

Buletin FKA

PENGAJIAN KEJURUTERAAN AWAM

UNIVERSITI TEKNOLOGI MARA CAWANGAN PULAU PINANG

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Website : <https://ppkapp.uitm.edu.my/>Facebook: <https://www.facebook.com/pkautmcpp/>**DARI MEJA KETUA PUSAT PENGAJIAN>>>****Embracing Excellence as Engineers,
Lecturers, and Individuals****Oleh Dr. Juhaizad bin Ahmad**

In the pursuit of knowledge and the relentless quest for self-improvement, we, as aspiring engineers and future educators, stand at a pivotal juncture in our lives. This bulletin serves as a testament to the profound significance of our chosen paths and the unwavering commitment we must maintain to excel in our careers and as individuals.

As engineers, we bear the responsibility of shaping the world around us. The innovations we conceive, the solutions we engineer, and the systems we design have a lasting impact on society. Our work carries the potential to improve lives, enhance sustainability, and drive technological progress. By striving to become good engineers, we become architects of a better future.

Simultaneously, as future educators and lecturers, we hold the key to nurturing the next generation of thinkers, innovators, and problem solvers. Our role extends beyond imparting knowledge; it

is about inspiring curiosity, fostering critical thinking, and instilling values that transcend the classroom. By aspiring to be good lecturers, we become custodians of knowledge, passing on the torch of wisdom to ignite future brilliance.

The path to becoming an exceptional engineer and lecturer is paved with challenges and uncertainties. Success requires not only a solid foundation of technical expertise but also the resilience to persevere in the face of adversity. Self-motivation, the fire that burns within us, propels us forward when the going gets tough.

Remember that success is not solely defined by accolades or material gains. It is a holistic journey encompassing personal growth, professional excellence, and contributions to society. Find inspiration within yourself, set audacious goals, and cultivate the discipline to turn aspirations into achievements. Let self-motivation be the compass that guides you on your path to success, both in your career and life.

In our relentless pursuit of career excellence, let us not forget the importance of becoming good individuals. Character defines us just as much as our accomplishments. Being a good person encompasses qualities such as empathy, integrity, and compassion. These virtues not only enhance our interactions with others but also contribute to our own well-being.

The true measure of our success lies not just in what we achieve but in the positive impact we have on the lives of those around us. Aspire to be a person whose presence uplifts others, whose actions inspire kindness, and whose character reflects the very best of humanity. Becoming a good person is a reward in itself, offering fulfillment and contentment beyond measure.

In conclusion, as we embark on our journey as engineers, lecturers, and individuals, let this bulletin serve as a reminder of the profound importance of our roles, the unwavering commitment needed for success, and the enduring value of becoming good people. May our pursuit of excellence be driven by a profound sense of purpose, self-motivation, and a steadfast dedication to leaving a positive mark on the world.



MESYUARAT KHAS PUSAT PENGAJIAN KEJURUTERAAN AWAM MENJELANG AKREDITASI PROGRAM EC221

Norlizan Wahid, Hazrina Ahmad, Badrul Nizam Ismail dan Muhammad Hafeez Osman

Satu program Mock Accreditation telah diadakan pada 21-22 Jun 2022 sebagai persediaan untuk mempersiapkan semua ahli Pusat Pengajian Kejuruteraan Awam UITMCPP bagi menghadapi lawatan Engineering Accreditation Council (EAC) yang akan berlangsung pada 12-13 Oktober 2022. Dua orang panel telah dijemput bagi menilai persediaan yang dibuat oleh Pusat Pengajian Kejuruteraan Awam untuk lawatan Akreditasi nanti. Panel-panel tersebut adalah:

1. Prof Madya Ir. Dr. Zakaria Hussain daripada Pengajian Kejuruteraan Elektrik, UiTM Cawangan Pulau Pinang
2. Ir. Dr. Mustaqqim Bin Abdul Rahim, Pensyarah Kanan daripada Fakulti Teknologi Kejuruteraan Awam, Universiti Malaysia Perlis (UNIMAP)

