELECTRONIC, 2010)
48097	FAREEZAN SALHA BINTI MOHAMED AZAHAR	BE HONS (UTeM) (INDUSTRIAL POWER, 2006) MSc (UiTM) (INTEGRATED CONSTRUCTION PROJECT MANAGEMENT, 2010)
80867	MOHD HAFIZ BIN JUSOH	BE HONS (ELECTRICAL, 2008)
50156	MOHD HAFIFI BIN MUHAMMAD HANAFIAH	BE HONS (UTeM) (ELECTRICAL, 2008)
41249	KU HONG LEONG	BE HONS (UPM) (ELECTRICAL
32590	IRWAN BIN ISMAIL	BE HONS (UTP) (ELECTRICAL & ELECTRONICS, 2003)
16670	CHOON KOK HOO	BE HONS (SUNDERLAND) (ELECTRICAL & ELECTRONIC, 1993)
71157	FOONG TZE HOE	BE HONS (USM) (ELECTRICAL, 2013)
37267	HERNNIE JOHN	BE HONS (UMS) (ELECTRICAL & ELECTRONIC, 2007)
37796	MOHAMAD ERWAN BIN RAMLY	BE HONS (UNITEN) (ELECTRICAL POWER, 2009)

77635	YAP KUAN HOW	BE HONS (UNITEN) (ELECTRICAL & ELECTRONICS, 2013)
88975	AMRAN BIN MOHAMAD NAYAN	BE HONS (UTHM) (ELECTRICAL, 2011) ME (UniKL) (MANUFACTURING, 2017)
84851	ABD AFFIDZ BIN ABD MOKMIN	BE HONS (UNITEN) (ELECTRICAL POWER, 2013)
79319	JAMES SIM WEI HONG	BE HONS (UTM) (ELECTRICAL, 2010)
49622	AFFIEZAL BIN ADNAN	BE HONS (UNI. OF LONDON) (ELECTRICAL & ELECTRONIC, 2001) ME (UNITEN) (ENGINEERING MANAGEMENT, 2017)
28577	WONG JIANHUI	BE HONS (UTAR) (ELECTRICAL & ELECTRONIC, 2009)
22456	WONG SIONG SHYONG	BE HONS (UTM) (ELECTRICAL, 2000)
76189	AG. SHAHRIN AFWAN BIN AG TAHIR	BE HONS (UTP) (ELECTRICAL & ELECTRONICS, 2011)
59068	CHIA HUA MING	BE HONS (USM) (ELECTRICAL, 2012)
78420	MOHD FADHILLULLAH BIN ABDULLAH	BE HONS (UiTM) (ELECTRICAL, 2012)
55866	NOOR SHAH RIZAL BIN ABDUL MANAP	BE HONS (UNIMAS) (ELECTRICAL & ELECTRONIC, 2010)
39143	AZLI HILMI BIN FAUZI @ MAT RAWI	BE HONS (UKM) (ELECTRICAL & ELECTRONIC, 2005)
20962	TAN JOO KHIONG	BE HONS (CANTERBURY) (ELECTRICAL & ELECTRONIC, 1997) CONVERSION (UNITEN) (2014)
34331	TAN SEE HEAN	BSc (WICHITA STATE) (ELECTRICAL, 2004)
53734	MOHD TAUFEK BIN YACOB	BSc (OHIO STATE) (ELECTRICAL & COMPUTER, 2007)
79391	SIOW CHUN LIM	ME (UPM) (ELECTRICAL & ELECTRONIC, 2011) PhD (UPM) (ELECTRICAL POWER, 2014)
85486	TAN KIA CHUN	BE HONS (UTAR) (ELECTRONICS, 2013) CONVERSION (UNITEN) (2015)
54290	BENEE CHNG YU LENG	BE HONS (MMU) (ELECTRICAL, 2011)
93849	MOHD YASMER BIN DAUD	BE HONS (UTM) (ELECTRICAL, 2009)

KEJURUTERAAN ELEKTRONIK

61161	YUSRI BIN HARUN	BE HONS (YOKOHAMA) (ELECTRICAL & COMPUTER, 2003)
79574	SAMSUL BIN SETUMIN	BE HONS (SURREY) (ELECTRONIC, 2006) ME (UTM) (ELECTRICAL-ELECTRONICS & TELECOMMUNICATION, 2010)
90134	NANI FADLINA BINTI NAIM	BE HONS (UTM) (ELECTRICAL-ELECTRONICS, 2005) ME (UTM) (ELECTRICAL-ELECTRONICS & TELECOMMUNICATIONS, 2007) PhD (UKM) (ELECTRICAL, ELECTRONIC & TELECOMMUNICATION, 2007)
79054	AZITA LAILY BINTI YUSOF	BE HONS (UKM) (ELECTRICAL, ELECTRONICS & SYSTEMS, 1999) ME (UKM) (COMMUNICATION & COMPUTER, 2000) PhD (UKM) (ELECTRICAL, ELECTRONICS & SYSTEMS, 2015)
65238	AZIM FAUZA BIN MD KHAIR	BE HONS (UTeM) (INDUSTRIAL ELECTRONICS, 2008)
59063	PRAJINDRA SANKAR KRISHNAN	BE HONS (UNITEN) (ELECTRICAL & ELECTRONICS, 2008) ME (UNITEN) (ELECTRICAL, 2009)
58731	ZUBAIR BIN JUZAR	BE HONS (MONASH) (ELECTRICAL & COMPUTER SYSTEMS, 2012)
21859	YAP BOON KAR	BE HONS (UNITEN) (ELECTRICAL & ELECTRONIC, 2002) MSc (IMPERIAL COLLEGE) (OPTICS & PHOTONICS, 2003) PhD (IMPERIAL COLLEGE) (2008)

