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<u>cover note</u>

EmPOWERing Graduates and Guiding Students



by Tan Zhi Howe Immediate Past Chairman, Young Engineers Section

stablished in 1970, Young Engineers Section (YES) comprises some 2/3 of members of IEM. Our vision is for young engineers to connect with engineers across borders as well as other professionals locally. Our mission is to Em**POWER** Graduates and Guiding Students (EGGS) as young engineers will soon be the pillar for the industry and growth of the nation.

In this month's Cover Story, IEM's Immediate Past President, Ir. Dr Tan Yean Chin, talks about his professional journey from a young engineer to the prominent geotechnical engineer that he is today. He also gives pointers on how young engineers can develop both soft and hard skills to face challenges.

In addition, there is an article on our recent Young Engineers Exchange to Taiwan. Members from our most active student section from Universiti Tun Hussein Onn Malaysia, have also penned their thoughts on running an engineering organisation while juggling their studies.

Last but not least, we hope that engineers who read this issue of *JURUTERA* will help empower each other as we look towards building a stronger IEM and a more developed nation.

Thank you. 🗖





Salam & Hello All IEMers,

hat a great month this will be! Apart from National Day on 31 August, 2018, this is also the month for Engineering Week which means the IEM calendar is full of activities.

Our Cover Story this month is on the future of our nation. Tan Zhi Howe will talk about this and more in his Cover Note.

Another exciting event is the start of the IEM Mobile Application Competition 2018 (#iemmac2018), which will run in 3 phases. Get together with your team and come up with the documentation for this competition. Great prizes await the winners. Details on our website.

The Log Book Training Scheme (LBTS) has now been rebranded to Engineering Competency Development (ECD), with more exciting enhancements and in-line with the current Professional Interview requirement which is competency focused. Find out more about it inside.

Lastly, hope to see all of you at the Engineer's Run and other events lined up for Engineering Week 2018. And keep sending in articles; after all, this is a magazine for YOU, by YOU!

Let's continue to engineer our country to greater heights!

Dear JURUTERA Readers,

special announcement

Some of you may have received the May and June 2018 issues rather late. This was because we were in the midst of changing the mailing firm we had used for the last 30 years that had ceased operations since March 2018. Two firms are being evaluated at present, each on a 3-month term to enable us to review their performance.

We greatly appreciate your patience, over any hiccup during this time. If your hardcopy delivery is delayed, you can access the digital version of *JURUTERA* on IEM's website.

Thank you.

Editorial Board











Ir. Dr Tan Yean Chin is founder and Senior Director of G&P Professionals, a group of multi-disciplines engineering consulting firms. He is the Immediate Past President of The Institution of Engineers, Malaysia (IEM) and Board member of the Board of Engineers, Malaysia (BEM).



Former IEM President Ir. Dr Tan Yean Chin has his heart and sight focused on the development of young engineers for the sustainability of IEM and the progress of the country's engineering industry.





Passion for his work, a positive mindset and a continuous desire for learning are what keeps Ir. Dr Tan Yean Chin highly spirited in his profession. He also finds much satisfaction in sharing his experiences and skills with others in the engineering fraternity, particularly young engineers.

Interestingly, when he became IEM President for a twoyear term which ended recently, his priorities included attracting young engineers to not only become members of IEM but also to serve and be involved in the policymaking of the almost six decades old institution. He had then envisioned IEM to include young engineers as members of the council, which would give them a platform to get their voices heard as well as to inject fresh and innovative ideas.

During his tenure, he succeeded in leading efforts to get IEM members to support and approve amendments to the IEM Constitution and By-Laws to allow five representatives from the Young Engineers Section (Y.E.S.) to sit on the IEM Council, thus enabling Student and Graduate Members/ Young Engineers to play a bigger and more important role in the institution.

"This is a landmark change in the IEM Constitution. For almost 60 years, only full IEM members were allowed to be on the council. I believe that now, by allowing five young graduates to be on the council, they can contribute to the policy making of the institution. This shows IEM is sensitive about its young members' opinions and ideas and the need for them to contribute and serve IEM," says Ir. Dr Tan, adding that their active participation will help ensure the sustainability and relevance of IEM in meeting the challenges of the future.

He considers the rejuvenation of IEM for its long-term sustainability to be an important agenda, and the greater involvement of the young group is one way to help achieve this purpose. With the involvement of the young, he says, IEM can derive fresh and innovative ideas to move the institution forward as well as meet future challenges.

"Sustaining and increasing membership, and staying relevant will ensure IEM thrives in the future. With new young leaders being groomed, they can continue with present efforts, such as maintaining current membership, attracting and recruiting more new members, providing better services to members and ensuring IEM stays relevant and influential in both the local and international engineering fraternities," he says, adding that the young should be the main force in rejuvenating IEM for its sustainability. This will augur well with our new tagline, "IEM Reimagined", so as to further advance the institution as one of Malaysia's premier professional organisations.

EXPANDING MEMBERSHIP BASE

IEM has more than 40,000 members, making it one of the largest professional organisations in the country. Graduate and Student Members represent 76% of the whole membership. Ir. Dr Tan says it is also important for IEM to expand its membership base, which is now dominated by those in the conventional engineering fields such as electrical, mechanical and civil. He emphasises that IEM must also attract engineers from new fields because in doing so, IEM can further evolve and continue to remain relevant.

"We have also proposed encouraging the incorporation of others involved in the engineering field, such as technologists and technicians, into IEM. We want to promote inclusiveness within IEM, which should represent not only engineers but also those working in all fields related to engineering," he says.

Ir. Dr Tan started getting involved in IEM activities at a young age and feels that he has benefitted greatly from this. "I encourage aspiring engineers and young engineers to do the same. I joined IEM in 1994 at the age of 26. The Y.E.S. Section helped me progress in the engineering field. At the time, it was known as the Graduate Student Section," he says. "Through it, I met many engineers. We shared and learnt from one another. Y.E.S. is an important platform for young engineers to come up in the industry. IEM is not only for learning technical skills; more importantly, it is a platform for networking. Not many are aware of this. Actually it is the networking that can help you achieve success. For young engineers, it helps in enhancing human skills, and getting more competent in preparing and making presentations. I encourage graduate engineers to join Y.E.S. as it will help in their career development."

Recalling his early days with IEM, Ir. Dr Tan says he joined as a Graduate Student member and then moved on to be a Corporate member, joining the Engineering Technical Division of IEM. He was Chairman of the Geotechnical Engineering Technical Division for 2004/2006 and at the age of 48 in 2016, he became IEM President.

One year later, he obtained his doctorate degree in engineering, attesting to his quest for continuous learning. He says he has also learnt a lot from IEM, particularly in the areas of human relations, organisational skills and volunteerism.

ADVICE FOR YOUNG ENGINEERS

Ir. Dr Tan says the dedication of volunteer members is a key reason for the success of IEM. Volunteers work together as a team, sharing their skills and sacrificing their time to work for the benefit of its members. It is important, he feels, to inculcate the spirit of volunteerism in young engineers who will be taking over the baton of the leadership of IEM to move it further in the future.

"The future will have its own challenges and young engineers can deal with these with a positive mindset and the right attitude. Another important attribute is to have passion in what you do. If you love your job, it is easier to face the challenges. You must also add value to whatever you do by enhancing skills, such as management skill, through continuous learning. This will add to your arsenal of weapons. If you don't value add, you can't improve," says Ir. Dr Tan in advising engineers who aspire to feel happy about their career.



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BUILDING TRUST



He says it is also important to stay abreast of issues affecting the industry.

"Nothing beats reading. In the engineering fraternity, you must constantly update yourself by reading relevant publications as well as attend talks and seminars where you can exchange ideas, network, make friends and build a stronger network by volunteering your time and service."

He says that his own success in the engineering field is also due to his willingness to share knowledge, know-how and experience. "People must be willing to do this; you will end up gaining more. Opportunities will knock at your door. When you are willing to share, it shows your positive attitude. It is the law of attraction; by being positive, you attract positive people," says Ir. Dr Tan. "Everybody has 24 hours in a day. Believe in focusing and having passion in your work. You can have work-life balance. Despite being busy, train yourself to be more efficient. Do things in a shorter time. One of the ways to become more efficient is to get help and complete tasks through teamwork. When you do things faster, you will find you have more time."

As for his ability to achieve balance in his life, Ir. Dr Tan attributes this to his family and his deep conviction in religion. "When work is done, I go home and spend time with my family. Weekends are family time. My wife sacrificed her career as a manager and gave up a lucrative job to be a full-time homemaker. We have two sons, both studying in university now. Family is important to me," he says.



"I also find inner peace through religion. I am a Buddhist and meditation helps me achieve inner calm. Other than staying positive and passionate about my work, I have got through my worst of times through religious practices. These can help solve life challenges.

"Every job has its problems, such as difficulties in human interaction. I believe that the basis of every successful person is being honest and ethical. If you deviate, you will end in a downward spiral. Be honest and truthful in whatever you are working on. Don't just think of making money. Think of learning as much as possible. In the long run, money will search for you. Do learn as much as possible. Don't be calculative. A boss likes an employee who is hardworking and wants to learn more. The money will come eventually."

56 The future will have its own challenges and young engineers can deal with these with a positive mindset and the right attitude. **29**

Ir. Dr Tan says his own success habits hinge on punctuality. "Always complete tasks in a timely manner. Being punctual is a must. Don't waste time on unnecessary things that will not contribute towards completing your tasks. This habit contributes to achieving efficiency, that is, by being focused in what you are doing. Do your best to complete tasks on time," he says.

What makes an engineer successful and happy at the same time? To this question, Ir. Dr Tan says that success and happiness are a state of mind. "These do not depend on material things. Being regarded as trustworthy by colleagues and friends is important. When people trust you, it speaks volumes of you as a good engineer. You must also earn peer trust so that what you say will carry weight. And be good in what you do. To quantify your success through how much you earn is wrong. Try to enjoy the process that you go through to complete a certain task, whether it's technical challenges or human handling," he says.

"As long as you try and enjoy the process and are able to answer to your inner self, you will find the inner peace for a continuous career. Some people give up because they cannot take the stress. Being successful is being able to enjoy the process of getting there. If you do that, your rate of success will be higher. Hang on to something deep, such as religion, to achieve inner peace and happiness. Helping people and developing universal values such as tolerance and kindness are also a way to happiness."

As past president of IEM, Ir. Dr Tan hopes the new council members will continue with the nurturing of young engineers, make IEM a more relevant institution that represents the engineering industry and focus on the institution's sustainability.

He is confident that IEM will continue to support Government efforts to further develop the nation. On the part of IEM, members have vast engineering know-how and resources as well as a sizeable pool of young and talented engineers who can offer technical advice and input to the Government and the industry at large. THE MONTHLY BULLETIN OF THE INSTITUTION OF ENGINEERS, MALAYSIA

JURUTERA EIGEN

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FEATURE

A report of the 27th Prof. Chin Fung Kee Memorial Lecture delivered by Ir. Dr Ooi Lean Hock on 18 November 2017

Underground MRT in Kuala Lumpur: The Inevitable Urban Transit Solution





Ir Dr Ooi Teik

Aun

Ir. Khoo Chee Min

The spirit of Tan Sri Prof. Chin Fung Kee lives on

Tan Sri Prof. Chin Fung Kee's name invokes the memory of a person who embodied a value system very much respected by Malaysian engineers. It is synonymous with the following values:

- Dedication to one's chosen career.
- Commitment to the assigned tasks in service of men.
- Belief in a meritocracy system.

Thus, it is no wonder that Tan Sri Prof. Chin is remembered as the country's foremost engineering educator and an outstanding practising engineer. The 27th Annual Prof. Chin Memorial Lecture is a fitting occasion that recognised his contributions to our engineering industry and nation-building. See *JURUTERA*, November 2015, pages 25-28.

The speaker Ir. Dr Ooi Lean Hock

Ir. Dr Ooi Lean Hock graduated with a PhD from University of Sydney, Australia. He worked as a geotechnical consultant and a specialist contractor before joining MMC-GAMUDA in the SMART Tunnel project. He is currently the lead geotechnical engineer in the Design and Technical Department of MMC-GAMUDA KVMRT (T) Sdn. Bhd. for the second line of Klang Valley Mass Rapid Transit namely the Sg. Buloh Serdang PutraJaya (SSP) line. He has extensive experience in ground treatment works, more recently in deep excavation and tunnelling works. He also has a keen interest in geotechnical instrumentation and testing. He has been involved in many interesting infrastructural projects such as railways, runways, highways, tunnels and hydropower both locally and abroad.



The title "Underground MRT in Kuala Lumpur: The Inevitable Urban Transit Solution" is taken from Ir. Dr Ooi Lean Hock's lecture. In this report, the more suitable title is "A Liveable City: Enabled by Underground connectivities".

raffic congestion is defined as the result of too many cars on roads which have reached the maximum vehicle capacity. As any office worker in Kuala Lumpur will testify, traffic congestion is the cause of much misery as a person will, on average, spend 34% extra travel time in the morning rush hour to get to the office; he will need 56% extra travel time and another 80% extra travel time in the evening rush hour (1). Computing the total loss of productive time, this translates to a whopping extra 41 minutes travel time per day to him or an extra 158 hours travel time per year, according to the same report.

In the *World Bank* report survey conducted in 2014, Jensen and Reimann (2015) found that only 17% of Kuala Lumpur commuters used public transport. This figure compared unfavorably with 62% in Singapore, and 89% in Hong Kong [2]. In all, the report found that Greater Kuala Lumpur commuters wasted 250 million hours a year in traffic jams. In economic terms, this was a loss of RM54 million a day as a result of unproductive hours.

However, the main culprit of Kuala Lumpur's traffic congestion could be the *laissez faire* manner in which the city authority managed urban transportation planning. Akmal S. Abdelfatah et al., (2015) noted that private car ownership increased from 5.5 million in 2003 to over 10 million in 2012, an exponential 81.8% growth in just 9 years [3].

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Figure 1: Passenger car, motorcycle and bus registration Source: Akmal S Abdelfatah et al., (2015)

See Figure 1. Put differently, the increase of private cars per year was 500,000, compared to a paltry increase of just 2,000 buses per year.

So the menace of traffic congestion is well understood. What is not is the magnitude of the need to change our behaviour with respect to overcoming the traffic congestion in Kuala Lumpur. As an example, after Uber commissioned Boston Consulting Group (BCG) on how to mitigate traffic congestion in 2017, it discovered that the current 5.8 million cars in Kuala Lumpur were way beyond the carrying capacity of the city roads; 40% of the cars must be replaced by alternative transport options [4].

In this short article, instead of reporting Ir. Dr Ooi Lean Hock's lecture verbatim (it will be reported in full in *IEM Journal* later), we seek out the motivations behind the construction of the MRT1 and MRT2 Lines. We raise three questions: First, what is considered a liveable city (assuming that the traffic congestion is brought under control)? Second, how would urban transit solve the traffic congestion woes? Third, why do we go underground in Kuala Lumpur, and what are the major geological challenges of deep excavation and tunnelling related to mitigating traffic congestion — as we learnt from Ir. Dr Ooi's lecture?

LIVEABLE CITY: GREATER KUALA LUMPUR'S ASPIRATION

In his lecture delivered on 18 November, 2017, Ir. Dr Ooi pointed out that an integrated public transportation system was key to achieving 50% public transport ridership by 2020, without which the ideal state of a liveable Greater Kuala Lumpur would remain a distant dream. In this section, we shall focus on two issues: The concept of a "liveable city" and the emergence of an acceptable framework used to measure the level of a smart city.

Concept of Liveable City: The concept of liveability first appeared in the 1950s. In the literature review, an accepted definition of a liveable city should include 6 broad principles:



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Figure 2: Smart city initiatives framework. Source: Chourabi. Nam and Walker (2012)

Provide more transportation choices, promote equitable and affordable housing, enhance economic competitiveness, support existing communities, coordinate and leverage federal policies and investment as well as value communities and neighbourhoods [5]. By and large, transportation is the most important in determining whether a city is liveable. The next crucial principles are the wellbeing of the communities from housing to economy. As we shall see later, many of these principles are similar to frameworks used to categorise smart cities except in ICT (information communications technology) provision.