Sehubungan dengan itu, satu mesyuarat khas diadakan bagi meneliti semula hasil dapatan Mock Accreditation tersebut dan memastikan setiap ahli Pusat Pengajian dapat membuat persediaan sewajarnya menjelang akreditasi yang berlangsung dalam bulan Oktober 2023. Mesyuarat Khas tersebut dimulakan dengan Ketua Pusat Pengajian Kejuruteraan Awam dan Ketua Program Ijazah Sarjana Muda Kejuruteraan Awam iaitu Dr. Anas Ibrahim dan Dr. Muhammad Faizal Pakir membentangkan hasil dapatan daripada program Mock Accreditation yang telah dijalankan. Antara hasil dapatan yang perlu diberi perhatian segera adalah:

- Terdapat pensyarah yang tidak mengetahui dan masih kurang faham tentang Program Outcome (PO) yang dipetakan kepada kursus tertentu
- Kebanyakan pensyarah yang ditemubual masih kurang faham mengenai spesifikasi WP dan WK di dalam Complex Problem Engineering
- Kebanyakan pelajar masih kurang mengetahui tentang pelaksanaan OBE dan apa itu Program Outcome
- Pelajar tidak menyedari kewujudan system myReflection

Justeru, Unit OBE PPKA UITMPP telah diberi tanggungjawab untuk memberi penerangan dan mengingatkan semula semua ahli Pusat Pengajian berkenaan dengan proses pelaksanaan OBE Pusat Pengajian dan penggunaan Complex Problem Engineering di dalam proses penilaian setiap subjek.

Mesyuarat diteruskan dengan taklimat oleh Ketua Unit OBE, Dr. Hazrina Ahmad berkenaan dengan "Things you should know: Towards EAC Accreditation 2022". Tujuan utama taklimat tersebut diberikan adalah untuk memperkasakan pengetahuan semua pensyarah berkenaan dengan OBE dan pendedahan semula kepada konsep pelaksanaan OBE.



Gambar 1 Dr. Muhammad Faizal Pakir (kiri) dan Dr. Anas Ibrahim (kanan) memberikan taklimat berkenaan dengan hasil dapatan Mock Accreditation

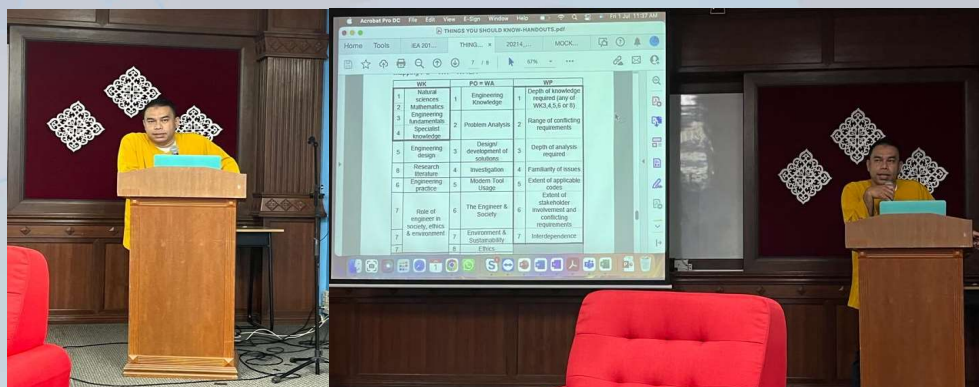
Penerangan juga dibuat bagi mengingatkan semula tentang CQI proses yang dijalankan diperingkat Pusat Pengajian dan diperingkat kampus. Risalah (handout) berkaitan dengan taklimat telah diedarkan bagi tujuan rujukan seluruh warga pusat pengajian. Semua maklumat lengkap berkenaan OBE dan perlaksanaannya telah diterangkan di dalam OBE Implementation Manual yang boleh dimuat turun daripada laman web PPKA.

Taklimat berkenaan pelaksanaan Complex Problem Engineering di dalam penilaian untuk kursus telah diberikan oleh En. Badrul Nizam Ismail selaku Koordinator Complex Problem Engineering PPKA UiTMCP. Penerangan berkaitan dengan pemetaan Mapping WA-WK-WP juga diberikan dengan bantuan risalah berkaitan yang memudahkan lagi pemahaman berkenaan dengan perkara tersebut.