KEJURUTERAAN KOMUNIKASI

64571	ABDULLAH 'IRFAN BIN ABDULLAH	BE HONS (IIUM) (COMMUNICATION, 2006) MSc (UiTM) (TELECOMMUNICATION & INFORMATION, 2016)

KEJURUTERAAN BIOMEDIKAL

95827	SITI NORAINI BINTI SULAIMAN	BE HONS (USM) (ELECTRICAL & ELECTRONIC, 2000) MSc (USM) (ELECTRICAL & ELECTRONIC, 2003) PhD (USM) (2012)

KEJURUTERAAN SUMBER AIR

27055	MOHD RASHID BIN MOHD RADZI	BE HONS (UiTM) (CIVIL, 2006) MSc (UiTM) (WATER RESOURCES, 2012)

KEJURUTERAAN TELEKOMUNIKASI

69494	HAFIZAH BINTI ZAINOL ABIDIN	ME (IMPERIAL) (ELECTRICAL & ELECTRONIC, 2009)
24763	ZETI AKMA BINTI RHAZALI	BE HONS (UKM) (ELECTRICAL, ELECTRONIC & SYSTEM, 1996) MSc (UKM) (ELECTRICAL, ELECTRONIC & SYSTEM, 2003) PhD (UMP) (ELECTRICAL, 2014)
17552	AZIZI BIN MOHD NOOR	BE HONS (UiTM) (ELECTRICAL, 1998) MSc (UiTM) (IT, 2004)

KEJURUTERAAN MEKANIKAL

50024	DATU MUHD FAISAL BIN DATU LIMAN	BE HONS (UPNM) (MECHANICAL, 2012)
76209	TAN KIEN SENG	BE HONS (UTAR) (MECHANICAL, 2014)
69507	HUDSON FOO REN HAW	BE HONS (RMIT) (MECHANICAL, 2011)
33833	NEVILLE CHOO JUN HAO	BE HONS (MONASH) (MECHANICAL, 2007)
56543	SANTHA A/P RAMAN	BE HONS (UTHM) (MECHANICAL, 2006)
43212	HAIRULNIZAM BIN HASSIN	BE HONS (UTM) (MECHANICAL, 2002)
42492	HO CHOON FEI	BE HONS (UKM) (MECHANICAL, 2005)
24222	MOHAMAD AMIR BIN HASHIM	BE HONS (UNITEN) (MECHANICAL, 2002)
52228	LIM PAY YII	BE HONS (UNIMAS) (MECHANICAL & MANUFACTURING, 2012)
43808	MOHD FADZLY BIN SAMSUDIN	BE HONS (UKM) (MECHANICAL, 2008)
42026	MOHD HATTA BIN MAHFULZ	BE HONS (UNITEN) (MECHANICAL, 2007)
26524	MOHD MUJIB BIN MD DERUS	BE HONS (UKM) (MECHANICAL, 2001)
27341	SIVABALAN A/L TANAPALA	BE HONS (UTHM) (MECHANICAL, 2007) ME (UM) (2013)
80449	OH HOE CHEONG	BE HONS (UNIMAS) (MECHANICAL, 2014)
38597	GOPINATHAN A/L MUTHAIYAH	BE HONS (UNITEN) (MECHANICAL, 2007) ME (UNITEN) (MECHANICAL, 2014)
20761	SALLEHUDDIN BIN ADENAN	BE HONS (UPM) (MECHANICAL, 2004)
48065	YANG KOK WEI	BE HONS (UTeM) (STRUCTRURE & MATERIAL, 2008) ME (UPM) (ENGINEERING MANAGEMENT, 2016)
60678	HILMI BIN ABDULLAH	BSc (KOREA) (MECHANICAL, 2008) MSc (BRUNEL) (ENGINEERING MANAGEMENT, 2015)
45344	MOHD KHAIRY BIN KAHAR	BE HONS (UTM) (MARINE TECHNOLOGY, 2009) ME (UTP) (ASSET MANAGEMENT & MAINTENANCE, 2017)
41216	MOHD SAFARUL IZMI BIN SAIDIN	BE HONS (UTHM) (MECHANICAL, 2006)
59129	AHMAD FAIZUL BIN ISMAIL @ ZAINAL ABIDIN	BE HONS (UKM) (MECHANICAL, 2008)
41211	MOHD HAZIZI BIN MOHD HANAPIAH	BE HONS (UTM) (MECHANICAL, 2000)
66385	ROZMAN BIN GHAZULI	BE HONS (USM) (MECHANICAL, 2005)
43748	MOHD ZAMRI BIN HASSAN	BE HONS (KUTKM) (MECHANICAL-THERMAL FLUIDS, 2006)
96895	HAFIS BIN MD. ISHAK	BE HONS (UTHM) (MECHANICAL, 2007)
48920	FAIEZA BINTI ABDUL AZIZ	BE HONS (BRADFORD) (MECHANICAL, 1997) MSc (UPM) (MECHANICAL, 2002) PhD (CARDIFF) (SYSTEMS ENGINEERING, 2006)
30578	AL EMRAN BIN ISMAIL	BE HONS (UPM) (MECHANICAL, 2000) MSc (UiTM) (MECHANICAL, 2004) PhD (UKM) (2012)
32345	HUSNUL AMIR BIN TAJARUDIN	BE HONS (UiTM) (ELECTRICAL, 2010)
41194	MOHD KHAIRUL BIN MAHTAR	BE HONS (UTM) (MECHANICAL, 2000)
58028	HAFIZZUDIN BIN KASIM	BE HONS (UNITEN) (MECHANICAL, 2012) ME (UNITEN) (MECHANICAL, 2017)
70557	BRYAN NG HORNG HENG	BE HONS (UTAR) (MECHANICAL, 2014)
39789	MOHAMMAD RHADHI BIN KAMSHAH	BE HONS (UTHM) (MECHANICAL, 2011)