Acceptable framework for assessing a smart city. Chourabi, Nam and Walker (2012) proposed a framework for a smart city after exhaustive studies [6]. See Figure 2. In the diagram, smart city initiatives are driven by people, policy and ICT. The emphasis appears to be on ICT. However, what appears to be missing is urban transit, or for that matter, transportation planning.

A refinement on this model (as in Figure 2) was made by Albino, Berardi and Dougelico (2015) who cited research findings by Lombardi et al., (2012) and identified 5 components suitable for the study of a smart city: Smart economy, smart people, smart government, smart environment and smart living. One

additional component was added: Smart mobility. Therefore, from this point onwards, mobility is also key in the definition of a smart city [7]. The said framework recognises the multi-faceted nature of a smart city to include the quality of people, communities and ICT provision.

Monzon (2015) created a method of assessment to compare and contrast two sets of cities: The welldeveloped North Mediterranean cities and the developing South East Mediterranean and cities [8]. The researcher accepted the framework of Albino, Berardi and Dougelico (2015), but further refined it by operationalising the model in connecting both city sets through the variables as shown in Figure 3. In addition, in this model, infrastructure was identified as the central piece, technology the enabler, and through integration of infrastructure and technology, an assessment of a smart city was made possible.

If mobility is paramount to the success of a smart city, urban rapid transit should then be seen as a means to alleviate traffic congestion in the Greater Kuala Lumpur, as explained in the next section.

URBAN RAPID TRANSIT

In this section our task is to collect empirical evidence from the relevant literature: First, the car-based system as applied to the Greater Kuala Lumpur, and second, the expected outcome in adopting a transit-based system.

Evidence of car-based system. There is a rich source of literature leading up to the current carbased system. In particular, Barter (2000, 2004) labelled Kuala Lumpur Metropolitan Area (KLMA) as moderately traffic saturated compared to other Asian cities such as Bangkok and Manila, but moving close to car-dependence [9, 10]. He attributed this condition to institutional arrangements that encouraged carownership.

In Table 1, if we focus on comparing the column HIA (higher-income Asian cities such as Hong Kong and Singapore) with the column Klang Valley, the income disparity between the two is very great (US\$34,797 and

Table1: Transport system and land use characteristics in the Klang Valley compared with middleincome and high-income groupings of cities, circa 1995

		USA	ANZ	CAN	WEU	НА	MA	MO	Klang Valley
Metropolitan gross domestic product per capita	USD	31,386	19,775	20,825	32,077	34,797	9,776	6,625	6,991
Passenger can per 1000 persons		.587.1	575.4	529.6	413.7	217,3	198.3	265.1	208.7
Molorcycles per 1000 persons		13.1	13.4	9.5	32.0	65.8	154.0	14.Z	174.5
Pauenger car pauenget km per capita	Pass. km/cap.	18,155	11,387	8,645	6,202	3,724	3,517	4,133	4,345
Wotorcycle passenger km per capita	Pass. km/oap.	-45	81	21	119	100	1,165	- 78	1,365
angh of expressway per 1000 persons	m/1000 cap.	1.56	129	122	82	22	27	43	68
Parking spaces per 1000 CBD jobs		- 555	.505	390	261	121	164	374	299
Motorised passenger km on public transport	×	2.9	7.5	9.0	19.0	50.3	26.9	35.6	10.8
Public transport seat km of service per capito	sexat km/cop.	1,557	3,628	2,290	4,213	5,535	2,734	3,283	1,331
Overall average speed of public transport	km/h	27.4	32.7	25.1	257	33.2	16.4	24.8	18.5
Average road network speed	km/h	49.3	44.2	44.5	32.9	51.3	20.9	35.9	28.1
Ratio of public versus private transport speeds		0.58	0.75	0.57	0.79	1.08	0.78	0.70	0.66
lotal emissions per urban hectare									
ICO. SO, WIC, NON	ka/ha	3 563	2.749	4.588	5.304	3.994	12.952	7.236	7,899
Ulban density	pencis/ho	15	15	26	55	134	164	54	58
lotal ensuions per urban hectare (CO, SO ₃ , VHC, NOv) Urban density	kg/ha pesois/ha	3,563 15	2,749 15	4,588 26	5,304 55	3,894 134	12,952 164	7,236 54	

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Figure 3: Relations between smart city dimensions, South & East Mediterranean challenges and general city challenges. Source: A. Monzon (2015)

US\$6,991 respectively). Yet, in terms of passenger cars per 1,000 persons, the difference is very small (217 cars and 208 cars). Another comparison is the public transport seat km of service per capita (5,535 and 1,331 respectively); the Klang Valley provides much less. Notice the average network speed for both HIA and Klang Valley (31.3 km per hour and 28.1 km per hour respectively); the difference is slight which indicates that Klang Valley traffic has not come to a standstill yet. So, though the Klang Valley is cardependent, it has not reached traffic saturation yet.

Benefits of transit-based system. The opposite of traffic congestion is seamless flow of traffic through adopting an urban transit system. By eliminating traffic congestion, the benefits are numerous, according to the American Public Transportation Association (2018). There is no wasting of time, no delay for appointment, no wasting of fuel and less air pollution/carbon dioxide emission, less car maintenance costs, less incidents of road rage, less spillover to other roads and less chance of collision on the roads [11].

Diaz and Mclean (1999) conducted a survey of 12 transit agencies which studied how transit developments affected property value [12]. Two major benefits were noted: Transit investment allowed better accessibility to other parts of a region from stations and more land spaces were opened up though these were previously not

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accessible and deemed unattractive. The quantum of increased property value in each case can be attributed to function of accessibility to employment, pedestrian accessibility, market penetration and development impacts. As argued by Mohammad et al., (2013), implementing transit agencies should be careful to plan the alignment of their routes, and locations of the station in order to attract more commuters [13]. Another rail transit study undertaken for Shanghai, Pan and Zhang (2008) provided empirical evidence that supported classical land economic theories that with better accessibility, "higher development intensity and more capital-intensive land use occurs near the transit stations" [14].

In the next section we learnt from Ir. Dr Ooi's lecture that consultants/ contractors met various geological challenges in the course of building an urban transit system in Kuala Lumpur.

GEOLOGICAL CHALLENGES OF UNDERGROUND KL

What are the unique challenges of Kuala Lumpur's geology, in particular the infamous KL Limestone Formation? "The construction of each underground structure/tunnel is a remarkable adventure, as it must be driven in a particular site featuring a rock mass in no way similar to any another," said Ir. Dr Ooi.

"The features encountered in KL Limestone Formation included but were not limited to the highly erratic rock head, highly developed fissures and intricate three dimensional network of solution channels littered with ubiquitous cavities, vertical cliffs, overhangs, and were consistent with Extreme Karst classification" according to Waltham & Fookes [15]. This karstic feature posed many problems to tunnelling as well as the design and construction of deep underground retention structures and therefore was rightly classified as potentially high risk.

Ooi and Ha [16, 17] summarised the challenges of tunnelling and deep excavation works in KL karsts. Key challenges included the difficulties in accurately defining the bedrock profile as well as the sizes, trends and depth of cavities and solution channels. The consequential impact of any groundwater flow and potential loss of material (sinkhole) through solution channels in karst could have far-reaching consequences, even up to great distances when the delicate balance of the in-situ groundwater condition was compromised [17].

Klados et al., [18] shared experiences in managing tunnelling challenges through the KL Karst Formation using the Variable Density Tunnel Boring Machine (VD TBM), a first-of-its-kind in the tunnelling industry. The VD TBM was conceptualised by Malaysian MMC-Gamuda JV through exhaustive research and collaboration with TBM supplier Herrenknecht AG and Ruhr-University.

The completion of the MRT1 line not only transformed KL's underground but also the heart of Malaysia. It would be remiss to not highlight the importance of the role of MRT in Kuala Lumpur's continuing evolution into a liveable, world-class city in the future. It has changed the landscape of underground transportation significantly with the least social and environmental impacts while maintaining the current "citvscape".

CONCLUSION

In trying to understand the motivations behind constructing the MRT1 and MRT2 lines, this article answered the three questions. First, an established liveable city is one that meets the mobility needs of its residents. Second, the urban transit system is the only means to overcome traffic congestion as we have learnt from the experiences of Singapore and Hong Kong. Third, by going underground to build the transit stations and the requisite tunnelling, consultants/ contractors faced unique challenges in the KL Limestone Formation, which were eventually resolved using VD TBM.

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Ir. Dr Ooi Teik Aun Hon. FiEM, FICE graduated with BE and ME from Auckland University and PhD from Sheffield University. He was Superintendent of Research and Laboratory while in JKR. He is founder Chairman of TUSTD, Organising Chairman WTC2020, Deputy Chairman TUSTD, Director of TAO Consult, Director of IEMTC and IEM Academy.

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IEM Employment Survey 2017



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he IEM Employment Survey was conducted at the end of 2017 with a cut-off date, 31 January, 2018. The objective was to obtain information pertaining to the employment situation, remuneration and job satisfaction of engineers. The survey was under the charge of the Standing Committee on Welfare & Service Matters, with the collaboration of the Young Engineers Section. A total of 1,061 online surveys was completed from December 2017 to January 2018.





Figure 1: Percentage of respondents based on IEM Membership Grade

Figure 2: Percentage of respondents based on registration with Board of Engineers Malaysia



Figure 3: Percentage of respondents based on engineering disciplines (bachelor degree level)

RESULTS

Of the 16,000 online surveys emailed to IEM members, 1,016 responses were received by 31 January, 2018. The respondents comprised 18.28% female and 81.72% male. As shown in Figure 1, the majority were Graduate Members (46.09%), followed by Corporate Member (40.15%) and non-members (7.35%).

For registration with the Board of Engineers Malaysia (Figure 2), results were recorded at 55.33% comprising mostly Graduate Engineers, 25.64% Professional Engineers with Practicing Certificate and 12.91% Professional Engineers.

The majority were aged 31-40 years (41.85%), followed by those aged 20-30 years (29.03%) and 41-50 years (16.21%). Next, the majority were fully employed (83.69%), followed by the self employed (8.48%) and those doing further studies (3.02%). For academic qualifications, the respondents comprised Bachelor Degree (69.93%), Masters (21.12%) and PhD (7.42%).

Figure 3 shows that the majority were in Civil Engineering (43.10%), Mechanical Engineering (21.41%), Electrical Engineering (21.12%), Chemical Engineering (6.37%) and others (7.99%).

Based on the survey, the majority were local graduates (76.59%). The number of overseas graduates stood at 21.79%, followed by graduates from twinning degrees (1.62%). The majority (91.53%) agreed that engineering was their choice of career.

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Of the respondents, 95.97% were working in Malaysia and 4.03% working overseas. Of these, 76.33% were in the private sector, 13.75% with the Malaysian government and 9.92% in government-linked companies or agencies (Figure 4). Of the 1,061 respondents, the majority were Engineers (35.17%), followed by Senior Engineers (23.38%), Directors (12.28%) and Managers (10.90%).

Most of the respondents (Figure 5) considered themself Professionals (30.84%), Management (25.15%) and Executives (19.84%). Their job nature (Figure 6) were Engineering/Technical (39.39%), Consultancy (34.87%), Education/Training (9.14%) and Management (6.78%).

The majority spent 1-6 months After Graduation to secure a job (61.10%), followed by Before Graduation (31.14%), 7-12 months After Graduation (4.42%) and more than 1 year After Graduation (3.34%).

In addition, 25.05% had 1-5 years working experience, 22.79% with 6-10 years, 20.92% with more than 20 years and 20.14% with 11-15 years.

The online survey reported that most respondents worked in one company after graduation (24.85%). This was followed by working in 2 companies (24.17%), 3 companies (21.81%), 4 companies (13.56%) and 5 companies (15.62%).

Most respondents (Figure 7) worked in the Construction/Properties sector (39.19%), followed by Oil & Gas (14.44%), Utility & Services (11.69%) and University/Colleges (8.84%).

In the remuneration section, the survey reported basic salaries, allowances and bonuses for 2017. Overall (Figure 8), the majority of 12.59% reported receiving salaries of RM4,001-RM5,000 per month, 12.29% received RM3,001-RM4,000 per month, 9.97% received RM5,001-RM6,000 per month and 9.06% received more than RM20,000 per month.

Allowances (Figure 9): 32.4% of respondents reported they did not receive an allowance in 2017, 37.26% received less than RM1,000 allowance and 1.31% received



Figure 4: Percentage of respondents based on employment sectors



Figure 5: Percentage of respondents based on role in the company



Figure 6: Percentage of respondents based on job nature

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Figure 7: Percentage of respondents based on employment sector



Figure 9: Percentage of respondents based on allowances received per month

allowances of between RM4,001-RM5,000 per month.

Bonuses (Figure 10): 34.04% indicated that they received one month bonus at the time of the survey, 29.31% did not receive any bonus and 3.73% received more than five months bonus.

The majority (48.24%) reported that their current salary was not reasonable, 33.53% felt their current salary was reasonable and 18.23% were unsure.

As shown in Figure 11, 66.97% worked 40-45 hours per week, 15.51% worked 46-49 hours per week and 5.74% worked more than 59 hours per week.

For the weekly overtime hours (Figure 12), 33.23% reported that they did not work overtime while 29% were required to work 1-5 hours of overtime per week and 4.83% reported working over 20 hours of overtime per week. The majority (84.96%) reported that there was no payment for their overtime work.

Finally, the online survey was to help understand the respondents' job satisfaction, encouragement to attain Professional Engineers' status and to move away from engineering.

Overall, 45.59% of respondents reported that they were satisfied with their current jobs and 8.71% reported that they were very satisfied. However, 10.03% indicated that they were dissatisfied with their current jobs and 2.94% were very dissatisfied with their current jobs.

65.96% reported they would work to attain the professional engineer status and 34.04% said they would not apply to become professional engineers.

As for the intention to move away from engineering, 73.56% reported that they would remain in an engineering career and 26.44% reported that they would definitely move away from engineering as a career.

Authors' Biodata

Ir. Dr Tan Chee Fai is a committee member of Standing Committee of Welfare and Service Matter Session 2017/2018.

Ir. Prof. Dr Leong Wai Yie is a committee member of Standing Committee of Welfare and Service Matter Session 2017/2018.

Figure 10: Percentage of respondents based on bonus in 2017

Figure 11: Percentage of respondents based on working hours per week

Figure 12: Percentage of respondents based on overtime hours per week

IEM DIARY OF EVENTS

Title: Pre AGM Talk & 5th Women Engineers Section AGM 18 August 2018

Organised by: Women Engineers Section Time : 9.00 a.m. - 1.00 p.m. CPD/PDP : 4

Title: Pre AGM Talk & 14th Project Management Technical Division AGM

18 August 2018

Organised by: Project Management Technical Division Time : 9.00 a.m. - 1.00 p.m. CPD/PDP : 2

Title: 1-Day Course on Road Safety Audit (RSA) & Traffic Management Plan (TMP)

27 August 2018

Organised by: Highway &						
	Transportation					
	Engineering					
	Technical Division					
Time	: 8.30 a.m 5.00 p.m.					
CPD/PDP	: 6.5					

Title: 1-Day Course on Audit of a Junction Design & the Traffic Management Plan (TMP)

28 August 2018

Organised by: Highway & Transportation Engineering Technical Division Time : 8.30 a.m. - 5.00 p.m. CPD/PDP : 6.5

Title: 1-Day Course on Traffic Impact Assessment (TIA), Transport Assessment & Traffic Site Plan

29 August 2018

•	
Organised by	: Highway &
	Transportation
	Engineering
	Technical Division
Time	: 8.30 a.m 5.00 p.m
CPD/PDP	: 7

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.