Unit OBE Pengajian Kejuruteraan Awam, UiTM Pulau Pinang telah berusaha sedaya upaya untuk memastikan program ini berjalan lancar. Kerjasama daripada semua pensyarah amat memberangsangkan dan diharap dengan pelaksanaan Mesyuarat Khas ini dapat mempersiapkan lagi semua pensyarah Pengajian Kejuruteraan Awam UiTMPP dalam menghadapi lawatan EAC 2023.



Gambar 2 Dr. Hazrina Ahmad memberikan taklimat berkaitan pelaksanaan OBE.



Gambar 3 En. Badrul Nizam Ismail memberikan taklimat berkaitan Complex Problem Engineering

CIVIL ENGINEERING COLLOQUIUM 2022

Oleh: Dr. Kuan Woei Keong

Kolokium "Civil Engineering Colloquium 2022" anjuran PPKA UiTMCP telah diadakan dengan jayanya pada 31 Mei 2022. Program ini bertujuan untuk menyediakan satu platform kepada peserta untuk mengemukakan dan menerbitkan hasil kerja penyelidikan mereka. Hasil pembentangan peserta akan dikumpulkan dan diterbitkan dalam prosiding kolokium dengan ISBN dan yang terpilih akan diterbitkan dalam jurnal berindeks (MYCITE), Jurnal Kejuruteraan, Penerbit UKM. Program ini telah menyediakan satu platform kepada staf akademik dan pelajar pasca siswazah untuk membentangkan hasil kerja penyelidikan. Di samping itu, melalui program ini hasil penerbitan di peringkat pusat pengajian dapat dipertingkatkan dalam jurnal berindeks (MYCITE). Program ini juga merupakan satu program pembangunan dan Latihan staf tahunan di peringkat pusat pengajian bagi memenuhi perancangan fakulti.

Didapati seramai 22 orang peserta telah membentangkan kertas kerja mereka yang merangkumi bidang kejuruteraan struktur, kejuruteraan geoteknik, pengurusan pembinaan dan pengurusan sumber air. Pada permulaan kolokium, Prof Dr Hj Roslan Zainal Abidin selaku *Associate Fellow* Pusat Pengajian Kejuruteraan Awam, UiTMCP telah memberikan ucapan keynote yang bertajuk "Landslide Risk with Regards to Rainfall Erosivity and Soil Erodibility". Beliau telah berkongsi pengalaman dan memberi penjelasan yang terperinci tentang penunjuk indicator untuk mengenalpasti risiko tanah runtuh. Selain itu, beliau juga membentangkan penyelidikan yang terkini dalam bidang berkenaan.

Pembentangan daripada 22 orang peserta telah dibahagikan kepada 4 kumpulan. Para peserta telah membentangkan kertas kerja mereka pada dua sesi pagi dan sesi petang yang dilancarkan secara selari. Setelah pembentangan kolokium ini, kertas kerja yang dihantarkan oleh peserta yang terpilih akan diterbitkan dalam jurnal berindeks (MYCITE), Jurnal Kejuruteraan, Penerbit UKM.