PERMOHONAN BARU/PEMINDAHAN MENJADI AHLI KORPORAT

No. Ahli	Nama	Kelayakan
KEJURUTERAAN AWAM		
25464	RENGA RAO A/L KRISHNAMOORTHY	BE HONS (USM) (CIVIL, 2000) MSc (USM) (STRUCTURE, 2001) PhD (MANCHESTER) (STRUCTURAL FIRE, 2011)
KEJURUTERAAN ELEKTRONIK		
22236	SITI ANOM AHMAD	BE HONS (UPM) (ELECTRONIC-COMPUTER, 1999) MSc (SOUTHAMPTON) (MICROELECTRONICS SYSTEM DESIGN, 2005) PhD (SOUTHAMPTON) (ELECTRONICS & ELECTRICAL, 2009)
KEJURUTERAAN ELEKTRIKAL		
72642	MOHAMAD ZAID BIN MOHAMAD ALI	BSc (RENSSELAER, USA) (ELECTRICAL POWER, 2005) CONVERSION (UNITEN) (2012) ME (UM) (2013

IEM DIARY OF EVENTS

Title: 2-Day Course on "Practical Approach to Residual Soil Behaviour for Geotechnical Engineering Analysis, Design and Construction (RSGE)"

18-19 June 2018

Organised by: Geotechnical Engineering Technical Division
Time : 9.00 a.m. - 5.00 p.m.
CPD/PDP : 15

Title: 2-Day Course on "Practical Approach to Residual Soil Behaviour for Geotechnical Engineering Analysis, Design and Construction (RSGE)"

21-22 June 2018

Organised by: Geotechnical Engineering Technical Division
Time : 9.00 a.m. - 5.00 p.m.
CPD/PDP : 15

Kindly note that the scheduled events are subject to change. Please visit the IEM website at www.myiem.org.my for more information on the upcoming events.

PERMOHONAN BARU / PEMINDAHAN AHLI

Persidangan Majlis IEM yang ke-**411** pada **19 Mac 2018** telah meluluskan sebanyak **782** ahli untuk permohonan baru dan permindahan ahli. Berikut adalah senarai ahli mengikut disiplin kejuruteraan:

DISIPLIN	GRED KEAHLIAN									
	FELO	SENIOR	AHLI	COMPANION	SISWAZAH	"INCORPORATED"	"AFFILIATE"	"ASSOCIATE"	SISWA	JUMLAH
Aeronautikal					1					1
Aeroangkasa					1					1
Pertanian					1					1
Biokimia					1					1
Bioperubatan					2				21	23
Kimia			1	1	18				103	123
Awam			23	5	69				85	182
Komunikasi			1						1	2
Komputer					2					2
Komputer & Komunikasi									1	1
Elektrikal & Elektronik									17	17
Elektrikal			15	2	19	3			30	69
Elektronik			2	1	12		1		38	54
Alam Sekitar					1				9	10
Industri					1					1
Kawalan & Instrumentasi			3							3
Pembuatan			2		4				5	11
Marin					1					1
Bahan			1		1					2
Mekanikal	1		8	1	36				189	235
Mekatronik					6				19	25
Arkitek Naval									3	3
Petroleum					1				6	7
Telekomunikasi					2					2
Nuklear									4	4
Lain-lain									1	1
JUMLAH	**1**	**0**	**56**	**10**	**179**	**3**	**1**	**0**	**532**	**782**

Senarai nama ahli dan kelayakan adalah seperti di bawah. Institusi mengucapkan tahniah kepada ahli yang telah berjaya.

Ir. Yap Soon Hoe
Setiausaha Kehormat, Institusi Jurutera Malaysia, Sesi 2017/2018

PEMINDAHAN AHLI KEPADA AHLI FELLOW

No. Ahli	Nama	Kelayakan
KEJURUTERAAN MEKANIKAL		
20112	MOHD RADZI BIN SALLEH	BE HONS (MALAYA) (MECHANICAL, 1977)