FEATURE

Engineering Competency Development: Paving the Path for Future Professional Engineers

Author: Engineering Competency Development Committee (formerly known as Log Book Training Scheme Sub-Committee)

n 1982, IEM initiated the Log Book Training Scheme (LBTS) programme to assist Graduate Members obtain their professional engineer qualification. The objective was to support graduate members in organisations which did not have a professional engineer with the same engineering discipline to act as mentor or supervising professional engineer.

It is with this very core essence of its establishment and to support the change of professional engineer interview from outcome based to competency-based assessment that IEM has rebranded LBTS to Engineering Competency Development (ECD).

Since its inception, many graduate members have benefitted from this programme. IEM shall continue to provide this service to graduate members with enhancements (the objectives of this rebranding exercise) to cater to changes in the IEM Professional Interview assessment format, the younger generation and advancements in the industry.

In this rebranding exercise, we concentrate on five elements: Database, Survey, Name, Engagement and Appreciation.

Firstly, membership to the ECD programme is not automatic. Neither was the LBTS. However, as the years went by, the programme accumulated a very long list of mentors and mentees, whether they were active or not. The list became meaningless and using manual tracking made it too complex and time consuming to utilise or maintain.

To streamline this issue, database clean-up was required. An invitation email/letter was sent out in December, 2017, to all mentors and mentees listed in the database. The objective was to update and confirm interest of each mentor and mentee to be maintained in the programme. Their replies were tabulated.

Elements of LBTS rebranding

Enrolling in the programme is voluntary since a graduate member can take other routes to become a professional engineer. We believe in concentrating our efforts and energy of our resources on graduate members who are serious about progressing in their professional careers. We volunteer because we believe in nurturing the engineering industry and this should be appreciated by the participants. The database clean-up exercise reduced the list of participants by more than half. The list of mentors and mentees will be listed in the ECD section for the reference of members.

Secondly, we conducted a survey of all the members in the old database with the objective to improve LBTS effectiveness for the candidates pursuing Professional Engineer Certification, to make LBTS more effective for the mentor in helping their mentees and to collect information on areas of improvement that need to be considered during LBTS rebranding. The survey was conducted on the "survey monkey" platform from 5 January to 5 February, 2018. It was divided into 3 categories: Demographic Information, Engineer's Log and Overall Scheme.

The response was not encouraging but those concerned over the wellbeing of the LBTS programme, managed to voice out their opinions. One of the most important findings was that all respondents thought the programme was beneficial and relevant to their organisations and their career development. This was important to know because, if this programme was deemed irrelevant, it should be scrapped. Another major finding was that LBTS needed to be made online and paperless. This was actually the approach the committee felt strongly about, moving forward. However, such interface would require a major information technology setup which would mean high financial investment. The committee agreed that the project should be conducted over a longer period of time in multi-stages to go along with the upgrading of IT infrastructure at IEM.

We shall update the progress in upcoming articles. Other findings relating to the improvement process are in the process of implementation or will be reviewed and implemented in the near future.

Thirdly, to be current with the industry and in-line with the changes in IEM, a new name was deemed necessary. The IEM PI assessment format was enhanced to competency based with the last batch of PI applicant registered by 31 December, 2017. So, a "competency" based assessment need to be supported with mentorship that focused on competency based as well. This was where LBTS needed to be enhanced. The competency was not about focusing on traits of engineers personally but rather their engineering capabilities. This programme may also be expanded to include potential members from backgrounds such as technicians and technologists, once the organisation has designed the career development path of these groups of members.

A new logo was introduced, together with the new name "Engineering Competency Development" (instead of "Log Book Training Scheme"), as part of the marketing impact for brand recognition.

The fourth element in this rebranding exercise is engagement. We believe that all programme participants need support from the IEM secretariat and committee members. With this in mind, we will bring in more mentor and mentee support sessions to continue to brief and refresh participants about the programme, update new features (if any), and answer queries from members. The committee shall also start monitoring such sessions at the branch level and provide support as required. In 2017, the committee started the initiative of training trainers for branch representatives to conduct such briefings at their respective locations.

The "train the trainer" programme was implemented to reach out to more qualified mentors, especially to cater to the needs of branches outside the Klang Valley (HQ). This will make the programme more effective in serving mentees at their respective regions. In addition, the trainers can also organise mentor-mentee engagement sessions to support more graduate members requiring mentors to pursue the professional certification. The committee will continue to provide such support and seek cooperation from all to engage the secretariat incharge and the committee for any assistance required.

The last element is recognition for mentee and mentor. For the mentees, we encourage giving feedback on their mentors, introducing a mentor recognition programme and social media engagement. We encourage feedback on the mentors, be it positive or requiring improvements. Feedback is important to monitor the suitability of a mentor and a mentee. This is a 3-year relationship during which both parties will need to connect with each other professionally. Should the match between a mentor and mentee not be achieved, then we should find alternatives. Mentor recognition is also another way for mentees to provide the best feedback on their mentors. We have heard many stories of the admiration mentees have for their mentors and we would like to make these stories known. Do not hide your

admiration but instead recognise the efforts of your mentor.

When social media engagement started a few years ago on Facebook, many graduate members preferred this method of reaching out for assistance. We shall streamline and promote more such social media presence.

As for mentors, we shall maintain the list of mentors on the website as part of an elite group of people who has reached a certain level of ability to be a mentor in the industry, appreciation letters and a mentor recognition programme. These are members who are able and willing to altruistically help others to be as successful as they are.

When a mentee becomes a corporate member, the mentor will receive an appreciation letter signed by the IEM President. We believe a mentee's success is also that of the mentor's. Another form of recognition for mentors is the annual "Top 5 Mentors". Based on the feedback from mentees, these 5 mentors will be given recognition at an official IEM event.

For now, these are the elements of our rebranding effort. The Committee would like to thank all survey participants for providing ideas on how they would like to see the programme sail in the IEM organisation, how to make it relevant in the industry and how to engage with the participants.

We will provide updates, from time to time, on the progress of the ECD programme. This is part of our engagement efforts for all members. We must remember that all the committee members and mentors in this programme are volunteers who are passionate about helping the younger generation achieve career development satisfaction with professional certification.

Contributing our personal time and sharing our knowledge and experiences are done in the hope that our contributions will translate into the development of Malaysia and bring the country to greater heights. Therefore, instead of criticism, let us think of how the programme can be made better. We will certainly appreciate help in any way possible. Let us all work together.

FEATURE

Young Engineers' Role in Cultivating STEM

TEM (Science, Technology, Engineering & Mathematics) is becoming increasingly important and today, the application of science and technology is the norm in our daily lives.

Technology continuously invades every aspect of our lives, from smartphones to the development of electric cars and finding solutions to global warming. Indeed, STEM plays a major role in the world, with the result that most careers now require a background in STEM education.

Indirectly, STEM influences the economic growth of a country and today, it has become one of the competitive areas that determines a nation's future.

Because of this, the Malaysian government has taken great effort to promote STEM. In 1970, it was our national policy to achieve a 60:40 ratio of Science stream to the Technical Arts stream but we have fallen well short of the target since its implementation.

Recent data showed that only 45% of students in secondary schools chose Science subjects over Technical Arts and that 15% who met the requirements to pursue Science, did not do so. Some of the factors leading to the decline in interest in STEM are limited awareness about STEM, perceived difficulty of STEM subjects and content-heavy curriculum.

Young engineers play a very important role in promoting STEM. As a new task force in the industry, they can contribute to the betterment of society. Through experience sharing sessions, they can offer school students a first taste of the industry and so motivate them to take up STEM-related studies. Young engineers should also able to communicate with and understand school students better as they themselves have left

STEM Model Building Competition 2017

school not too long ago. As a result, school students will look to them as role models when they pursue a career in the STEM field.

Hands-on activities will allow school students to have STEM experiences that are more fun and engaging. These activities also facilitate the development of necessary skills for younger school students. For Engineering Week, the Young Engineers Section (YES) has organised the annual model building competition as one of its initiatives to increase the interest in STEM among school students. For the competition, the students need to be able to think critically and creatively when tasked with building a specific model from a set of materials.

YES has also helped to set up engineering clubs in schools to inspire students who, at the same time, will be able to see the importance and excitement of engineering as a career. Through extra-curriculum activities, students will be able to learn design, technology and engineering more effectively than through textbooks. Allowing students to get a feel of engineering at such a young age will definitely mould their minds and hearts as well as ignite their passion for engineering.

Then there is the perception that STEM is difficult to study. To change this perception, events such as the Kuala Lumpur Engineering & Science Fair (KLESF) can help create greater awareness and knowledge of STEM.

KLESF, a STEM event co-organised by IEM, attracts tens of thousands of visitors annually. YES supports the event as KLESF is a great platform to raise the awareness of STEM among primary and secondary school students. To encourage students to explore STEM, members of YES organised a hands-on learning game

YES volunteers in KLESF 2017

FEATURE

at the recent KLESF. This provided a platform and an opportunity for the young engineers to engage, educate and communicate with school students as well as instill in them an interest in STEM.

As for young women engineers, they are key to knocking down gender barriers.

In our realistic society, there are more environmental and social barriers for female students when they get involved in STEM sectors. Women are expected to marry and then become housewives. Academy of Sciences Malaysia (ASM) fellow Prof. Datuk Dr Halimaton Hamdan said that because of this long-time stereotyping, women tend to have self-doubts about whether they are suited for STEM careers; this has also caused them to feel they're not as valued as their male counterparts.

Of the total 7.6 billion world population recorded in 2018, 49.6% are women. Thus, women should play an important role in STEM too. When more women take part in STEM industries, it indirectly increases the number of people involved in STEM but due to significant gender disparity, men greatly outnumber women in STEM industries.

The Star newspaper reported that when women take part in the management of technology companies, these companies achieve a 34% higher return on investment. This strongly proves that women play an equally important role as men in STEM industries. There is no gender bias in the supply of STEM talent. To encourage the public to break away from gender stereotyping, young women engineers should stand up and be role models for female students.

One of the best female role models in STEM is Y.B. Yeo Bee Yin, Minister of Energy, Technology, Science, Climate Change & Environment and an engineer by training. At 35, she is also the youngest woman to be a full Cabinet minister. She is also a female leader in STEM and serves as a role model for future generations of women to participate in STEM industries.

Y.B. Yeo Bee Yin

Women engineers in STEM leadership roles should share their passion for the wonders of science, working experiences in STEM industries and lessons they have learnt along the way so that the younger generation can understand real world challenges. This way, girls will be able to eliminate their doubts and gain confidence in their scientific abilities so that in the future, they too can be successful in STEM fields.

Young women engineers can also take the initiative to create a STEM mentorship programme to help promote interest and capacity-building in science and mathematics among female school students.

CONCLUSION

In short, STEM is critical to the growth of our country's economy and it already impacts all parts of our daily lives. Young engineers play an important role in encouraging school students to participate in STEM activities.

Young women engineers should promote STEM to young girls to help overcome the gender bias and cultivate STEM interest among them as well.

To quote Shameema Parveen, CEO of Edutech, "All great inventors in the world have succeeded from never giving up - the ability to keep trying is what makes a good inventor".

- 1. Images source:
- 2. http://eduplaying.com/stem/
- http://www.humanresourcesonline.net/ malaysia-faces-low-female-participation-instem-sectors/
- http://3.bp.blogspot.com/-QPGhoKJoVT0/ UM9NcE1sS6I/AAAAAAAABbA/DY-H6SOIXU/ s1600/DSC_7066.jpg

Authors' Biodata

Yew Weng Kean is currently the chairman of Young Engineers Section.

Tan Wen Jia is on the general committee of the Young Engineers Section.

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Addressing Consistency

by Ir. Shum Keng Yan

Ir. Shum Keng Yan is a chemical engineer and a certified accident prevention and safety practitioner.

e have looked at addressing the perceptions of "Significance" and "Timing" in influencing behaviours. Now we will look at "Consistency".

In our February 2018 article, we noted that being able to get away with unsafe acts and feeling more comfortable were consistent each time a person repeated an unsafe act. This reinforced the desire to repeat the unsafe act.

How does this compare if the supervisor takes action? For instance, the supervisor sees the unsafe act and calls out that it is unacceptable by explaining the adverse outcome to the person. This will provide the significance and immediacy. The same needs to be repeated each time. Suppose the unsafe act occurs again and there is no call out. How will the employees perceive this? There is a lack of consistency in the expectations. This will weaken the original message that the unsafe act is not acceptable.

"Consistency" is about driving the same level of expectations every time there is an unsafe act. Any deviation or exemption due to cost, time, favouritism, hierarchy or other reason will create inconsistency, thus diluting the key message. Employees are quick to recognise when there is an inconsistency and will use the same reasoning when they choose to work in an unsafe way.

Only by combining "Consistency" with "Significance" and "Timing" will we be able to create a reinforcing message and drive behavioural change.

If you detect any inconsistency, drop me at note at: pub@iem.org.my.

"It's not what we do once in a while that shapes our lives. It's what we do consistently." Anthony Robbins.

IEM DIARY OF EVENTS

Title: The IEM-CIE-HKIE Tripartite Seminar 2018 on "Geotechnical Challenges in Infrastructures and **Transportation Projects**"

4 September 2018

Organised by: Geotechnical Engineering Technical

	DIVISION
Time	: 8.30 a.m 6.30 p.m.
CPD/PDP	: 7

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ENGINEER'S

Contributed by Michelle Lau

Seri Gemilang

Bridges of Putrajaya

he bridges of Putrajaya were built using various construction methods. Seri Gemilang, a steel and concrete road bridge, is used for many ceremonial parades, while Seri Wawasan is based on cable back stays and steel tie backs. Both have distinct profiles and perspectives that are very eye-catching. In fact, CNN Travel has ranked the Seri Wawasan Bridge as one of the world's most amazing bridges.

Seri Wawasan

"This section is dedicated to all members with passion for photography. If you think you have taken pictures worthy of publication, please submit them to may@iem.org.my. Editorial Board welcomes submission with a paragraph of description that depicts engineering literally or metaphorically."

FORUM

Young Engineer Networks, Malaysia-Taiwan Exchange Forum 2019: Preparing to Face Future Challenges

YOUNG ENGINEERS SECTION

reported by

his year, the Malaysia-Taiwan Young Engineer Exchange Forum saw an initiative for further collaboration to foster international ties amona vouna enaineers, to promote technical exchanges between young engineers and to provide students in the host country to interact with practising engineers from various industries. The event, organised by The Chinese Institute of Engineers (CIE), The Chinese Association of Engineering Consultants (CAEC) and The Taiwan Construction Research Institute (TCRI) and Young Engineers Section of The Institution of Engineers, Malaysia (IEM-YES), attracted 14 delegates from Malaysia, Singapore, Brunei and Hong Kong. It was held in Taipei, Taiwan, on 15-17 March, 2018.

It started with a social networkina session to meet new friends and to renew acquaintances, some of which originated from CAFEO (Conference Federation ASEAN Enaineers Organisation). Delegates caught up with one another, while making new friends. The event then proceeded with "Global, Regional, Local Trends & Roles of Civil Engineers", shared from the perspectives of Taiwan and Malaysia, by Mr. Chen Yi Min (Taiwan) and Mr. Tan Zhi Howe (Malaysia). This was to give students in Taiwan an introduction to an industrial overview of the Taiwan-Malaysia engineering, expectations and practices.

Group photo session

Then, in "Keys to Success in Engineering Industry as a Young Engineer", Dr Chang Jung Feng from Taiwan as well as Ir. Yeoh Su Hong and Mr. Chin Woon Kheong from Malaysia shared hard-learned lessons collected over the years. Few key take-aways from this were that, to keep abreast of times, young engineers must update their knowledge in an effective manner, cultivate and integrate their knowledge across functional domain and blend the technical skills with diversity of knowledge to conduct engineering from a holistic approach. The trio's professional experiences gave young engineers and students valuable insight into a career in the construction industry.