Sambutan Aidilfitri 2022 Pelajar Bersama Penasihat Akademik

Oleh Amalina Amirah binti Abu Bakar dan Khairul Ammar bin Muhammad Ali

Prai, 13 Mei 2022 - Satu jamuan raya telah diadakan di rumah penasihat akademik bagi merayakan para pelajar Ijazah Sarjana Muda Kejuruteraan Awam (EC221). Program ini merupakan program bersama yang di anjurkan di antara para pelajar di bawah kelolaan beberapa pensyarah Fakulti Kejuruteraan Awam. Ianya diadakan setelah sekian lama pensyarah dan para pelajar tidak bertemu secara fizikal akibat pandemik COVID-19. Tujuan utama diadakan program ini sebagai usaha untuk merapatkan ukhuwah dan persaudaraan di antara para pelajar dan juga para pensyarah. Di samping itu, sesi perkongsian dan motivasi dijalankan bagi memberikan semangat kepada para pelajar supaya belajar bersungguh-sungguh bagi menyempurnakan semester pengajian yang sedang berlangsung. Pelajar-pelajar juga dijamu dengan pelbagai juadah makanan sempena perayaan Aidilfitri 2022. Jelas terpancar di wajah mereka akan keseronokkan dalam menikmati hidangan yang disediakan. Pertemuan kali ini menjadi sejarah kerana ianya dilakukan di rumah pensyarah bagi merasai suasana rumah terbuka yang sebenar berbanding pertemuan-pertemuan sebelum ini yang dilakukan di kampus. Semoga program seperti ini dapat dijalankan lagi pada tahun-tahun akan datang bagi memastikan hubungan di antara para pelajar dan pensyarah sentiasa harmoni dan dilimpahi kasih sayang.



Gambarajah: Para pelajar dan pensyarah yang merayakan rumah terbuka sempena Aidilfitri 2022

BOLA JARING PENYUMBANG PINGAT EMAS DI SUKAN ANTARA FAKULTI 2022

Juliana Idrus

Sukan Antara Fakulti 2022 (SAF 2022) telah berlangsung dengan jayanya dari 8 hingga 20 Disember 2022 di UiTM Cawangan Pulau Pinang. Sebanyak lapan fakulti telah bertanding menerusi sepuluh perlawanan sukan untuk memastikan juara keseluruhan adalah milik fakulti masing-masing.

Pusat Pengajian Kejuruteraan Awam (PPKA) telah menghantar dua pasukan Bola Jaring pada sukan SAF kali ini. Pasukan A dan Pasukan B terdiri daripada pelajar-pelajar wanita dari pengajian Diploma (EC110) dan Ijazah (EC221) Kejuruteraan Awam. Pasukan A telah diwakili oleh Siti Nur Syakirah, Alia Natasya, Nur Azzurin Fatini, Izzah Insyirah, Nur Ain, Nurul Nasuha, Nurul Asyikin, Wan Nor Asyikin, Wan Azra Jasmin dan Pearl Issabell. Manakala Pasukan B disertai



oleh Nurul Ameeratul Syaheeda, Emendy Chresha, Nur Auni Safiyah, Amirah Syahirah, Saidatul Afifah, Syafinaz, Nur Adrienna Shafira, Amirah Hafizah, Nur Haifa dan Nur Fatin Nabila. Sebagai persediaan, kedua-dua pasukan di bawah seliaan Pengurus Pasukan Bola Jaring, Cik Juliana Idrus dan Puan Nur Hakimi Azami telah mengadakan beberapa siri latihan termasuk pertandingan persahabatan untuk mempertajamkan lagi skil dan strategi perlawanan.

Tarikh keramat 10 Disember 2022 telah membuktikan segala usaha dan penat lelah pasukan terbayar dengan kejayaan pingat pingat Emas daripada Pasukan A. Manakala Pasukan B hanya berjaya ke peringkat suku akhir. Semoga kejayaan yang diperolehi oleh Pasukan Bola Jaring pada tahun ini terus kekal dan bertahan sehingga tahun sehingga tahun berikutnya.

Experiential Learning Opportunities for Forensic Engineering Students

By: Ts Ir Noraziyah Abd Aziz and Dr Juhaizad Ahmad

Beginning with the March 2022 semester, students of the Forensic Engineering course were given the opportunity to have experiential learning while working on their Mega Project. This Mega Project is intended to measure the competency of the students to carry out problem-based learning (PBL) activities by performing a complete check of defects for buildings in UiTM Cawangan Pulau Pinang (UiTM CPP), also known as a dilapidation survey. Since the opening of the campus UiTM CPP in 2003, major buildings on the campus are still in their original conditions, but a few areas of the buildings have visible deterioration and require maintenance. So, as future forensic engineers, students were exposed to the real working environment to provide a record of the existing structures, including buildings, infrastructure, roads, pathways, and any facility structures that exist on the project site. All prominent defects in the form of cracks, settlement, water seepage, corrosion of reinforcement, subsidence, and other building defects will be documented in photographs together with notes by referring to the Garis Panduan Pemeriksaan Bangunan Sedia Ada by the Public Work Department (PWD).