PEMINDAHAN AHLI KEPADA AHLI KORPORAT

No. Ahli	Nama	Kelayakan
KEJURUTERAAN AWAM		
39179	AHMED FAIZAL BIN AB LLAH	BE HONS (UTM) (CIVIL, 2009)
11736	CHANG KUET SHIAN	BE HONS (TASMANIA) (CIVIL, 1988) MSC (MURDOCH) (ENVIRONMENTAL SCIENCE, 2004)
30651	ELIYANI YAZREEN BINTI A. RANI	BE HONS (UITM) (CIVIL, 2006)
32090	LIM CHEE HIN	BE HONS (USM) (CIVIL, 2011)
54317	LIM EU SHENG, MARCUS	ME HONS (NOTTINGHAM) (CIVIL, 2011)
66052	LING EE GEE	BE HONS (RMIT) (CIVIL & INFRASTRUCTURE, 2010)
29029	MAZZUWAN BIN MOHD DIAH	BE HONS (UTM) (CIVIL, 2001)
24764	MOHAMAD RODZI BIN HASAN	BE HONS (UTM) (CIVIL, 2002)
28318	MOHD ERIE HUSAIRRIE BIN ISMAIL	BE HONS (UTM) (CIVIL, 2007)
37153	MOHD MARWAN BIN NUR ANUAR	BE HONS (UTHM) (CIVIL, 2011)
41542	MUHAMAD YATIMI BIN ABDUL RASID	BE HONS (UTHM) (CIVIL, 2012)
51727	WONG SOON YONG	BSC (NATIONAL TAIWAN) 9CIVIL, 2011) MSC (SHEFFIELD) (STRUCTURAL, 2012)
47826	YAP WOOI HONG	BE HONS (USM) (CIVIL, 2012)
44616	YII HOCK WONG	BE HONS (SWINBURNE) (CIVIL, 2001)
KEJURUTERAAN BAHAN		
66812	LAI MUN KOU	BE HONS (UM) (MATERIALS, 2002) MESC (UM) (2017)
KEJURUTERAAN ELEKTRONIK		
90775	ALIFF BIN LATIP	BE HONS (UTM) (COMPUTER, 2010)
79369	YUSNANI BINTI MOHD YUSSOFF	BE HONS (USM) (ELECTRICAL & ELECTRONIC, 1998)
KEJURUTERAAN ELEKTRIKAL		
87517	AHMAD FAUZI BIN OTHMAN	BE HONS (UTM) (ELECTRICAL, 2005)
25417	CHOW WAI MUN	BE HONS (UTM) (ELECTRICAL, 2000)
49563	GANESON S/L SIVAPPRAGASAM	BE HONS (UNITEN) (ELECTRICAL & ELECTRONIC, 2008)
66364	IZHAM HAMEIRY BIN MOHAMMAD DIN	BE HONS (UITM) (ELECTRICAL, 2010)
70454	SYAZWAN BIN JASNI	BE HONS (UITM) (ELECTRICAL, 2007)
78416	TAY ENG CHONG	BE HONS (MONASH) (ELECTRICAL & COMPUTER SYSTEMS, 2013)
KEJURUTERAAN KAWALAN & INSTRUMENTASI		
93586	MOHD SUFIAN BIN MD HASSAN	BE HONS (UTHM) (ELECTRICAL, 2012)
42144	MUHAMMAD NUR IMAN BIN ZAHARI	BE HONS (UTP) (ELECTRICAL & ELECTRONICS, 2011)
KEJURUTERAAN KIMIA		
54310	CHANG SIEW TEEN	BE HONS (SHEFFIELD) (CHEMICAL, 2005) MSC (ENVIRONMENTAL & ENERGY, 2006)
KEJURUTERAAN MEKANIKAL		
54518	AHMAD FAIZAL BIN SALLEH	BE HONS (NAGOYA) (MECHANICAL, 1998) ME (UTM) (MECHANICAL, 2006)
27329	AHMAD HAZLEY BIN MAT YUSOH	BE HONS (UTEM) (STRUCTURE & MATERIAL, 2008)
55891	CHIN CHEE CHOONG	BE HONS (UNITEN) (MECHANICAL, 2005)
18698	KARTHIGEYAN A/L NALLASAMY	BE HONS (UPM) (MECHANICAL SYSTEM, 1999)
30852	MOHD KHIDHIR BIN ZULKIFLI	BE HONS (UTM) (MECHANICAL, 2011)
47639	MOHD NASIR BIN MAT SAAD	BE HONS (USM) (MECHANICAL, 2006)
80199	TAN YONG CHAI	BE HONS (PORTSMOUTH) (MECHANICAL, 2000)
KEJURUTERAAN PEMBUATAN		
66402	MOHAMMAD YEAKUB ALI	BSC (DHAKA) (MECHANICAL, 1992) ME (ASIA INS.OF TECH) (MANUFACTURING SYSTEMS, 1997)
58686	NG TAN CHING	BE HONS (UTEM) (MANUFACTURING & MANAGEMENT, 2009)