Next, representatives from Taiwan, Malaysia, Singapore, Brunei and Hong Kong came together in an open panel discussion to talk about relevant issues and challenges they faced in their communities as well as how they tackled these issues. They also offered early career advice and tips which would help motivate the students to take the next great leap into an engineering career.

Delegates were invited to join a technical visit to Danhai LRT System. Upon arrival at the site office in Danshui, the delegates were briefed on the project development by a representative from Project Management consultant Moh and Associates (MAA) and received a warm welcome from the Department of Rapid Transit System, New Taipei City. He shared with delegates a part of the history of the project, the challenges faced - such as land acquisition for the Danhai LRT development - and the construction technologies adopted for the construction. Later, the delegates toured the site and witnessed the testing of the first Taiwanese-designedand-made LRT rolling stock.

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FORUM

Delegates at CIE office

The next day, the delegates visited the CIE office for a discussion session and country presentation, where the representatives of each country took turns to talk about their organisations, history, size, structure, past events, membership drive strategies etc. A post-mortem discussion was then conducted to gather feedback from participants for greater improvements at the next event.

IEM and CIE had launched this initiative to bring together young engineers of the engineering fraternity not limited to SEA but from around the world. The detailed objectives are to be further developed and refined as it progresses.

The 3-day event ended with a farewell dinner on 17 March at Madison Hotel Urban 331 Bistro, hosted by CIE and CAEC. Present were Dr Moh Za Chieh, a key person in Taiwan's engineering development, Mr. Wen Tai Hsin, Secretary General of Taiwan Railway Reconstruction Bureau as well as Head of Department of the Civil Engineering at National Taiwan University (NTU) and National Taiwan University of Science & Technology (NTUST). It was an enjoyable evening and delegates left with fond memories of their time in Taiwan. IEM-YES would like to thank CIE and CAEC for hosting the event; we look forward to the next event hosted by HKIE in Hong Kong.

In conclusion, the event successfully gathered engineers from participating countries for exchanging ideas and networking. It is set to become a platform for professional network opportunities, a platform to engage and be exposed to new things, a platform to exchange ideas, share engineering best practices and expertise, for better cross-border relationships and for knowledge sharing in preparation to face challenges of the future.

IEM DIARY OF EVENTS

Title: 1-Day Short Course on Design of Piled Foundations

5 September 2018

Organised by: Geotechnical Engineering Technical Division Time : 8.30 a.m. - 6.30 p.m. CPD/PDP : 7.5

Title: Technical Visit to EWT Transformer Sdn. Bhd.

19 September 2018

Organised by: Mechanical Engineering Technical Division Time : 9.00 a.m. - 1.00 p.m. CPD/PDP : Applying

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JURUTERA • AUGUST 2018

FORUM

Ingenieure & Engineers Cup 2018 – A Badminton Tournament

SOUTHERN BRANCH - YOUNG ENGINEERS SECTION

reported by

he Institution of Engineers, Malaysia, Southern Branch, Young Engineer Section (IEM SB YES) held the Ingenieure & Engineers Cup (IE Cup) on 3 March, 2018, at Daiman Sri Skudai Sports Centre, Johor Baru. The main objectives were to encourage a healthy lifestyle for engineers and to increase bonding between IEM members and the public. Besides having a good time at the badminton tournament, members also enjoyed communicating and networking. For the tournament, teams taking part comprised 5 male players and 1 female player. The participants must be in an engineering-related field but never been involved in state tournaments or higher levels.

The 31 teams of 186 participants were divided into eight groups. The first and runner-up of each group then advanced to the knockout stage, where the champion was determined upon completion of the knockout stages. The event started with an opening speech by the Honorary Secretary of IEM Southern Branch, Ir. David Puen.

In addition, friendly matches among YES branches was also carried out concurrently at the same venue after the group stage. Participants included IEM members from all around the country such as IEM YES HQ (KL), IEM YES (Penang branch), IEM YES (Melaka branch) and friends from The Institution of Engineering & Technology (IET) at University of Southampton. YES members fully utilised the opportunity to network

among themselves, especially in terms of engineering and technological information sharing.

After 4 hours of group matches and 4 hours of knockout stages, the winners were finally determined. Present at the prize presentation ceremony were IEM SB Chairman Ir. Mohd Khir and members of the organising committee. Sponsors provided prizes worth a total RM8,200 which were awarded to the winners in the respective categories. The venue sponsor was Daiman Johor Jaya Sports Complex Berhad while cash and other prizes were sponsored by NS BlueScope Lysaght Malaysia Sdn. Bhd., MAPEI Malaysia Sdn. Bhd., Hong Xin Construction Sdn. Bhd., Hong Xin Construction Sdn. Bhd., Chuan Luck Piling Sdn. Bhd., Haily Construction Sdn. Bhd., Siacon Technology Sdn. Bhd., Laubros Holdings (M) Sdn. Bhd., and our in-kind sponsor by Match Point Sport Café.

IEM DIARY OF EVENTS

Title: ICTSIG Junior Digital Class (September 2018) - S.T.E.M fun learning: Introduction to Physical Computing and Software Development

5 September 2018

Organised by: Information and Communications Technology Special Interest Group Time : 9.00 a.m. - 5.30 p.m. CPD/PDP : N/A

Title: Talk on Visionary Leadership (Active Learning Lab Session)

8 September 2018

Women Engineers
Section
9.00 a.m 11.00 a.m
2

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.

Engineers, EmPOWERing Our Nation

SARAWAK BRANCH - YOUNG ENGINEERS SECTION

reported by

Chan Kwok Kwang

The IEM Engineering Expo was initially held in conjunction with Pi Day to commemorate Pi (π), a constant that is essential not only in mathematics but also in engineering. It used to be held on or around 14 March each year, in line with the value of Pi which is 3.142.

However, in 2017, the event concept was revamped to place more emphasis on engineering itself. The expo now features more than just companies exhibiting engineering products and services; it includes companies looking to recruit engineers, universities, government agencies and other learned societies related to the engineering field.

This year's event, themed "Engineers, Em**POWER**ing Our Nation", was held on 14-15 April at The Hills Shopping Mall, Kuching. It was launched by Batu Kitang State Assemblyman, Y.B. Cr. Ir. Lo Khere Chiang, who is also a civil engineer, together with IEM Sarawak Branch Chairman, Ir. Tang Chok Khing and other IEM Sarawak Branch and YES Sarawak committee members.

There were 37 booths, including that of Construction Industry Development Board (CIDB), National Institute of Occupational Safety and Health (NIOSH), Electrical Inspectorate Unit (EIU), institutions of higher education and engineering companies. Exhibits included the latest safety standards and regulations by the authorities, undergraduate and postgraduate programmes by universities and sophisticated engineering technologies by engineering companies.

The organising committee with Y.B. Cr. Ir. Lo Khere Chiang

Technical talks are a main highlight at the annual IEM Engineering Expo. Due to the overwhelming response received in 2017, parallel sessions were held this year to accommodate more than 20 talks, with topics ranging from the engineering field to occupational health and safety related issues.

CPD points were awarded to participants of technical talks on the latest engineering trends and technologies. A talk on "An Overview of the Professional Engineers' Interview" was held for the benefit of graduate engineers planning to obtain their Professional Engineer status.

In conjunction with the event and to promote safety awareness, especially in the construction field, IEM Sarawak Branch also collaborated with CIDB to offer a mandatory course, "Course on Safety Induction Construction Workers (SICW)-CIDB", for construction site personnel. Others who participated included contractors and other parties in the construction field.

IEM Sarawak Branch also invited Sarawak Veterinary Association and Sarawak General Hospital to give safety awareness talks related to the recent rabies outbreak, both on human and animal aspects. Updates on the outbreak as well as precautionary actions were discussed during these sessions.

IEM Sarawak Branch, in collaboration with Malaysia Red Crescent Stampin Chapter and Borneo Medical Centre, held a blood donation drive during the event this year as part of its social responsibility programme. This received an encouraging number of turn-ups as in previous editions of the activity.

Other programmes included "Networking High Tea" and "Build & Break Competition". The networking session was aimed at encouraging close interaction and exchange of ideas among exhibitors, technical talk participants and exhibition visitors, while the second programme was aimed at promoting creative thinking and engineering problem-solving skills among participants who were only given the problem and tools on the spot.

Overall, the event was a huge success. IEM Sarawak Branch would like to thank all parties involved for their kind support.

NEWS FROM BRANCH _

25th AGM of IEM - Negeri Sembilan Branch

reported by

Ir. Dr Oh Seong Por NEGERI SEMBILAN BRANCH

n June 30, 2018, The Institution of Engineers, Malaysia, Negeri Sembilan Branch (IEMNS) held its 25th Annual General Meeting at the IEM office in Oakland Commercial Square, Seremban. It was attended by 56 members, comprising 3 fellows, 52 corporate members and 1 graduate member. Representing the IEM President was Deputy President Ir. Ong Ching Loon. Prior to the AGM, Ir. Ong delivered an informative presentation on Energy Efficiency and Conservation.

IEMNS was established in 1993. Today, there are 1,668 members, comprising 10 fellows, 276 corporate members, 336 graduate members, 1,027 student members and 19 other grades. Since 2008, IEMNS owns an office lot equipped with appropriate infrastructure to hold activities such as talks, meetings, professional engineer interviews and special event celebrations.

This year, Ir. Dr Oh Seong Por was elected Chairman of IEMNS for session 2018/2019, taking over from Ir. Zainurin bin Karman. Ir. Dr Oh is also a committee member in the standing committee on information and publication as well as on the editorial board of IEM HQ. Other newly elected members were Ir. Mohd Azlan bin Othman (Vice Chairman), Ir. Abdul Rahim bin Sidek (Honorary Secretary) and Ir. Chong Chee Yen (Honorary Treasurer).

In his inaugural Chairman's address, Ir. Dr Oh reaffirmed the

Executive Committee, IEM Negeri Sembilan Branch Session 2018 / 2019					
Chairman	Ir. Dr Oh Seong Por				
Vice Chairman I	Ir. Dr Zarabizan bin Zakaria				
Vice Chairman II	lr. Mohd Azlan bin Othman				
Honorary Secretary	Ir. Abdul Rahim bin Sidek				
Honorary Treasurer	Ir. Chong Chee Yen				
Committee Members	lr. Richard Khoo Nee Kheong				
	lr. Kanna Dasan Narayanasamy				
	Ir. David Teh Wee Teck				
	Ir. Dr Noorazizi bin Mohd				
Immediate Past Chairman	Dato Ir. Zainurin bin Karman				
Past Chairman	Ir. Tiong Ngo Pu				
	Ir. Shahrin Amri bin Jahari				

commitment to revitalise activities aligned with the IEM mission, namely to promote the engineering profession to support the socio-economic development of our nation, to provide services to members and to enhance society's consciousness of science, engineering and technology.

Several activities have been proposed, such as technical visits to industries or projects for members to learn, benchmark and create networking, inviting experts to give talks for the sharing of experience and information, to conduct training for candidates and students on the roadmap to becoming

From left: Ir. Chong Chee Yen (Hon. Secretary), Dato Ir. Zainurin bin Karman (Immediate Past Chairman), Ir. Dr Oh Seong Por (Branch Chairman), Ir. Ong Chin Loon (Deputy President), Ir. Tiong Ngo Pu (Past Chairman) and Ir. Shahrin Amri bin Jahari (Past Chairman)

a professional engineer and to disseminate information to champion the engineering profession and IEMNS activities.

Ir. Dr Oh also urged members, nonmembers and students to participate in the activities. Members were invited to contribute ideas and suggestions. Finally, to show appreciation to the Deputy President, Immediate Past Chairman and fellow members, he recited a Malay pantun.

Ribuan Terima Kasih diucapkan Kepada Timbalan President Persatuan Kerjasama tuan selalu diharapkan Demi kemajuan persatuan

Ribuan Terima Kasih diucapkan Kepada Dato Pengerusi Persatuan Sumbangan Dato tetap diperlukan Semoga Dato kekal di AJK persatuan

Ribuan Terima Kasih diucapkan Kepada semua warga persatuan Penyertaan warga amat dialukan Demi kejayaan persatuan

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	Management (including project/contract/equipment/service/transport	Dams/reservoirs/irrigation	Cement
	district manager, clerk of works, other technical or operating manager)	Harbours/offshore structures	Other construction materials
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Spiritual Journey in Mythical Medan

Ir. Tham Kum Weng

Ir. Tham Kum Weng previously worked for JKR for 18 years and has been practising as a C&S consulting engineers for the past 25 years. He focusses on engineering inspection assessment and evaluation of structures and bridges. He shares relevant travel experiences from his occasional travel.

uring a company family trip to Lake Toba, Medan, in early November, 2017, we unsuspectingly d is c o v e r e d a n experience that would heal our souls as well as help us appreciate and cherish the diversity of this world.

Medan, the third largest city in Indonesia (population 3 million) is home to Graha Maria Annai Velankanni (Marian Shrine). This unique Catholic shrine is dedicated to The Lady of Good Health, in reverence to the 17th century apparition of Mother Mary in Velankanni, Tamil Nadu State, India.

The Catholic Church in Medan has been in operation since 2005. Its uniqueness stamps

from its spectacular Indo-Mughal architecture which incorporates components of other religions including Buddhism, Hinduism, Taoism and Islamic features. Save for discreetly mounted crosses, an uninitiated passerby could be forgiven for assuming the building to be a Hindu temple. It took amateurs four years (2011-2015) to build the shrine, masterminded by

Jesuit Priest Father James Bharaputra. It was largely funded by public donations. The external facade was painted in multi-colours of black, grey, white, red, green, blue and yellow in ascending order, with each colour symbolising a certain Christian concept. The colour sequence also symbolises profoundly the faith journey of a human from sin to God's glory. It was built for the Tamil Catholic community which first came to Medan to work in a the plantations in the 19th century, under the Dutch administration. It also serves as a pilgrimage centre for Catholics in South East Asia who come to seek healing, solace, peace and a cleansing of the soul.

The main prayer hall for prayer services (Eucharistic Masses etc.) on the upper floor is accessible via two spiral staircases on each side in the front. Inside the building, Bible quotations and images are displayed in four languages (Indonesian, English, Tamil and Chinese). Inside, I could feel such a sense of peace and calm,

coupled with joy and awe at God's creation that I burst out singing "How Great Thou Art".

On this short trip, we truly appreciated the open-mindedness of the majority Muslim population which accepted people of other races and faiths to practise their religions openly. It is heartening to see the people live in peace and harmony.