Sample of cracks on the building apron at Kolej Kristal, UiTM CPP.



Mega Project presentation with the BPF engineer, Mohd Saiful Nizam Mohammad Ali.



The group of students and BPF representatives.

Experiential learning offers an excellent strategy for achieving the objective of university education. In experiential learning, students will be exposed to the real working environment, develop their critical thinking skills, and boost their self-confidence. Working in a group of 6 to 8 members, they have to liaise with *Bahagian Pengurusan Fasilitas* (BPF) at UiTM CPP as their client or building owner from the beginning of the project until the presentation of the findings reports.

They started their project by gathering all the information and drawing plans from the assistant architectural officer of BPF, Siti Naidia Binti Baharom. After that, they had to plan and organise their site visit for the building inspection. Students were also given an opportunity to handle equipment to run a simple, non-destructive test like Rebound Hammer test for the assessment of compressive strength, and uniformity of concrete and used the measuring tape to measure the dimension of cracks. Then, the dilapidation survey findings must be explained and discussed with the engineer from BPF, Mohd Saiful Nizam Mohammad Ali, through the Mega Project slide presentation. The findings presentation is a must to adapt significant problems arising from interactions between wide-ranging or conflicting technical, engineering, or other issues. Finally, students then proposed relevant and suitable mitigation measures that should be taken for each defect in data. Justification is given on the relevance of the mitigation methods and their significant consequences to society and the environment, which are also characterised by the difficulty of prediction and mitigation.

SHARING TECHNICAL SESSION ON GROUND PENETRATING RADAR USAGE FOR REBAR CORROSION DETECTION AND SEVERITY ESTIMATION

BY TS. SYAHRUL FITHRY SENIN WITH IEM PENANG BRANCH

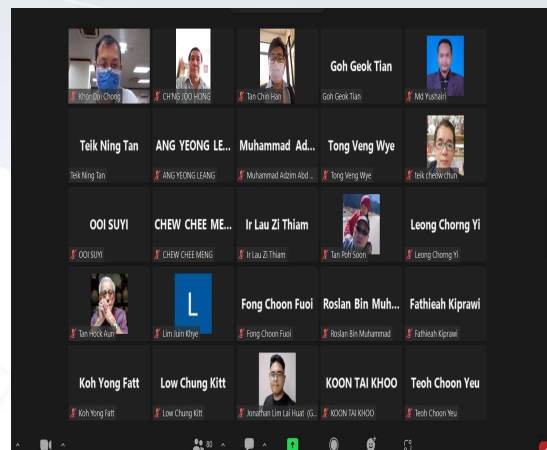
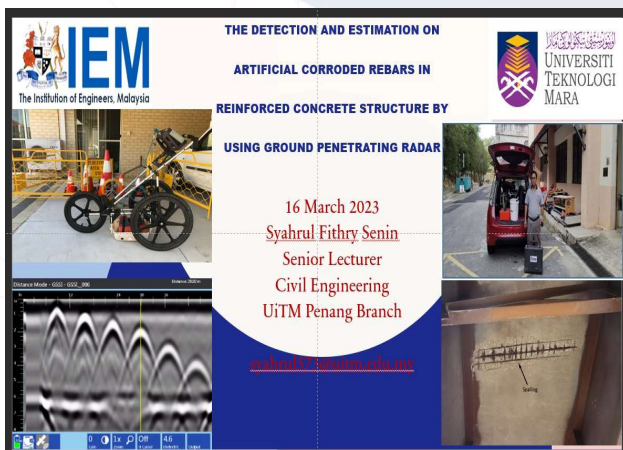
The Institution of Engineers Malaysia (Penang Branch) hosted a webinar on 16 March 2023 featuring a talk on Ground Penetrating Radar (GPR) application on rebar corrosion identification and its severity estimation. The speaker of the webinar was Ts. Syahrul Fithry Bin Senin, a senior lecturer from the Centre of Civil Engineering Studies at UiTM Penang Branch. The talk lasted for two hours, and the event was attended by around 80 participants, including civil and structural engineering consultants, contractors, and institutions of higher learning.