PERMOHONAN MENJADI AHLI KORPORAT

Nama	Kelayakan
KEJURUTERAAN AWAM	
ALI AMRAN BIN KAMARUZAMAN	BE HONS (UM) (CIVIL, 2005)
BERNARD TOIDES	BE HONS (UKM) (CIVIL & STRUCTURAL, 1999)
MOHAMMAD NIZAN BIN EDRIS	BE HONS (UTM) (CIVIL, 2000)
MOHD SAID BIN SIDIK	BE HONS (UTM) (CIVIL, 1984)
NORMAYASUARIA BINTI ABD MALEK	BE HONS (USM) 9CIVIL, 2002)
RAMENDRA LOGANATHAN	BE HONS (UTM) (CIVIL, 2000) MSc (UM) (PROJECT MANAGEMENT, 2015)
SAFINAS BINTI SAROJI	BE HONS (UiTM) (CIVIL, 2002)
TAN LAY BOON	BE HONS (UPM) (CIVIL, 2006)
TENGKU SURIATI BINTI TENGKU YUSOFF	BE HONS (UiTM) (CIVIL, 1997)
KEJURUTERAAN ELEKTRIKAL	
EZREE SUHAILY BT MD SHARIF	BE HONS (UiTM) (ELECTRICAL, 2006)
HANIN DHIYA BIN SENIN	BE HONS (UTM) (ELECTRICAL, 2009)
MOHD HAZRUL BIN ABU HASSAN	BE HONS (UTM) (ELECTRICAL, 2007)
MOHD SAUQI BIN SAMSUDIN	BE HONS (UMP) (ELECTRICAL, 2009)
MOHD TAQUIDIN BIN JUNOH	BE HONS (UKM) (ELECTRICAL & ELECTRONIC, 2008)
MUHAMMAD ZAMRI BIN RAMLI	BE HONS (UiTM) (ELECTRICAL, 2003)
ROSNIZAH BINTI GHAZALI	BE (STRATHCLYDE) (ELECTRONIC & ELECTRICAL, 1997)
TAN BOOK CHOOI	BE HONS (UM) (ELECTRICAL, 2006)
FADLI HAFIZ BIN AHMAD RUSDI	BE HONS (UNIMAP) (ELECTRICAL SYSTEM, 2007) ME (UTM) (ELECTRICAL-POWER, 2015)
KEJURUTERAAN KAWALAN & INSTRUMENTASI	
KHAIRUL A'ALAM BIN ABDUL GHANI	BE HONS (UMP) (ELECTRICAL POWER SYSTEM, 2008)
MOHD HELMI ALSYUKRAN BIN ABD MALIK	BE HONS (UTM) (ELECTRICAL, 2008)
MOMAS MADON	BE HONS (LEEDS) (ELECTRICAL & ELECTRONIC, 1988)
KEJURUTERAAN KOMUNIKASI	
MOHD RASHIDI BIN CHE BESON	BE HONS (UniMAP) (COMMUNICATION, 2007) MSc (UNIMAP) (COMMUNICATION, 2011)
KEJURUTERAAN MEKANIKAL	
FADZLIN SARAH MOHD GHAZALI	BE HONS (UiTM) (MECHANICAL, 2006)
KEJURUTERAAN SUMBER MINERAL	
SHUKERI BIN ISMAIL	BE HONS (USM) (MINERAL RESOURCES, 1993)

PERMOHONAN MENJADI AHLI 'COMPANION'

No. Ahli	Nama	Kelayakan
KEJURUTERAAN AWAM		
97476	MOHAMAD HELMIY BIN LLAH	B.E.HONS.(UITM)(CIVIL, 2010)
97381	NOOR ZARINA BT MOHD NAZIR	B.E.HONS.(UTM)(CIVIL, 2002) M.SC.(UTM)(CONSTRUCTION MANAGEMENT, 2007)
97478	MOHD AZRI BIN HASSAN @ YUSOFF	B.E.HONS.(UTM)(CIVIL, 2003)
KEJURUTERAAN ELEKTRIKAL		
97477	JEMMY @ MOHD JEMMY BIN MOHD ROHANI	B.E.HONS.(UTM)(ELECTRICAL-INSTRUMENTATION & CONTROL, 2009)
KEJURUTERAAN ELEKTRONIK		
97379	DZATUL ITHRI BINTI AMRAN	B.E.HONS.(UNIMAS) (ELECTRONICS & COMPUTER, 2004) M.SC.(UTM)(BIOMEDICAL, 2017)
KEJURUTERAAN KIMIA		
97378	FAIRUOZE ROSLIN	B.E.HONS.(USM)(CHEMICAL, 2007)
KEJURUTERAAN MEKANIKAL		
97380	SUFFIAN BIN TAHIR	B.E.HONS.(UTM)(MECHANICAL-AERONAUTICS, 2004)