TEMUDUGA PROFESIONAL

Kepada Semua Ahli,

Tarikh: 18 Julai 2018

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 FIEM, PEng

Setiausaha Kehormat, IEM (Sessi 2018/2019)

PERMOHONAN BARU				
Nama	Kelayakan			
KEJURUTERAAN AWAM				
AINA BINTI ADAM	BE HONS (UITM) (CIVIL, 2007)			
AHMAD ABDUL SHAHID BIN MOHAMAD	BE HONS (UTHM) (CIVIL, 2007)			
AZRI HIZAMI BIN ABDUL AZIZ	BE HONS (UTM) (CIVIL, 2010)			
FADZLI BIN MD NORDIN	BE HONS (UPM) (CIVIL, 2005)			
NORLELA BINTI ABU BAKAR	BE HONS (UTM) (CIVIL, 2006)			
RAHAYU BINTI MD DIAH	BE HONS (UTM) (CIVIL, 2005)			
SALMIA BINTI BEDDU	BE HONS (USM) (CIVIL, 2006) MSc (USM) (STRUCTURAL, 2007) PhD (UTP) (CIVIL, 2012)			
WONG BAK SOON, DAVID	BE HONS (USM) (CIVIL, 2005)			
YUSUF BIN ABD. GHANI	BE (MIDDLESEX POLYTECHNIC) (CIVIL, 1986)			
ZALIHAN BNTI ZAHARI	BE HONS (UITM) (CIVIL, 2003)			
KEJURUTERAAN ELEKTRIKAL ABU SUFIAN BIN HJ ABU BAKAR AIMAN BIN ISMAIL CHONG KUEN WAI MUHAMMAD HAFEEZ BIN MOHAMED HARIRI NURZARINA BINTI ABU BAKAR	BE HONS (UNITEN) (ELECTRICAL & ELECTRONICS, 2009) ME (UNITEN) (ELECTRICAL, 2017) BE HONS (UNITEN) (ELECTRICAL & ELECTRONICS, 2008) BE HONS (UTM) (ELECTRICAL, 2002) BE HONS (USM) (ELECTRICAL, 2010) MSc (USM) (ELECTRICAL & ELECTRONIC, 2014) BE HONS (UTM) (ELECTRICAL, 2007)			
KEJURUTERAAN ELEKTRONI	<			
FIDELIA OLGA FRED	BE HONS (UITM) (ELECTRICAL, 2004)			
KEJURUTERAAN MEKANIKAL				
JAMIN	BE HONS (UTM) (MECHANICAL, 2008)			
MOHD SAIFUL BIN IDRIS	Dipl. Ing (KARLSRUHE) (MECHANICAL, 2010)			
KEJURUTERAAN MEKATRONI MOHD ARI NAZRUL BIN ABD RAHMAN	K BE HONS (UniMAP) (MECHATRONICS, 2007)			

	PERMOHONAN BARU/PERPINDAHAN MENJADI AHLI KORPORAT				
	Nama	Kelayakan			
KEJURUTERAAN AWAM					
	CHAI YOKE FONG	BE HONS (UTM) (CIVIL, 1994)			
	QUECK HAN TIONG	BE HONS (UTM) (CIVIL, 2000)			
	KEJURUTERAAN ELEKTRIKAL				
	DOMINIC KONG SAY SEONG	BE HONS (UPM) (ELECTRICAL & ELECTRONICS, 2010)			
	PUAH KUAN HUA	BE HONS (MMU) (ELECTRICAL, 2009)			

No. Ahli KEJURUT 34159 (87145 (94013 (59944)		
KEJURUT 34159 (87145 (94013 (59944 I	Nama	Kelayakan
34159 (87145 (94013 (59944 I	ERAAN AWAM	-
87145 (94013 (59944 I	CHAN KWOK KWANG	BE HONS (UNIMAS) (CIVIL, 2009)
94013 (59944 I	CHIN CHUN KIAT	BE HONS (UTAR) (CIVIL, 2013)
59944 I	CHONG KIAN MING	BE HONS (UTHM) (CONSTRUCTION, 2006)
	FADZLI MOHAMED NAZRI	BE HONS (USM) (CIVIL, 2005) MSc (USM) (CIVIL, 2008) PhD (BRISTOL) (2012)
78461 I	KELVIN LAW PUANG RONG	BE HONS (SWINBURNE) (CIVIL, 2011)
81477 I	LIEW KAR HOE	BE (QUEENSLAND) (CIVIL, 2011)
79581 I	NORAM IRWAN BIN RAMLI	BE HONS (UITM) (CIVIL, 2004) MSc (USM) (STRUCTURAL, 2005)
89457 3	SITI FATIMAH BINTI CHE OSMI	BE HONS (SURREY) (CIVIL, 2006) ME (SURREY) (WATER & ENVIRONMENTAL, 2009)
70446	SU KEIN LEONG	BE HONS (CURTIN) (CIVIL & CONSTRUCTION, 2013)
38786	SYAHBRINA BINTI HJ. USIN	BE HONS (UTHM) (CONSTRUCTION, 2006)
KEJURUT	ERAAN BIOMEDIKAL	
93539 I	(HAIRUNNISA BINTI HASIKIN	BE HONS (MALAYA) (ELECTRICAL, 2007) MESc (MALAYA) (BIOSENSOR, 2010) PhD (USM) (2014)
KEJURUT		
10000	MOMA DINTEROWALE	2006)
76026 I	NG SOON HEE	BE HONS (UTAR) (ELECTRICAL & ELECTRONICS, 2014)
66681 I	RAVEEN KUMAR A/L RAMALINGAM	BE HONS (UTP) (ELECTRICAL & ELECTRONICS 2010) ME (UTM) (ELECTRICAL - POWER, 2014)
03015	SAMUEL OH MING OOI	BE HONS (MONASH) (ELECTRICAL & COMPUTER SYSTEMS, 2010) RE HONS (MALAVA) (ELECTRICAL 2012)
00010		DE HUNO (WALATA) (ELECTRICAL, 2012)
KEJURUT	ERAAN ELEKTRONIK	
75280	SHAHRIL IRWAN BIN SULAIMAN	BE HONS (UNITEN) (ELECTRICAL & ELECTRONICS, 2002)
KEJURUT 24776 I	ERAAN INSTRUMENTASI DA KAMARUL AZLAN BIN MD BUKHRI	N KAWALAN BE HONS (UTM) (ELECTRICAL, 2003)
KEJURUT	ERAAN KIMIA	
41979 I	OH CHEE SENG	BE HONS (UPM) (CHEMICAL, 2000)
KEJURUT	ERAAN MEKANIKAL	
36991 I	FAIZAL BIN MOHAMED YUSOFF	BE HONS (U.M.I.S.T) (MECHANICAL, 1998)
89688	MOHD SUKRIE BIN RAMLI	BE HONS (UTHM) (MECHANICAL, 2010)
94362	SYAHRUL ANUAR BIN ABD WAHAB	BE HONS (UTM) (MECHANICAL, 1998)
KEJURUT	ERAAN SUMBER AIR	
88481	AMIRUDEAN BIN SAPIEE	BE HONS (UITM) (CIVIL, 2011) MSc (BIRMINGHAM) (WATER RESOURCES TECHNOLOGY & MANAGEMENT, 2014)
	HONAN BARU / PERPINI	DAHAN MENJADI AHLI KORPORAT
PERMO	Nama	Kelayakan
PERMO No. Ahli		
PERMO No. Ahli KEJURUTI	ERAAN AWAM	
PERMO No. Ahli KEJURUTI 24350	ERAAN AWAM ANIZAHYATI BINTI ALISIBRAMULISI	BE HONS (UITM) (CIVIL, 2001) ME (UTM) (CIVIL-STRUCTURAL, 2006) PhD (NORWEGIAN UNIVERSITY OF SCIENCE & TECHNOL (OCY) (STRUCTURAL OF 2014)
PERMO No. Ahli KEJURUTI 24350 12583	ERAAN AWAM Anizahyati binti Alisibramulisi Zainal Abidin bin zakaria	BE HONS (UITM) (CIVIL, 2001) ME (UTM) (CIVIL-STRUCTURAL, 2006) PhD (NORWEGIAN UNIVERSITY OF SCIENCE & TECHNOLOGY) (STRUCTURAL, 2014) BE (NORTH EAST LONDON POLYTECHNIC) (CIVIL, 1988)
PERMO No. Ahli I KEJURUTI 24350 // 12583 : KEJURUTI	ERAAN AWAM Anizahyati binti Alisibramulisi Zainal Abidin bin zakaria ERAAN MEKANIKAL	BE HONS (UITM) (CIVIL, 2001) ME (UTM) (CIVIL-STRUCTURAL, 2006) PhD (NORWEGIAN UNIVERSITY OF SCIENCE & TECHNOLOGY (STRUCTURAL, 2014) BE (NORTH EAST LONDON POLYTECHNIC) (CIVIL, 1988)

Division
: 9.00 a.m 1.00 p.m.
: 3

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.

KEAHLIAN

PERMOHONAN BARU / PEMINDAHAN AHLI

Persidangan Majlis IEM yang ke-413 pada 16 Julai 2018 telah meluluskan sebanyak 1675 ahli untuk permohonan baru dan permindahan ahli. Berikut adalah senarai ahli mengikut disiplin kejuruteraan:

	GRED KEAHLIAN									
DISIPLIN	FELO	SENIOR	AHLI	COMPANION	SISWAZAH	"INCORPORATED"	"AFFILIATE"	"ASSOCIATE"	SISWA	JUMLAH
Aeronautikal					2					2
Aeroangkasa					2					2
Pertanian					1					1
Biokimia					1					1
Bioperubatan			1		2	1		1	4	9
Kimia			13	1	37				105	156
Awam	1	2	165	9	134	1		1	299	612
Komunikasi						1			2	3
Komputer					1				10	11
Komputer & Komunikasi									6	6
Elektrikal & Elektronik				1					40	41
Elektrikal		2	109	2	74	7		1	50	245
Elektronik	1		14	3	30	2	1	3	36	90
Alam Sekitar			2						1	3
Proses & Makanan					2					2
Geoteknik			2							2
Lebuhraya			1							1
Pembuatan			2		9				22	33
Marin					2					2
Bahan					4				1	5
Mekanikal	1		54	1	99	2		1	211	369
Mekatronik				1	8	1			53	63
Petroleum					1				7	8
Struktur			2						1	3
Telekomunikasi					1				1	2
Sumber Air			2							2
Lain-lain									1	1
JUMLAH	3	4	367	18	410	15	1	7	850	1675

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

.

Ir. Mohd Khir bin Muhammad FIEM, PEng

Setiausaha Kehormat, Institusi Jurutera Malaysia, Sesi 2018/2019

	PEMINDAHAN	I AHLI KEPADA	KEJU	RUTERAAN MEKAI	NIKAL
	AHLI F	ELLOW	12557	LT KDR (B) MOHD	B.E.H
No. Ahli	Nama	Kelayakan		JAMIL	TECH
KEJU	RUTERAAN AWAM			PEMINDAHAN	
18037	NGUI MIN FUI@TOM	BE HONS (LEEDS) (CIVIL,		AHLI KO	DRPO
		1995)	No.	Nama	Kela
KF.JU	RUTERAAN EI EKT	RONIK	Ahli		
18809	LIM KEE WENG,	BE HONS (NOTTINGHAM	KEJU	RUTERAAN ALAM	SEKIT
	BERNARD	TRENT) (ELECT & E'TRONIC, 1996)	42502	NOOR HAFIZAH BINTI KUSNIN	BE HO (CIVIL MANA
KEJU	RUTERAAN MEKAI	NIKAL			
15937	ZAINAL FITRI	BE HONS (MANCHESTER	KEJU	RUTERAAN ARKITI	EK NA
	ZAINAL ABIDIN	METROPOLITAN) (MECH, 1992)	70364	MOHD FAKHRUDDIN BIN ZAINAL ASHIRIN	BE HC (MARI SYST
	PEMINDAHAN	I AHLI KEPADA			
	AHLIS	SENIOR	KEJU	RUTERAAN AWAM	
No. Ahli	Nama	Kelayakan	49423	ABDUL HADI BIN FIRUZ AHMAD	BE HC
KEJU	RUTERAAN AWAM		38312	ABDUL MUSAWIR BIN ABDUL WAHID	BE HO
16504	ISMAIL BIN ABD	B.E.HONS.(UITM)(CIVIL, 1997)	37939	ADLY BIN DASRIL	BE HO
	RAHMAN	M.E.(UTM)(GEOTECHNICS, 2007)	87604	AHMAD SAIFUDDIN BIN ABDUL	BE HO
48130	ZARABIZAN BIN ZAKARIA	B.E.HONS.(UTM)(CIVIL, 2002) M.E.(UPM)(HIGHWAY & TRANSPORTATION, 2000)	35905	ALLAN CHWEE YEW LUN	BE HO
		PHD.(UTM)(2016)	14770	ALLAN GUY GOONTING	BE HO 1991)
KEJU	RUTERAAN ELEKT	RIKAL	37313	ASRIMAYANTI BINTI CHI ARI	BE HO
60072	IRYANI BINTI MOHAMED RAWI	B.E.HONS.(UTM)(CIVIL, 2002)	70417	AZURA BINTI MEGAT IBRAHIM	BE HO STRU
17677	MOHD FADIL BIN ABU SAMAH	B.E.HONS.(UTM) (ELECTRICAL, 2000) M.E.(UTM)(ELECTRICAL- POWER, 2014)	24424	AZURA HANIM BINTI SULAIMAN	BE H0 MSC (2010)

	JAMIL	TECHNOLOGY, 1991)	44179
	PEMINDAHAN	AHLI KEPADA	91016
	AHLI KO	ORPORAT	32881
No. Ahli	Nama	Kelayakan	41527
KEJU	RUTERAAN ALAM	SEKITAR	27553
42502	NOOR HAFIZAH BINTI KUSNIN	BE HONS (UTM) (CIVIL-CONSTRUCTION MANAGEMENT, 2005)	34362
KEJU	RUTERAAN ARKITI	EK NAVAL	59928
70364	MOHD FAKHRUDDIN BIN ZAINAL ASHIRIN	BE HONS (TASMANIA) (MARINE & OFFSHORE SYSTEMS, 2011)	39050
KEJU	RUTERAAN AWAM		44129
49423	ABDUL HADI BIN FIRUZ AHMAD	BE HONS (UITM) (CIVIL, 2010)	58014
38312	ABDUL MUSAWIR BIN ABDUL WAHID	BE HONS (USM) (CIVIL, 2006)	66725
37939	ADLY BIN DASRIL	BE HONS (UTM) (CIVIL, 2006)	28078
87604	AHMAD SAIFUDDIN BIN ABDUL	BE HONS (UITM) (CIVIL, 2000)	36867
35905	ALLAN CHWEE YEW LUN	BE HONS (UTM) (CIVIL, 2011)	27807
14770	ALLAN GUY GOONTING	BE HONS (MONASH) (CIVIL, 1991)	20882
37313	ASRIMAYANTI BINTI CHI ARI	BE HONS (UTHM) (CIVIL, 2010)	29531
70417	AZURA BINTI MEGAT IBRAHIM	BE HONS (UKM) (CIVIL & STRUCTURAL, 2000)	54578 28915
24424	AZURA HANIM BINTI SULAIMAN	BE HONS (UPM) (CIVIL, 2003) MSC (UITM) (CONSTRUCTION, 2010)	62161

B.E.HONS.(UTM) (MECHANICAL-MARINE

28909	CHAN KOK YUEN	BE HONS (UPM) (CIVIL, 2007)
28240	CHEAH CHEE BAN	BE HONS (USM) (CIVIL, 2009) PHD (USM) (2012)
44179	CHENG SHU HUI	BE HONS (UTM) (CIVIL, 2006)
39982	CHEONG WAI SHIN	BE HONS (UTM) (CIVIL, 2006)
91016	CHIAM TEE YONG	BE HONS (UTAR) (CIVIL, 2011)
32881	CHIN NYUK JYI	BE HONS (UNIMAS) (CIVIL, 2011)
41527	CHUNG JIA JIUNN	BE HONS (UMP) (CIVIL, 2011)
27553	DURAIDA BINTI SALLEH	BE HONS (USM) (CIVIL, 2004) MSC (USM) (PROJECT MANAGEMENT, 2008)
34362	EMMY SHERINA BINTI ISMAIL HASHIM	BE HONS (UKM) (CIVIL & ENVIRONMENTAL, 2004)
59928	EZLIANA BINTI GHAZALI	BE HONS (UITM) (CIVIL, 2009) MSC (UITM) (CONSTRUCTION, 2011)
39050	GALIH ANAK ANDREW TUKAU	BE HONS (UITM) (CIVIL, 2007)
44129	GAN TZE NENG	BE HONS (CURTIN) (CIVIL & CONSTRUCTION, 2009)
58014	GOH WAI KHUEN	BE HONS (SWINBURNE) (CIVIL, 2008)
66725	HASNI BIN ZAINUDIN	BE HONS (UTM) (CIVIL, 2013)
28078	HO KIAT YEE	BE HONS (USM) (CIVIL, 2007)
36867	ISARUDDIN BIN MORSHIDI	BE HONS (UNIMAS) (CIVIL, 2002)
27807	KAMALIAH BINTI MOHD SAHA	BE HONS (UITM) (CIVIL, 2009) MSC (UITM) (STRUCTURE, 2011)
29882	KHOR JIANG CHAI	BE HONS (USM) (CIVIL, 2008)
29531	KHOR KIAH TEE	BE HONS (UPM) (CIVIL, 2010)
54578	KOK SAY CHOONG	BE HONS (KLIUC) (CIVIL, 2008)
28915	KUAK CHAI WENG	BE HONS (MALAYA) (CIVIL, 2007)
62161	KWANG KIM LUP	BE HONS (UTAR) (CIVIL, 2013)

KEAHLIAN

42352	LAI KER TZE	BE HONS (UMS) (CIVIL, 2011)
43153	LAW JIA HAUR	BE HONS (UTM) (CIVIL, 2006)
50249	LEE CHECK SHIN	BE HONS (KLIUC) (CIVIL, 2011) ME (UPM) (STRUCTURAL & CONSTRUCTION, 2014)
27116	LEE KING SHEN	BE HONS (UNIMAS) (CIVIL, 2005)
57611	LIEW CHIT WAI	BE HONS (UTM) (CIVIL, 2013)
11148	LIEW CHOONG KONG	BSC HONS (BRUNSWICK) (CIVIL, 1986) MSC (BRUNSWICK) (CIVIL, 1988)
59932	LIM JEE HOCK	BE HONS (UTM) (CIVIL, 2006)
94632	LIM MA HONG	BE HONS (UTM) (CIVIL, 1999)
22093	LIONG SIN WEY	BE HONS (UTM) (CIVIL, 2003)
29020	LOW KIAN TONG	(CIVIL, 2004) ME (UPM) (ENVIRONMENTAL, 2009)
60054	LOW SHEUE LIH	BE HONS (UNITEN) (CIVIL, 2007)
26500	LOW SOON AIK	BE HONS (UTM) (CIVIL, 2001)
32120	AHMAD	ME (UPM) (HIGHWAY & TRANSPORTATION, 2012)
47905	MOHAD 'FEDDER BIN MUSA	"BE HONS (UTM) (CIVIL, 2014) ME (UTM) (CIVIL, 2017)"
22737	MOHAMAD ISWANDI BIN JINNE	BE HONS (UKM) (CIVIL & STRUCTURAL, 2000)
29005	MOHAMED MEKHRAJUDIN BIN MUHAMMAD SAHID	BE HONS (UTTM) (CIVIL, 2004)
26625	MOHD FARIZ BIN MANSORUDIN	BE HONS (UITM) (CIVIL, 2006)
28797	YUSOFF	BE HONS (UTM) (CIVIL, 1991)
71135		BE HONS (UNISEL) (CIVIL
	KHAIR SHAH BIN ABDULLAH SANI	2006)
28029	MUHAMAD HAMBALI BIN AB GHANI	BE HONS (UTM) (CIVIL, 2002) MSC (UITM) (CIVIL, 2014)
93907	MUHAMMAD NASHRIQ FARHAN BIN SUPANDI	BE HONS (UTM) (CIVIL, 2007)
66376	Muhammad Nor Hafidzi bin Mahat	BE HONS (UTM) (CIVIL, 2009) ME (UTM) (STRUCTURE & MATERIAL, 2013)
36990	NOOR AZIM BIN MOHD RADZI	BE HONS (UTM) (CIVIL, 2006) MSC (UKM) (CIVIL & STRUCTURAL, 2016)
27020	NOORFAIZAH BT HAMZAH	BE HONS (UITM) (CIVIL, 2007) MSC (UITM) (GEOTECHNICAL, 2008)
25340	NOR AZLINA BINTI KASIM	BE HONS (UITM) (CIVIL, 2004) ME (UPM) (HIGHWAY & TRANSPORTATION, 2015)
43573	NOR'AIZA BINTI JA'AFAR	BE HONS (UPM) (CIVIL, 1996)
57530	NORAZURA BINTI MUHAMAD BUNNORI	BE HONS (UKM) (CIVIL & STRUCTURAL, 1999)
33188	NUR HIZARUDDIN BIN CHE AJID	BE HONS (UITM) (CIVIL, 2010)
29279	NUR WAHIDA BT BAKHTIAR	BE HONS (UMP) (CIVIL, 2008)
43741	NURUL AINAA BINTI SELAMAT	BE HONS (UTM) (CIVIL, 2008)
30556	ONG PENG PHENG	BE HONS (UTHM) (CIVIL, 2007)
25563	ONG TAI BOON	BE HONS (USM) (CIVIL, 2004)
30529	PARNAM SINGH A/L MEHAR SINGH	BE HONS (BIRLA INST. OF TECH. SCIENCE) (CIVIL, 1985) MSC (BELFAST) (CIVIL, 1989)
41071	PHANG CHIN XIU	BE HONS (UTM) (CIVIL, 2009)
29387	POH YIH CHERN	BE HONS (UPM) (CIVIL, 2008)
70227	PRAKASH A/L G. SELVARATNAM	BE HONS (UNITEN) (CIVIL, 2006)
28942	RAFIEE BIN ABDUL RAZAK	BE HONS (UPM) (CIVIL, 2007)
37239	RAJAKUMARAN A/L RAJAPPAN	BE HONS (UM) (CIVIL, 2006)
26867	RIDUAN BIN YUNUS	BE HONS (UTM) 9CIVIL, 2001)
74452	RINI ASNIDA BINTI ABDULLAH	BE HONS (UTM) (CIVIL, 2001) ME (UTM) (GEOTECHNIC, 2006) DHD (LEED) (2012)
25683	SAKINAH BINTI NOORDIN	BE HONS (UKM) (CIVIL & ENVIROMENTAL, 2002) MSC (UITM) (WATER DESOLIDCES 2002)
23130	SALMALIZA BINTI SALLEH	BE HONS (UITM) (CIVIL, 2004) MSC (NATIONAL UNIV. OF SINGAPORE) (PROJECT MANAGEMENT, 2007)

22161	SUHAILA BINTI	BE HONS
	30600	TRANSPO
52404	TAN CHONG HOO	BE HONS MSC (USM 2005)
29375	TAN KIEN YU	BE HONS
52306	WAN MUHAMMAD FAISYAL BIN MOHD NOOR	BE HONS
20605	WONG JERN NEE	BE HONS MSC (UPM CONSTRU
20980	WONG KAR HONG	BE HONS
45340	WOO PEGGY	BE HONS
54131	YEOH GIM HENG	BE HONS
59148	YEOW BEE KIM	BE HONS
28424	YEOW POH CHUN	BE HONS 2007)
70219	YONG JYH GIIN	ME HONS 2008)
19705	ZA'IM BIN SHAHID	BE HONS
KEJU	RUTERAAN BIOPE	RUBATAN
72569	NUR HANINIE BINTI ABD WAHAB	BE HONS (ELECTRO MSC (USM SYSTEM D
KEJU	RUTERAAN ELEKT	RIKAL
25025	AHMAD ARIPIN BIN	BE HONS
	SAIMAN	(ELECTRO TELECOM CONVERS
87513	AHMAD FAKHRUL HAKIM BIN ZAMRI	BE HONS
49911	AIDA MARIA BINTI AZMI	BE HONS &
62052	ALIFF MAHATHIR BIN ABD AZIZ	BE HONS
49921	AMIRUL IDZUAN BIN IDERIS	BE HONS
93823	AZLEY BIN JAMALUDDIN @ ABDUL AZIZ	BE HONS
60021	CHRISTIANA LINUS MAJAIL	BE HONS
88961	DURRANI MUHAMAD BIN	BE HONS (ELECTRIC
50142	SULAIMAN FAIRUZ NIZAM BIN AZMI	BE HONS (ELECTRIC 2008)
70627	FARID SHAZWAN BIN MOHD JAFFAR	BE HONS
58639	FELIX HO FENG NAM	BE HONS
89453	FULBERT BIN	BE HONS
37770	HAIRUDDIN BIN	BE HONS
58638	HIEW ZHI CHEUN	BE HONS
72633	HISHAMUDDIN BIN	BE HONS
37270	IDERIS BIN HADZIR	BE HONS
61900	IRSYIDA HANIM	ME HONS
24353	JA'AFAR BIN OMAR	"BE HONS
		(ELECTRIC SYSTEM, 7 ME (UPM)
28015	JORIN BIN	BE HONS
43474	KHAIRUL ANUAR	BEHONS
34054	KHAIRUL HAFIZUL	BE HONS
49599	LAM FOO CHEE	BEHONS
72189	LEE KEAT BENG	(ELECTRIC
47608	LEE MING YUEN	(ELECTRIC
45702		(ELECTRIC

38746 SITI ZANARIAH BINTI MOHD RAZADI

32116 SOH TEK PENG

21960 SOONG CHEE LIM

DNG	BE HONS (UPM) (CIVIL, 2001)
	BE HONS (LWWDS) (CIVIL & STRUCTURAL, 2003)
NG	BE HONS (UTM) (CIVIL, 2013) ME (UTM) (CIVIL, 2017)
A	BE HONS (UTM) (CIVIL, 2007)
IUN	BE HONS (MALAYA) (CIVIL, 2007)
N	ME HONS (SWANSEA) (CIVIL, 2008)
HID	BE HONS (UTM) (CIVIL, 1992)
BIOPER	RUBATAN
BINTI	BE HONS (UNIMAP)
	(ELECTRONIC, 2010) MSC (USM) (ELECTRONIC SYSTEM DESIGN, 2012)
LEKT	RIKAL
I BIN	BE HONS (UNIMAS)
	TELECOMMUNICATION, 2000) CONVERSION (UNITEN) (2012)
RUL	BE HONS (UNITEN)
MRI	(ELECTRICAL POWER, 2011)
NII	& ELECTRONICS, 2008)
lir	BE HONS (UITM) (ELECTRICAL, 2009)
N BIN	BE HONS (UNITEN) (ELECTRICAL POWER, 2008)
0	BE HONS (UNITEN) (ELECTRICAL POWER, 2007)
INUS	BE HONS (USM) (ELECTRICAL & ELECTRONICS, 2004)
I	BE HONS (UNITEN) (ELECTRICAL & ELECTRICAL 2009)
BIN	BE HONS (UNITEN) (ELECTRICAL & ELECTRONIC,
AN	BE HONS (UITM)
G	BE HONS (UTEM)
	(ELECTRONIC-COMPUTER, 2006)
	BE HONS (UNIMAP) (ELECTRICAL SYSTEM, 2010)
N	BE HONS (UNITEN) (ELECTRICAL POWER, 2010)
UN	BE HONS (UMS) (ELECTRICAL, 2006)
BIN	BE HONS (UITM) (ELECTRICAL, 2013)
DZIR	BE HONS (UTM) (ELECTRICAL 2004)
N	ME HONS (SHEFFIELD) (ELECTRICAL, 2008)
MAR	"BE HONS (UKM)
	(ELECTRICAL, ELECTRONIC & SYSTEM, 1999) ME (UPM) (ENGINEERING MANAGEMENT, 2006)"
	BE HONS (USM) (ELECTRICAL, 2001)
AR	BE HONS (UNITEN) (ELECTRICAL POWER, 2009)
ZUL	BE HONS (UITM) (ELECTRICAL, 2009)
E	BE HONS (UNIMAP) (ELECTRICAL SYSTEM, 2010)
G	BE HONS (UNIMAP)
N	BE HONS (UNITEN)
	BE HONS (UNITEN)

	BE HONS (LISM) (CIV/IL 2000)		А
	BE HONS (UPM) (CIVIE, 2000) BE HONS (UPM) (CIVIE, 2004) ME (UPM) (HIGHWAY & TRANSPORT 2011)	86187	N S
	BE HONS (USM) (CIVIL, 2004) MSC (USM) (STRUCTURAL, 2005)	62001	N
	BE HONS (UPM) (CIVIL, 2010) BE HONS (UITM) (CIVIL, 2011)	38893	N
		50170	N
	BE HONS (UPM) (CIVIL, 2002) MSC (UPM) (STRUCTURAL & CONSTRUCTION, 2005)	49920	N A
	BE HONS (UPM) (CIVIL, 2001) BE HONS (LWWDS) (CIVIL & STRUCTURAL, 2003)	25369	N A
	BE HONS (UTM) (CIVIL, 2013) ME (UTM) (CIVIL, 2017)	43641	N
	BE HONS (UTM) (CIVIL, 2007) BE HONS (MALAYA) (CIVIL,	34059	N N
	2007) ME HONS (SWANSEA) (CIVIL.	90065	N N
	2008) DE LIONS (LITAL) (CIV(II - 1002)	88839	N
	BE HONS (UTM) (CIVIL, 1992)	76040	N
	RUBATAN		S
	BE HONS (UNIMAP) (ELECTRONIC, 2010)		
	MSC (USM) (ELECTRONIC SYSTEM DESIGN, 2012)	34050	N A S
Г	RIKAL	94024	N
	BE HONS (UNIMAS) (FLECTRONIC &		R
	TELECOMMUNICATION, 2000) CONVERSION (UNITEN) (2012)	58674	N N
	BE HONS (UNITEN) (ELECTRICAL POWER, 2011)	70385	N
	& ELECTRONICS, 2008)		R
	BE HONS (UITM) (ELECTRICAL, 2009)	71194	B
	BE HONS (UNITEN) (ELECTRICAL POWER, 2008)	36946	N S
	BE HONS (UNITEN) (ELECTRICAL POWER, 2007)	47544	N J
	BE HONS (USM) (ELECTRICAL & ELECTRONICS, 2004)	93996	N B
	BE HONS (UNITEN) (ELECTRICAL &	73284	N N
	ELECTRONICS, 2009) BE HONS (UNITEN)	81946	P
	(ELECTRICAL & ELECTRONIC, 2008)	86027	Ρ
	BE HONS (UITM) (ELECTRICAL, 2011)	43529	R
	(ELECTRONIC-COMPUTER, 2006)	51326	R
	BE HONS (UNIMAP) (ELECTRICAL SYSTEM, 2010) BE HONS (UNITEN)	27508	R
	(ELECTRICAL POWER, 2010)	50702	0
		NATURAL CONTRACT	

BE HONS (UITM) (CIVIL, 2008)

BE HONS (USM) (CIVIL, 2011)