PEMINDAHAN KEPADA AHLI SISWAZAH

No. Ahli	Nama	Kelayakan
KEJURUTERAAN ALAM SEKITAR		
84731	CHEAH JIN XUN	B.E.HONS.(MALAYA) (ENVIRONMENTAL, 2016)
KEJURUTERAAN AWAM		
71595	AMERA DIANA BINTI JURIL	B.E.HONS.(IUKL)(CIVIL, 2015)
72271	MUHAMMAD FAIZ BIN KAMARUDDIN	B.E.HONS.(IUKL)(CIVIL, 2016)
81245	WONG CHU SIONG	B.E.HONS.(IUKL)(CIVIL, 2016)
44707	FONG YEAN SEK, EMILY	B.E.HONS.(SWINBURNE UNI. OF TECH.)(CIVIL, 2013)
33170	SITI SARAH BINTI RAMLI	B.E.HONS.(UITM)(CIVIL, 2010)
33539	AZMAN BIN AHMAD	B.E.HONS.(UITM)(CIVIL, 2011)
53588	CLARE YVONNE ANAK REHEN	B.E.HONS.(UKM)(CIVIL & STRUCTURAL, 2013)
81524	KWAN HUI YEE	B.E.HONS.(UMP)(CIVIL, 2017)
41524	MUHAMMAD DANIAL BIN ISMAIL	B.E.HONS.(UMP)(CIVIL-ENVIRONMENTAL, 2013)
30142	GUE CHANG YE	B.E.HONS.(UNITEN)(CIVIL, 2011) PHD.(UNI. OF CAMBRIDGE) (2017)
77922	SITI AISYAH BINTI KAMARUDIN	B.E.HONS.(UNITEN)(CIVIL, 2017)
27281	IVAN LASANUL TSEN SAM PAK	B.E.HONS.(USM)(CIVIL, 2006)
28267	YOW CHEE YEN	B.E.HONS.(USM)(CIVIL, 2009)
41428	NOR HIDAYAH BINTI SARI	B.E.HONS.(UTHM)(CIVIL, 2011)
41654	MOHD SHAIFUL ANWAR BIN YUNUS	B.E.HONS.(UTHM)(CIVIL, 2012)
41565	SHAIFUL BIN MAT SIDEK	B.E.HONS.(UTHM)(CIVIL, 2012)
52845	CHEAH SHENG HONG	B.E.HONS.(UTHM)(CIVIL, 2013)
40296	NORFARAHSHILA BINTI ROSLAN	B.E.HONS.(UTM)(CIVIL, 2011)
69696	CHIN JUN YEH	B.E.HONS.(UTM)(CIVIL, 2014)
44893	SURAYA BINTI ZAZALE	B.E.HONS.(UTM)(CIVIL, 2014) M.SC.(HERIOT-WATT UNI.) (CONSTRUCTION PROJECT MANAGEMENT, 2015)
74494	MUHAMMAD FIQRY BIN SELAMAT	B.E.HONS.(UTM)(CIVIL, 2016)
68677	ALMANDO BIN ABBIL	B.E.HONS.(UTM)(CIVIL, 2017)
68704	WERSON BIN JERRY	B.E.HONS.(UTM)(CIVIL, 2017)
47428	MOHAMAD ZULKARNAIN BIN MOHAMED MOKHTAR	B.E.HONS.(UTP)(CIVIL, 2015)
47450	NUR FARAHAIN BINTI MOHD IDRUS	B.E.HONS.(UTP)(CIVIL, 2015)
KEJURUTERAAN BIOKIMIA		
88118	EMIR ASLAM BIN THOPATALAM	B.E.HONS.(IIUM)(BIOCHEMICAL-BIOTECHNOLOGY, 2017)
KEJURUTERAAN BIOPERUBATAN		
86987	LIM HAN XIANG	B.E.HONS.(UTAR SG LONG) (BIOMEDICAL, 2018)
KEJURUTERAAN ELEKTRIKAL		
67968	MOHAMAD SHAMSUL ARIF BIN ENDI RAHMAN	B.E.HONS.(UITM)(ELECTRICAL & ELECTRONIC, 2017)
64703	KUMARESEN GOVINDASAMY	B.E.HONS.(UNITEN) (ELECTRICAL POWER, 2015)
68058	LIM YIREN	B.E.HONS.(UTAR SG LONG) (ELECTRICAL & ELECTRONIC, 2018)
34704	MD NAZMI BIN HASSAN	B.E.HONS.(UTEM)(ELECTRICAL-INDUSTRIAL POWER, 2009)
34661	MOHD FAHMI SOBRIE BIN FAUDZI	B.E.HONS.(UTEM)(ELECTRICAL-POWER ELECTRONIC & DRIVE, 2009)
KEJURUTERAAN ELEKTRONIK		
29335	SITI NURSYUHADA BINTI MAHSAHIRUN	B.E.(UMP)(ELECTRONICS, 2010) M.E.(UMP)(MECHATRONIC, 2017)
51526	AFFIRA MASTIKA BINTI ABDUL AZID	B.E.HONS.(UITM) (ELECTRONICS-COMMUNICATION, 2014)
72544	LEE JUN YI	B.E.HONS.(UTAR KAMPAR) (ELECTRONIC, 2018)
KEJURUTERAAN INDUSTRI		
69611	JASPER CHAN	B.E.HONS.(UTAR KAMPAR) (INDUSTRIAL, 2018)
KEJURUTERAAN KIMIA		
29428	DR NOR ILIA ANISA BINTI ARIS	B.E.(UMP)(CHEMICAL, 2009) PHD.(UTM)(2016)
48007	AIMUNI IZZATI BINTI MOHAMMAD YATIM	B.E.(UMP)(CHEMICAL, 2012)
27696	LAI JIA CHI	B.E.HONS.(CURTIN UNI. OF TECH.)(CHEMICAL, 2010)
70207	ANG SIE KIAN	B.E.HONS.(TAYLOR'S UNI.) (CHEMICAL, 2017)
70206	ANG SIE KIONG	B.E.HONS.(TAYLOR'S UNI.) (CHEMICAL, 2017)
66971	LOW KOK WEI	B.E.HONS.(USM)(CHEMICAL, 2017)
72539	LIM YEE LI	B.E.HONS.(UTAR KAMPAR) (CHEMICAL, 2018)
72549	WONG LIN ONN, JOHN	B.E.HONS.(UTAR KAMPAR) (CHEMICAL, 2018)
77966	LEONG WENG FAI	B.E.HONS.(UTAR SG LONG) (CHEMICAL, 2018)
75408	LOW MEI FONG	B.E.HONS.(UTAR SG LONG) (CHEMICAL, 2018)
KEJURUTERAAN MEKANIKAL		
80613	SIVAHARI A/L MUTHUSAMY	B.E.HONS.(NILAI UNI.) (MECHANICAL, 2018)
31381	MOHD FAEZ BIN ZAINOL	B.E.HONS.(UITM) (MECHANICAL, 2010) M.E.(UPM)(MANAGEMENT, 2015)
35009	MUHAMMAD IQBAL B. HASLAN	B.E.HONS.(UITM)(MECHANICAL, 2012)
39895	IYNUL FARAH BINTI OMAR	B.E.HONS.(UITM)(MECHANICAL, 2013)
50400	SITI MAHFUDZAH BINTI HASSAN	B.E.HONS.(UITM)(MECHANICAL, 2014)
67642	MUHAMMAD IQBAL B. MOHD ALI	B.E.HONS.(UITM)(MECHANICAL, 2017)
66034	SARAVANAN A/L SRIGARAN	B.E.HONS.(UNISEL) (MECHANICAL, 2014)
61254	LOGESWARAN A/L SUNDARASEKAR	B.E.HONS.(UTHM) (MECHANICAL, 2015)
35852	MUHAMMAD SYAUKI BIN YAAKOB	B.E.HONS.(UTM)(MECHANICAL, 2011)
61242	MUHAMAD HISYAM BIN RAI	B.E.HONS.(UTM)(MECHANICAL, 2016)
69856	CHAW VUI KEN, KENNETH	B.E.HONS.(UTM)(MECHANICAL, 2017)
69397	NG ZHENG YU	M.E.HONS.(THE UNI. OF NOTTINGHAM)(MECHANICAL, 2018)
53965	YOGHAN A/L LOGENTHIRAN	M.E.HONS.(UNI. OF NOTTINGHAM)(MECHANICAL, 2015)
69392	MUHAMAD ARIFF B. ABAS	M.E.HONS.(UNI. OF NOTTINGHAM) (MECHANICAL, 2015) M.SC.(UTM)(MECHANICAL, 2017)
KEJURUTERAAN PEMBUATAN		
45511	MOHD NAZMEE BIN KAMARUZAMAN	B.E.HONS.(USM) (MANUFACTURING ENGINEERING WITH MANAGEMENT, 2014)