27110 LINDA SIMON

BE HONS (UMS) (ELECTRICAL

(ELECTRICAL & ELECTRONIC, 2002)

		a LLLOTRONIO, 2002)
4182	LING KWAN YEW, ALFRED	BE HONS (UMS) (ELECTRICAL & ELECTRONICS, 2007)
36187	MELVIN NISCHOL SINGARAM	BE HONS (WESTERN AUSTRALIA) (ELECTRICAL, 1995)
62001	Mohamad Naim Bin Mohamad	BE HONS (UTEM) (INDUSTRIAL POWER, 2008) ME (UTM) (ELECTRICAL POWER, 2017)
38893	MOHD AFIZAN BIN ISMAIL	BE HONS (UTM) (ELECTRICAL, 2008)
50170	MOHD ARIF BIN ABDULLAH	BE (UTM) (ELECTRICAL, 2006)
19920	MOHD AZHAR BIN ABDUL MAJID	BE HONS (UNITEN) (ELECTRICAL & ELECTRONIC, 2007)
25369	Mohd Azwan Bin Ahmad	BE HONS (UITM) (ELECTRICAL, 2006)
13641	MOHD DZAKI BIN MOHD AMIR	ME HONS (LOUGHBOROUGH) (ELECTRICAL & ELECTRONIC, 2008)
34059	MOHD FADHIL BIN MUSA	BE HONS (UITM) (ELECTRICAL, 2006)
90065	Mohd Fitri Bin Mohammad	BE HONS (UITM) (ELECTRICAL, 2009)
38839	MOHD MAHZUZ BIN MAMAT	BE HONS (UKM) (ELECTRICAL & ELECTRONIC, 2012)
76040	MOHD SAZLI BIN SAAD	BE HONS (UITM) (ELECTRICAL, 2002) ME (UTM) (ELECTRICAL- MECHATRONIC & AUTOMATIC CONTROL, 2007)
34050	MOHD SHAFIK AFFANDY BIN SHAZALI	BE HONS (UITM) (ELECTRICAL, 2009)
94024	MOHD SHAHLAN FITRY BIN NOOR RAHIN	BE HONS (UITM) (ELECTRICAL, 2006) CONVERSION (UNITEN) (2013)
58674	MOHD ZAIM BIN MOHD NAZARI	BE HONS (UTM) (ELECTRICAL- INSTRUMENTATION & CONTROL, 2009)
70385	MUHAMMAD AZFAR BIN MAHAMAD ROHANI	BE HONS (UITM) (ELECTRICAL, 2013)
71194	MUHAMMAD FIQRI BIN ABDUL RAHMAN	BE HONS (WESTERN AUSTRALIA) (ELECTRICAL & ELECTRONIC, 2008)
36946	NISHAL A/L SURESHCHANDRA	BE HONS (UNITEN) (ELECTRICAL, 2010)
17544	NORAZLAN BIN JAAFAR	BE HONS (UTM) (ELECTRICAL, 2004)
3996	NURUL NABILA BINTI ZUBIR	BE HONS (UNITEN) (ELECTRICAL POWER, 2008)
73284	NUZILAN BIN MUHAMMAD	BE HONS (UNITEN) (ELECTRICAL POWER, 2013)
31946	PANG YAP SENG	BE HONS (UTAR) (ELECTRICAL & ELECTRONIC, 2013)
36027	PUEN MING CHIANG	BE HONS (MMU) (ELECTRICAL, 2012)
13529	R.SARAVANAN RAJAGOPAL	BE HONS (UTM) (ELECTRICAL, 2000)
51326	RINA BINTI RASHID	BE HONS (USM) (ELECTRICAL & ELECTRONIC, 2006) ME (UTHM) (ELECTRICAL, 2014)
27508	ROLAND JULIUS @ GRAY	BE HONS (UTM) (ELECTRICAL, 1991)
50702	SALLINDA BINTI MOHD ALI	BE HONS (UNITEN) (ELECTRICAL POWER, 2008)
8768	SARZAMINOR BIN BUKAR	BE HONS (UNIMAP) (ELECTRICAL SYSTEM POWER, 2014)
94146	SIDI AMAN BIN MUHAMMAD	BE HONS (UTM) (ELECTRICAL, 2001)
38072	SIREETHARAN A/L SUGUMARAN	BE HONS (UNITEN) (ELECTRICAL POWER, 2008)
72211	SOO CHEE KEAT	BE HONS (UKM) (ELECTRICAL & ELECTRONIC, 2010)
51673	SURIAMURTHY A/L MALAYANDY	BE HONS (UNITEN) (ELECTRICAL & ELECTRONIC, 2008)
77636	SYAIFUL ANUAR BIN SAPUAN	BE HONS (UTM) (ELECTRICAL, 2007)
54222	TAN KOK HENG	BE HONS (UPM) (ELECTRICAL & ELECTRONICS, 2011)
17609	TEOH BOON KHIM	BE HONS (MALAYA) (ELECTRICAL, 2009)

KEJURUTERAAN ELEKTRONIK

	COTERCOUR ELECT	
25354	AIZAT HILMI BIN	BE HONS (UITM)
	ZAMZAM	(ELECTRICAL, 2007)
		ME (UITM) (ENGINEERING
		MANAGEMENT, 2013)
19313	CHAI CHED CHANG	"BE HONS (UM) (ELECTRICAL, 1998)
		MSC (MMU) (2002)"

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BE HONS (UTM) (CIVIL, 2006)

48484 SEOW WUI GIAP

		HALLAM) (ELECTRONIC SYSTEMS, 2002) MSC (BELFAST) (ELECTRONICS, 2003) PHD (DUBLIN) (2011)
43098	MUHAMMAD ADIB BIN HARON	BE HONS (KUITTHO) (ELECTRICAL, 2006) ME (UTM) (ELECTRICAL- ELECTRONICS & TELECOMMUNICATION, 2008)
28065	NICHOLAS PHILIP	BE HONS (UTM) (ELECTRICAL - TELECOMMUNICATION, 2006)
23268	PU CHUAN HSIAN	BE HONS (NOTTINGHAM TRENT) (ELECTRONICS & COMPUTING, 2001) ME (MMU) (TELECOMMUNICATION, 2005)
33926	SYAMSUL KAMAL BIN ISMAIL	BE HONS (UITM) (ELECTRICAL, 2000)
21727	TAN KANG SWEE, ERIC	BE HONS (MMU) (ELECTRONICS-COMPUTER, 2006)
89539	WAN NUR ARINA BINTI WAN MOHD NOR	BE HONS (NEW SOUTH WALES) (ELECTRICAL & ELECTRONIC, 2014)
KEJU	RUTERAAN GEOTE	EKNIK
26420	SHENG WEI CHYI	BE HONS (USM) (CIVIL, 2005)

BE HONS (SHEFFIELD

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&

KEJURUTERAAN KIMIA

83290 LOH SIU HONG

18298	ABD RAHMAN BIN KADIR	BE HONS (MALAYA) (CHEMICAL, 1992)
70251	AMIZA BINTI AZMI	BE HONS (UITM) (CHEMICAL, 2006) ME (UM) (SAFETY, HEALTH ENVIRONMENT, 2013)
66387	ANG TIONG TUCK	BE HONS (SINGAPORE) (CHEMICAL, 2002)
22761	CHOK VUI SOON	BE HONS (UTP) (CHEMICAI 2003)
21893	KHO BEE WUI	BE HONS (MELBOURNE) (CHEMICAL, 2001)
59131	LEONG KAH LOON	BE HONS (UMS) (CHEMICA 2008)
43818	LIM FONG NEE	BE HONS (UM) (CHEMICAL 2008)
34318	LIU YI LING	BE HONS (UKM) (CHEMICA 2007)

KEJURUTERAAN LEBUHRAYA

87695 FOONG KOK L

I	BE HONS (UTM) (CIVIL, 2005)
	MSC (UTM) (CONSTRUCTION
	MANAGEMENT, 2006)

KEJURUTERAAN MEKANIKAL

88769	AFIF AKMAL BIN ABD RAHMAN	BE HONS (UKM) (MECHANICAL, 2007)
72638	AHMAD AFIQ BIN NOOR ZAINEE SHAH	BE HONS (SHEFFIELD) (MECHANICAL, 2010) ME HONS (SHEFFIELD) (MECHANICAL, 2013)
94027	AHMAD ZAHIRUDDIN BIN SARUJI	BE HONS (UTM) (MECHANICAL-AUTOMOTIVE, 2008)
77251	CHAN WAI LOON	BE HONS (SOUTH WALES) (MECHANICAL, 2009)
38076	CHEN KIN SEONG	BE HONS (UTHM) (MANUFACTURING & PRODUCTION, 2007)
25768	DAYANG NORHAYATI BINTI ABANG MOHAMAD IBRAHIM	BE HONS (UITM) (MECHANICAL, 2000)
43115	HAMBALI BIN AREP @ ARIFF	BE HONS (UITM) (MECHANICAL, 1997) MSC (LOUGHBOROUGH) (DESIGN, 2003) PHD (UPM) (2010)
30999	KHOR JO ANNE	BE HONS (UNIMAS) (MECHANICAL & MANUFACTURING, 2010)
27659	LEE PEI YUEN	BE HONS (UKM) (MECHANICAL, 2006)
79586	LIM JIN LUN	BE HONS (MMU) (MECHANICAL, 2010)
57242	MATHAN A/L SAMBU	BE HONS (UTHM) (MECHANICAL, 2014) ME (UTHM) (MECHANICAL, 2016)
24483	MAZLAN BIN A MAJID	BE HONS (UTM) (MECHANICAL,2002)
34295	MD. SYAHRIZAL IZWAN BIN MD. YUSOFF	BE HONS (IIUM) (MECHANICAL, 2006)
61958	MOHAMAD TARMIZI BIN ABU SEMAN	BE HONS (UITM) (MECHANICAL, 2001) MSC (USM) (BUILDING TECHNOLOGY, 2007)
22783	MOHD FAIZAL BIN	BE HONS (UITM) (MECHANICAL, 2005)

6378	MOHD FARHAN BIN HUSIN	BE HONS (UTHM) (MECHANICAL, 2012)
0266	MOHD FIRDAUS BIN AB HAMID @ FAUZI	BE HONS (UTEM) (MECHANICAL-DESIGN & INNOVATION, 2011)
0818	MOHD JAIS BIN ABU SAMAH	BE HONS (UPM) (MECHANICAL, 2004)
1109	MOHD KAMAL HAZIQ BIN KAMARUZAMAN	ME (MANCHESTER) (MECHANICAL, 2013)
8069	MOHD TAUFIK BIN ARSHAD	ME (LONDON) (MECHANICAL, 2008)
0642	MOHD ZAKIYUDDIN BIN MOHD ZAHARI	BE HONS (UTM) (MECHANICAL, 2011)
1944	MUHAMMAD HATTA BIN ANUAR	BE HONS (UTEM) (DESIGN & INNOVATION, 2009)
3986	MUHAMMAD ZUKNI BIN IBRAHIM	BE HONS (UTP) (MECHANICAL, 2009)
7585	NG YEN CHEONG	BE HONS (SHEFFIELD HALLAM) (MECHANICAL & MANUFACTURING SYSTEM, 2007) ME (UTM) (MECHANICAL, 2013)
3200	SEOW HENG SENG	BE HONS (MMU) (MECHANICAL, 2008)
5851	SHAHIFFUDIN BIN KHAMIS @ ABD HAMID	BE HONS (UTM) (MECHANICAL-MARINE TECHNOLOGY, 2011)
0859	SUBRAMANIAM A/L NITAMAKWUAVAN	BE HONS (UTM) (MECHANICAL, 2010)
7495	SUNG AUN NAA	BE HONS (UTM) (MECHANICAL, 2002) PHD (USM) (2015)
7605	TAN ZAO QI	BE HONS (UKM) (MECHANICAL, 2010)
7072	TAY KIAN KOK	BE HONS (UM) (MECHANICAL 2007)
3088	WONG CHOON YAP	BE HONS (UTM) (MECHANICAL, 1998)
4597	WOON CHENG YEE	BE HONS (BATH) (AEROSPACE, 2008) MSC (NEW SOUTH WALES) (MECHANICAL, 2010)
2409	YOH SUN NY	BE HONS (UPM) (MECHANICAL, 2008)
1120	ZULFADLI BIN MOHD JAIS	BE HONS (NIIGATA) (MECHANICAL & PRODUCTION, 2010)
EJUI	RUTERAAN PEMBU	IATAN
5287	ABANG HELMI BIN ABANG ABDUL MANAP	BE HONS (UKM) (MANUFACTURING, 2007) ME (UKM) (MATERIAL & TECHNOLOGY, 2012)
1111	NORMARIAH BINTI CHE MAIDEEN	BE HONS (USM) (MANUFACTURING WITH MANAGEMENT, 2007) ME (USM) (MECHANICAL, 2011)
EJURUTERAAN STRUKTUR		
8982	TAN CHAR AI	BE HONS (UTP) (CIVIL, 2005)
2072	TEO WEE	DE HONE (DELEAST) (CIV/II

Nama

AZIZAN

JAMLUS

AMIRUL HAIKAL BIN

ASRUL EFFENDI BIN

AZHAR KAMAL BIN ZAHIR

AZLAN BIN ADNAN

AMMAR BIN AZMI

3982	TAN CHAR AI	BE HONS (UTP) (CIVIL, 2005)
3973	TEO WEE	BE HONS (BELFAST) (CIVIL, 1998)

KEJURUTERAAN SUMBER AIR 62058 T/

AN LAI WAI	BE HONS (UTM) (CIVIL, 2001) ME (UTM) (CIVIL-HYDRAUL & HYDROLOGY, 2003)
	PHD (MONTREAL) (2010)

PERMOHONAN MENJADI **AHLI KORPORAT** Kelayakan

KEJURUTERAAN AL	AM SEKITAR
LAW ZE SEAN	BE HONS (MALAYA) (ENVIRONMENTAL, 201
KEJURUTERAAN AW	AM
ADENA BIN MAMAT	BE HONS (UTM) (CIVIL,
AHMAD HASRUL RIZAL BIN ABDULLAH	BE HONS (UTHM) (CIVIL
AHMAD REDUAN BIN KHAIRUDDIN	BE HONS (UITM) (CIVIL ME (UPM) (HIGHWAY, 20

1992) , 2013)

BE HONS (UITM) (CIVIL,2007) ME (UPM) (HIGHWAY, 2016) BE HONS (UKM) (CIVIL & ENVIRONMENTAL, 2007) BE (MINNESOTA) (CIVIL, 2011) BE HONS (UTM) (CONSTRUCTION MANAGEMENT, 2007)

BE HONS (UiTM) (CIVIL, 2007) BSc (CALIFORNIA STATE) (CIVIL, 1985) ME (UTM) (STRUCTURE, 1989) PhD (UTM) (1998)

BADARIAH BINTI MOHD SAUFI	BE
DAYANG MARINA SABRINA BINTI SAFRI	BE
DEVAGARAN A/L SAMUGAVELU	BE MS

DULIN KANG

IBRAHIM

PACKIAM

FAIZAL ASHRAF BIN

HABIBAH BINTI MD SHARI

HANAFI BIN ABDULLAH

KALAM BIN MOHD NOR

KHADLIAH BIN BASAR

KHAIRII HAFIZ BIN YAHYA LEE DERK CHYUAN

LEE SUN CHAI

LIEW KEN HIN

LIM CHIN THYE

MAI EK

MOHD ALI MOHAMED TALMIZI BIN MOHD YUSOFF

MOHD NOOR MOHD FARHAN

MAT DRUS MOHD HAFIZ BIN YAHYA

ISMAIL MOHD KHAIRIE BIN

HASAN MOHD RAHIM BIN KAWANGIT

ISMAIL

MOHAMUD

LIM MIN KHIONG

MARENAWATI BINTI ABD

MASFARUDDEEN BIN

MOHD AZNI BIN MUSA

IZZAUDDEN BIN ABU TALIB MOHD FAUZAN BIN MANSOR

MOHD FIRDZUAN BIN

MOHD HAROMA BIN

MOHD SUHAILI BIN

MOHD ZAMRI BIN

MUNIRAH BINTI MOHMAD

NEO KIM KIAT

NG BOON CHAI

MUNIRAH BINTI HASAN

NIK NAZLINA BINTI NIK MAT ROMLI NOR FAZLINA BINTI ISMAIL

NOR ROZAINI BINTI

ABDULLAH

BIN ABU BAKAR

ONG KEE SEONG

PURUSHOTHAMAN NAIR A/L NARAYAN NAIR

QOTRUNNADA BINTI

ABD RAHMAN

MUSTAFA

SHAILI

ISHAK

SAMAD

RAJA ZAINAL

RAZALI BIN MOHD

ROSNAN BIN HUSSIN

ROZELAWATI BINTI

SABIRA BINTI ABDUL

RIZAL BIN ARIP

RAFIDAH BINTI

MOHD FAIZARUDIN BIN

JAYANTHI RATHNA

HONS (UTM) (CIVIL, 1999)

HONS (UTM) (CIVIL, 2006)

HONS (UM) (CIVIL, 2005) MSc (USM) (BUILDING TECHNOLOGY, 2015) BE HONS (PLYMOUTH) (STRUCTURAL, 2002) BE HONS (UPM) (CIVIL, 1998)

ADV.DIPLOMA (UITM) (CIVIL, 1985) MSc (COVENTRY) (ENGINEERING BUSINESS SYSTEMS, 1996) BE HONS (UTM) (CIVIL, 2002) BE HONS (UPM) (CIVIL, 1989)

JURANIE BINTI DUMATIN BE HONS (UITM) (CIVIL, 2010) BE HONS (LITHM) (CIVIL 2005) BE HONS (UTM) (CIVIL 2002) BE HONS (UITM) (CIVIL, 2006)