PERMOHONAN MENJADI AHLI SISWAZAH

No. Ahli	Nama	Kelayakan
KEJURUTERAAN AEROANGKASA		
97500	NUR FITRI BIN SALEHUDDIN	B.E.HONS.(IIUM)(AEROSPACE, 2017)
KEJURUTERAAN AERONAUTIKAL		
97567	TAN YONG JIE, KEVIN	M.E.HONS.(UNI. OF BRISTOL) (AERONAUTICAL, 2014)
KEJURUTERAAN AWAM		
97565	ROSMANIRA BINTI MOHD AB GHANI	B.E.(UMP)(CIVIL WITH ENVIRONMENTAL, 2012)

97349	AHMAD AL-BAKRI BIN AHMAD BISTARI	B.E.(UMP)(CIVIL, 2008)
97429	SIAW KOK SENG	B.E.HONS.(CURTIN UNI. OF TECH.)(CIVIL & CONSTRUCTION, 2015)
97499	ONG KEE SEONG	B.E.HONS.(KLIUC)(CIVIL, 2010)
97553	AHMAD FIRDAUS BIN MD NOR	B.E.HONS.(MALAYA)(CIVIL, 2007)
97418	SASHITHREN A/L G. DARAMALINGAM	B.E.HONS.(MALAYA)(CIVIL, 2011)
97550	MIKE SAMUEL A/L MURUGAN	B.E.HONS.(MALAYA)(CIVIL, 2014)
97442	LIEW SAN HUA	B.E.HONS.(SWINBURNE UNI. OF TECHNOLOGY)(CIVIL, 2017)
97356	DR. MOHAMAD SHAKRI BIN MOHMAD SHARIFF	B.E.HONS.(UITM)(CIVIL, 2009) M.SC.(UITM)(CIVIL-GEOTECHNIQUE, 2011) PHD.(UITM)(CIVIL, 2017)
97375	MUHAMMAD RIDZWAN BIN KAMARUL BAHARAINI	B.E.HONS.(UITM)(CIVIL, 2010)
97332	NADIA JASWINE JAMES	B.E.HONS.(UITM)(CIVIL, 2010)
97367	SHAHMEER SHAH BIN SHAHRANSHAH	B.E.HONS.(UITM)(CIVIL, 2012)
97369	MUHAMMAD DANAIL BIN ABD HAMID	B.E.HONS.(UITM)(CIVIL, 2013)
97430	MUHAMMAD FIRDAUS BIN MOHD HATTA	B.E.HONS.(UITM)(CIVIL, 2013)
97414	MOHD FAUZI BIN MOHD ROHAIZAD	B.E.HONS.(UITM)(CIVIL, 2014)
97417	NORKHASIFAH BINTI ABD RAHMAN	B.E.HONS.(UITM)(CIVIL, 2014)
97486	MOHAMAD EFFANDY BIN ANUAR GAN	B.E.HONS.(UITM)(CIVIL, 2015)
97421	TUAN 'AFIF BIN TUAN AZMAN	B.E.HONS.(UITM)(CIVIL, 2017)
97437	CHUA PENG YANG	B.E.HONS.(UMP)(CIVIL, 2013)
97415	KIU PEY ING	B.E.HONS.(UNIMAS)(CIVIL, 2014)
97355	HAMZAH BIN MD YUSOF	B.E.HONS.(UNITEN)(CIVIL, 2009)
97490	AHMAD HUZAIRIE BIN JOHAR	B.E.HONS.(UNITEN)(CIVIL, 2010)
97438	AHMAD FAUZAN BIN AHMAD MUSTAFFA MUSTAAL	B.E.HONS.(UNITEN)(CIVIL, 2011)
97335	MUHAMMAD AL-AZI MOHD LATIF	B.E.HONS.(UNITEN)(CIVIL, 2013)
97352	TEO WAN ZHI, ELAINE	B.E.HONS.(UNITEN)(CIVIL, 2015)
97566	YUGAVARATHAN A/L GANESH	B.E.HONS.(UNITEN)(CIVIL, 2015)
97559	REMINGTON RAJIV RICHARD HENDRICKS	B.E.HONS.(UNITEN)(CIVIL, 2016)
97555	SHO ZHI CHIN	B.E.HONS.(UNITEN)(CIVIL, 2017)
97362	WAN NORHAFIZAH BINTI WAN ISMAIL	B.E.HONS.(USM)(CIVIL, 2004)
97556	ZULKIFLI BIN SALLEH	B.E.HONS.(USM)(CIVIL, 2005)
97370	SHAFIDA AZYANTI MOHD SHAFIE	B.E.HONS.(USM)(CIVIL, 2010)

Note: *Continuation of the Transfer Graduate, Graduate, Incorporated, Affiliate and Associate would be published in June 2018. For the list of approved "ADMISSION TO THE GRADE OF STUDENT", please refer to IEM web portal at http://www.myiem.org.my.*

Pengumuman yang ke-115

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3	11026	ABDULLAH BIN OTHMAN
4	43718	ABU BAKAR BIN ABD AZIZ
5	54117	ALI KAMAL SABRI BIN ABDUL AZIZ
6	05930	ANANTARAJU PILLAI
7	33980	ARLEENEANSHAM @ LEE KIM SENG
8	78989	AZHAR BIN ABDULLAH
9	14350	AZHAR BIN AHAMAD
10	02425	BUI YIN HUING, GEORGE
11	10908	CHANG CHOOI FOONG
12	13856	CHEO MIANG CHEH @ CHEO MIANG POO
13	07504	CHEO WEE WAH
14	04387	CHIN CHWOON SAM
15	27634	CHONG CHON KEN
16	24198	CHUAH CHIN SENG
17	10850	CHUAI TECK
18	34338	FARIDA ARYANI BINTI KAMARUDIN
19	09973	IBTISHAM BIN L. SALEH
20	28020	JOHAN BIN ADAM LEONG
21	12533	KAMARUDIN BIN ABD. KARIM
22	04907	KHALID BIN HAMZAH
23	07359	KHOR CHAI HUAT
24	27086	KOK WEE TONG, THOMAS
25	24330	KONG SHIANG EK
26	15881	KUMARI NALINI A/P P. SUBRAMANIAM
27	04577	LEE CHENG SIONG
28	10489	LEE FATT WAI
29	45867	LEE FEI HAN @ LEE KOT CHUEN, LENIOR
30	01998	LEE LAM
31	25874	LEE WEI CHIEK
32	52447	LENSUS ANAK MET
33	09010	LEONG SANG KHIM
34	12893	LEONG YEE LUNG
35	22936	LIAW WEI LOONG
36	01851	LIM FONG PENG
37	08672	LIM KONG JOO
38	10697	LOH FOOK GUAN
39	17350	LOW AH KEONG, LAWRENCE
40	00913	MAAROF BIN MUAT
41	06555	MD. YUSOF BIN ISMAIL
42	19200	MEGAT SAIDI BIN NIK NGAH
43	26740	MHD. SHUKREE BIN SHAHABUDIN
44	11511	MOHAMAD AZMI BIN ABDULLAH @ MAMAT
45	14616	MOHAMMAD NIZAR BIN JAMALUDDIN
46	13780	MOHD REDZUAN BIN MOHD RAMLI
47	20285	MOHD. RIADHI BIN HASHIM
48	41502	MUHAMMAD AZAHARI BIN MUSTAPHA
49	15327	NG KIN WENG
50	21285	NG WENG LIANG
51	09451	NIK MOHD KAMEL BIN NIK HASSAN
52	17049	NOOR AZAM BIN MD SAAD
53	03593	ONG KOK HOO
54	13436	OOI CHONG KOOI
55	04396	OOI SAN KOOI
56	10024	PHANG CHU MAU
57	34388	PHOEBE RAJENDRAN
58	20014	POH HEON KHOON
59	11588	POOK FONG FEE
60	29572	SYOU KONG HEAN
61	04886	TAN CHEE KEONG, WILLIAM
62	01798	TAN HOON KAI
63	02336	TAN KENG TONG
64	16674	TAN KOK HWA
65	12895	WONG HUAN YONG
66	23635	ZULFAISAL BIN MOHAMED
67	14432	ZULKIFLY BIN YUSOF

IEM DIARY OF EVENTS

Title: The 2nd Peter Chiam Teong Tee Memorial Lecture

23 June 2018

Organised by: Geotechnical Engineering Technical Division
Time : 12.00 p.m. - 2.30 p.m.
CPD/PDP : Applying

Title: 1-day Workshop on Testing, Certification and Compliance Verification for Bus Trunking Systems (Busways)

26 June 2018

Organised by: Electrical Engineering Technical Division
Time : 8.30 a.m. - 5.30 p.m.
CPD/PDP : Applying

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