> BE HONS (UTM) (CIVIL, 2007) BE HONS (SOUTHWEST LOUISIANA) (CIVIL, 1983) ME (SOUTHWEST LOUISIANA) (CIVIL, 1985) BE HONS (MANCHESTER) 9CIVIL. 1999) BE HONS (UTAR) (CIVIL, 2011) BE HONS (LEEDS) (CIVIL & STRUCTURAL, 2006) ME (UNIMAS) (CIVIL, 2014) BE HONS (UTM) (CIVIL, 1999)

BE HONS (UTHM) (CIVIL, 2009)

BE HONS (ABERDEEN) (CIVIL, 1987) BE HONS (UTM) (CIVIL, 2007)

BE HONS (UITM) (CIVIL, 2006)

BE HONS (UMP) (CIVIL, 2011)

BE HONS (UPM) (CIVIL, 2006)

BE HONS (UITM) (CIVIL, 2007)

BE HONS (UTM) 9CIVIL, 2006) BE HONS (UTM) 9CIVIL, 1996)

BE HONS (UITM) (CIVIL, 2008)

BSc HONS (STRATHCLYDE) (CIVIL, 1983)

BE HONS (USM) (CIVIL, 1998) ME (USM) (CIVIL, 2006) BE HONS (UTM) (CIVIL 2005)

ME (UTM) (PROJECT MANAGEMENT, 2014)

BE HONS (UITM) (CIVIL, 2002) BE HONS (UTM) (CIVIL, 2010) ME (UTM) (CIVIL-STRUCTURAL, 2012)

BSc (ARKANSAS) (CIVIL, 1998) BE HONS (MALAYA) (CIVIL, 1997) BE HONS (UTM) (CIVIL, 2000)

BE HONS (UTHM) (CIVIL, 2007)

BE HONS (UTM) (CIVIL, 1999)

BE HONS (USM) (CIVIL, 2006)

NORAFIZAL ZURAIDIN NURAFINA BINTI SAFRI

BE HONS (UNIMAS) (CIVIL, 2006) ME (UNIMAS) (CIVIL, 2010) BE HONS (KLIUC) (CIVIL, 2010) BE HONS (UTM) (CIVIL, 2002)

BE HONS (UTM) (CIVIL, 2010) ME (UTM) (STRUCTURE, 2015) BE HONS (UITM) (CIVIL, 2002)

RAJA NAZARUDDIN BIN BE HONS (UTM) (CIVIL, 1997)

BE HONS (USM) (CIVIL, 2006)

BE HONS (UTM) (CIVIL, 1997) BE HONS (UTM) (CIVIL, 1994)

BE HONS (UTM) (CIVIL: 2008) BE HONS (UITM) (CIVIL, 2006)

SAFFUAN BIN BOHORI @BAHARI

BE HONS (UTM) (CIVIL, 2013)

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KEAHLIAN

WONG

YUNIK ABDUL

ZURA

HASS

PARA

AMZAł

HASNOOR FAIZMAH BINTI HASIM

JAMALIAH RAHMAT

KAHAR BIN KADU

LIAN HIN SEONG

LIZA BINTI LEAS

MOHD FAIRUS BIN

MOHD FAIZAL BIN

MOHD FAKHRUL BIN

MOHD HASROY BIN

MOHD HAZEEQ BIN HANAFI

MOHD HAZMEL BIN HANAFI

MOHD SHUKRI BIN

MUHAMAD AFIFI BIN

MUHAMAD ZAIDI BIN

ABDUL RASID

MUHAMAD

RAMAT

MOHD SAID

SUFYAN

MAMAT

MOKHTAR

ZAINUDDI

ZINON

RAZAK

OTHMAN MOHD FAKHRI BIN MAHAMAT SUKIS

SAIFUL AZZUAN BIN AZNAM	BE HONS (UTM) (CIVIL, 2000)
SALAWATI BINTI SALLAN	BE HONS (UTM) (CIVIL, 2005)
SALFARINA BINTI MOHD SHARIF	BE HONS (UTHM) (CIVIL, 2003)
SANISAH BINTI SULAIMAN	BE HONS (UiTM) (CIVIL, 2004) ME (UPM) (WATER, 2014)
SHARIFAH MAZNAH BINTI SYED AHMAD ZAHRI	BE HONS (UTM) (CIVIL, 2002)
SITI NOREENA BINTI MOHD YUSOF	BE HONS (UPM) (CIVIL, 2005)
SITI SHAZWANI BINTI MOHD NAWI	BE HONS (UTHM) (CIVIL, 2009) ME (UPM) (HIGHWAY AND TRANSPORTATION, 2011)
SYAHIDA BINTI ARIPIN	BE HONS (UTM) 9CIVIL, 2005) MSc (UTM) (CONSTRUCTION MANAGEMENT, 2006)
TENGKU MOHD SHAHRU HASLAN BIN TUAN YUSOFF	BE HONS (UTP) (CIVIL, 2009)
TENGKU RIDHWAN BIN TENGKU AZMAN	BE HONS (UTM) (CIVIL, 2006)
WARDATUN AHMAR BINTI ABDUL MANAN	BE HONS (UTM) (CIVIL, 2005)
WONG KUOK YONG	BE HONS (MALAYA) (CIVIL, 1998)
YASMIN BINTI ABDUL RASHEED KHAN	BE HONS (UTM) (CIVIL, 2009)
YUNIKA KIRANA BINTI ABDUL KHALIK	BE (UMP) (CIVIL, 2009) MSc (UiTM) (GEOTECHNICAL, 2016)
ZURAINI BINTI ZAINAL	BE HONS (UKM) (CIVIL & STRUCTURE, 2000) MSc (UiTM) (CIVIL-CONSTRUCTION, 2009)
KEJURUTERAAN ELE	KTRIKAL
ABD MALIK BIN MOHD REDZIAN	BE HONS (UTM) (ELECTRICAL, 2008)
AEZUWAN BIN AZIZ	BE HONS (UITM) (ELECTRICAL, 2006)
AHMAD FARID BIN HASSIN	BE HONS (UTM) (ELECTRICAL, 2009)(
AMALENDRRAN A/L PARAMANATHAN	BE HONS (UNITEN)ELECTRICAL POWER, 2010)
AMZAH BIN ABU	BSc (ARIZONA) (ELECTRICAL, 1996)
ASRAF BIN AB RAHMAN	BE HONS (UITM) (ELECTRICAL, 2008)
FATHIYAKAN BIN ABD RAHIM	BE HONS (UNITEN) (ELECTRICAL & ELECTRONICS, 2003) CONVERSION (UNITEN) (2012)
GANESAN A/L KADIRGAMA	BSc (WESTERN MICHIGAN) (ELECTRICAL, 1999)

RICAL. ICAL. RICAL (2012) N) (ELECTRICAL, 1999) BE HONS (UITM) (ELECTRICAL, 2007) BE HONS (UITM) (ELECTRICAL. 2009) KAMARUZAMAN BIN MD BE HONS (UITM) (ELECTRICAL, 2008) 2001) BE HONS (UKM) (ELECTRICAL & ELECTRONIC, 2007) MOHAMAD HAKIM BIN BE HONS (UM) (ELECTRICAL 2009) BE HONS (UITM) (ELECTRICAL, 2007) MOHD FAIRUZ BIN ABD POWER, 2008) BE HONS (UITM) (ELECTRICAL, BE HONS (UITM) (ELECTRICAL, 2012) POWER, 2011) BE HONS (UTM) (ELECTRICAL, MOHD MUZAMMIL BIN BE HONS (UTM) (ELECTRICAL, 2008) BE HONS (UITM) (ELECTRICAL. 2007) POWER, 2012) MUHAMAD FAIZAL BIN OSMAN BE HONS (UTM) (ELECTRICAL, 2008) MUHAMMAD AZMI BIN

RICAL RICAL TRICAL CTRICAL BE HONS (UNITEN) (ELECTRICAL & ELECTRONICS, 2009) BE HONS (UTM) (ELECTRICAL-INSTRUMENTATION & CONTROL BE HONS (UNITEN) (ELECTRICAL BE HONS (UNITEN) (ELECTRICAL BE (McGILL) (ELECTRICAL, 2013) BE HONS (UNITEN) (ELECTRICAL & ELECTRONIC, 2006) BE HONS (UNITEN) (ELECTRICAL BE HONS (UNITEN) (ELECTRICAL POWER, 2007) BE HONS (UNITEN) (ELECTRICAL POWER, 2012)

MUHAMMAD IRFAN BIN BE HONS (UTM) (ELECTRICAL-ROHANIF ELECTRONICS, 2005) MUHAMMAD IZZAT BIN BE HONS (UNITEN) (ELECTRICAL IDRIS POWER, 2012) MUHAMMAD NURHAFIZ BE HONS (UNITEN) (ELECTRICAL BIN HAIRUDDIN POWER, 2012) NOOR AZITA BINTI AWALUDIN BE HONS (UNITEN) (ELECTRICAL POWER, 2002) MSc (UPM) (ELECTRICAL POWER, 2006) NOOR RULHUDA BINTI BE HONS (UTM) (ELECTRICAL ISMAI 2008) NOR AZLINA BINTI KASIM BE HONS (USM) (ELECTRICAL & ELECTRONIC, 2003) NOR JAZAIDI BIN ALIL BE HONS (UTM) (ELECTRICAL @ ATIL 2008) NORADLIANA BINTI BE HONS (UTM) (ELECTRICAL MOHAMAD SABRI 2008) BE HONS (USM) (ELECTRICAL POWER, 2000) MSc (UPM) (ELECTRICAL POWER, 2010) NORMISAHILI BINTI MISWAN PHEROSHEN SINGH A/L MOHAN SINGH BE HONS (UNITEN) (ELECTRICAL POWER, 2013) SARIZAN BIN ILIAS BE HONS (UITM) (ELECTRICAL. 2006) SATHVIR KAUR VALDEV SITI FARADILAH BT AMIRUDDIN SITI HASSANAH BINTI HASSAN 2008) TAN SHIUN LEI 2010) TEOH WEI LIAM 2009) WAN SAIFULHASAN BIN WAN AB AZIZ 2009) ZAHRULHAZMI BIN

BE HONS (MMU) (ELECTRICAL, 2007) ME (UM) (ELECTRICAL ENERGY & POWER SYSTEM, 2011) MSc (CALGARY) (SUSTAINABLE ENERGY DEVELOPMENT, 2015) BE HONS (UNITEN) (ELECTRICAL & ELECTRONICS, 2007) BE HONS (UITM) (ELECTRICAL BE HONS (BIRMINGHAM) (ELECTRONIC & ELECTRICAL, BE HONS (MMU) (ELECTRICAL BE HONS (UITM) (ELECTRICAL BE HONS (UTM) (ELECTRICAL 2011) BE HONS (MALAYA) (ELECTRICAL

KEJURUTERAAN EI EKTRONIK

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CHOOI WAI MUN

HANAFIAH IZWAN

HAZRIM BIN ABDU

IRNIE AZLIN@NUR AQILAH BINTI ZAKI

JALAUDDIN

ZULKARNAIN BIN

LAN BIN ABDUL AHIM	BE HONS (USM) (ELECTRICAL & ELECTRONIC, 1996) ME (UNITEN) (ELECTRICAL, 2010)
AIZAN BINTI MUHAMAD	BE HONS (UNITEN) (ELECTRICAL & ELECTRONICS, 2002) MSc (UKM) (MICROELECTRONICS, 2007)
AIZATUL ZOLKAPLI	BE HONS (UNITEN) (ELECTRICAL & ELECTRONICS, 2001)
ERSHANTA KUMAR A/L RAMAN	BE HONS (UNITEN) (ELECTRICAL & ELECTRONICS, 2007)
AMLAH BINTI AWANG	BE HONS (LEEDS METROPOLITAN) (ELECTRONIC & ELECTRICAL SYSTEM, 1998)

KEJURUTERAAN GEOTEKNIK

AHMAD SYAIFUL BIN BE HONS (UTM) (CIVIL, 2003) MOHD SOM

KEJURUTERAAN KIMIA

I HURA BIN I I ID	BE HONS (UTP) (CHEMICAL, 2001)			
AMAD NASRI BIN AMAD YUSOF	BE HONS (CURTIN) (CHEMICAL, 2010)			
A BINTI JULLOK	BE HONS (UTM) (CHEMICAL, 2004) ME (CHEMICAL, 2007)			
I WEN HUI	BE HONS (UKM) (CHEMICAL & PROCESS, 2001) Mphil (CAMBRIDGE) (2007) PhD (NEW SOUTH WALES) (PHILOSOPHY, 2012)			
SOO KHEONG	BE HONS (UM) (CHEMICAL, 2007)			
URUTERAAN MEKANIKAL				
JL JAWAT BIN SOR	BE HONS (UM) (MECHANICAL, 2003)			

	2003)
	BE HONS (UNITEN) (MECHANICAL, 2002)
BIN	BE HONS (UTHM) (MECHANICAL, 2007)
LLAH	BE HONS (UNITEN) (MECHANICAL, 2007)
RIA	BE HONS (UNITEN) (MECHANICAL, 2001) ME (MALAYA) (MECHANICAL, 2012)
	BE HONS (MALAYA) (DESIGN & COMPUTER-AIDED MANUFACTURING, 2000)

MSc (MALAYA) (STRUCTURAL DYNAMICS & VIBRATIONS, 2002) BE HONS (UTM) (MECHANICAL,

2006)

MOHD NAZRI B DOLLAH MOHD SYAZWA SOLAH MOHD SYUKRI MOHD KHALID MOHD YUNUS YUSO RUSYAIDI BIN A BAKAR TAN MOOK ENG TANG KAM SIE TOH CHIH KAN WONG HA YOU ZAMRI BIN MOH TUKIRAN **KEJURUTERAAN SUMBER AIR** MEGAT AHMAD FAUZI BIN MEGAT SHOIB

MOHD AFIZ BIN MOHD

FADZI

MOHD HAFIFI

MOHD JEERI B

	(MECHANICAL, 2003)
SIN ISNAN	BE HONS (UTHM) (MECHANICAL 2007)
NAMIR	BE HONS (UTeM) (DESIGN & INNOVATION, 2007)
IN	BE HONS (UM) (MECHANICAL, 2003)
N BIN	BE HONS (UTEM) (THERMAL FLUIDS, 2007)
BIN	BE HONS (UTM) (MECHANICAL- INDUSTRIAL, 2008)
BIN	BE HONS (UTM) (MECHANICAL, 2007)
BU	BE HONS (UPM) (MECHANICAL, 2008)
3	BE HONS (QUT) (MECHANICAL, 2007)
N	BE HONS (QUT) (MECHANICAL, 1997)
G	BE HONS (UNITEN) (MECHANICAL, 2008)
	BE HONS (SWINBURNE) (MECHANICAL, 2012)
HD	BE HONS (UTM) (MANUFACTURING, 1999)

BE HONS (UNITEN)

BE HONS (UITM) (CIVIL, 2002)

PEMINDAHAN KEPADA AHLI 'COMPANION'			
i	Nama	Kelayakan	
JUI	RUTERAAN AWAM		
86	TAN YENG KIANG	B.E.HONS.(UTM)(CIVIL, 2002)	

KEJURUTERAAN KIMIA

No.

Ahl

KE

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14563 OMANTARAM B.E.HONS.(UTM)(CHEMICAL, KANGARA.IOO 1993)

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2	12569	EWEDY BACHI
3	11263	GOH CHENG SENG
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5	21440	MOHD BAHARUDDIN BIN TAJUDIN
6	24170	MOHD SALLEH BIN NGAH MAT DRUS
7	23964	MU MUNG SIUNG
8	15141	SOFIANA BALKHIS BTE TAN SRI DATO' TALHA
9	03031	SU AH KAU
10	17261	WAN HAMDI BIN WAN RAMI I

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