During the webinar, Ts. Syahrul Fithry emphasized the importance of structural monitoring due to rebar corrosion in reinforced concrete structures. He discussed the use of GPR, which is portable and cost-effective for large space applications, to detect and quantify corrosion damage on artificial rebars without damaging the surrounding concrete material. Ts. Syahrul Fithry demonstrated the use of GPR to perform structural monitoring and highlighted its potential benefits in preventing structural failure due to rebar corrosion.

The webinar was sponsored by Telestructures Industries Sdn. Bhd. and ended with a series of questions and answers between the participants and the speaker. The audience found the talk informative and engaging, with many participants expressing their interest in using GPR for corrosion monitoring in their own projects.

The event was concluded by the awarding of a certificate of appreciation to Ts. Syahrul Fithry from the IEM Penang Branch Chairman, Ir. Benard Lim Kee Weng. The certificate recognizes Ts. Syahrul Fithry's valuable contribution to the engineering community by sharing his knowledge and expertise on GPR applications for rebar corrosion identification and its severity estimation.

In conclusion, the webinar on GPR application for rebar corrosion identification and its severity estimation was a great success. Ts. Syahrul Fithry's talk was informative and engaging, and the event was attended by a diverse range of professionals from the engineering industry. The use of GPR in corrosion monitoring has great potential in preventing structural failure and ensuring the safety and longevity of reinforced concrete structures.



SYNERGISE FINAL YEAR PROJECT CREDIBILITY THROUGH PUBLICATION INDEXED IN MYCITE

By Noorsuhada Md Nor, Kuan Woei Keong, Soffian Noor Mat Saliah, Wan Safizah Wan Salim, Siti Fatimah Sadikon, Nor Janna Tammy and Amril Hadri Jamaludin

2022: The "Synergise Final Year Project Credibility Through Publication Indexed In MyCite" programme, led by Assoc. Prof. Dr. Noorsuhada Md Nor and supported by the Faculty Committee, was an initiative within the Ranking Champion, Publication Unit, and Staff Training Unit of the Civil Engineering Studies at Universiti Teknologi MARA, Penang Branch. Its primary objective was to enhance a key performance indicator for university, campus, and faculty in the field of publishing, resulting in significant advancements.

Initially focused on articles written by students' Final Year Projects (FYP), the programme was then expanded to include the active involvement of supervisors to further improve the quality of the papers. The aim was to have these students' efforts at least to be published in journals listed in MyCite (Malaysian Citation Index). However, over time, we have managed to collaborate with Jurnal Kejuruteraan, which is indexed by MyCite and the Emerging Sources Citation Index (Clarivate Analytics - WOS, Q3 in 2021) and we hope that the papers will be accepted for publication in this journal.

It is important to note that this programme was not a short-term endeavour, as the process of publishing a paper in a journal takes time and effort. It started with the collection and screening of papers, which was initially done by in-house editors such as Assoc. Prof. Dr. Noorsuhada Md Nor, Dr. Kuan Woei Keong, Dr. Soffian Noor Mat Saliah, Dr. Wan Safizah Wan Salim and Ms. Siti Fatimah Sadikon. After screening, two reviewers from the respective field were appointed for each paper to do the assessment. This evaluation process was time-consuming as not all reviewers were able to complete their evaluations within the given time frame. Some reviewers initially agreed to evaluate the paper but did not respond after they received it. This experience was both a challenge and a motivation for the editors to continue their efforts and ensure that all papers underwent the necessary changes and were given the opportunity to be published in the selected journal.

After receiving feedback from the reviewers, the authors were notified and requested to make the necessary corrections before submitting the paper to the publisher. In the end, 15 papers were submitted for publication in Jurnal Kejuruteraan, and the publication was done in stages. The first stage, Volume 35 (6), was scheduled for November 2023 and the corresponding authors received an email from the Editor-in-Chief stated their papers have been accepted for publication and expressing gratitude for their contributions.

The success of this program was attributed to the combined efforts of authors, editors, reviewers, and committee members. Special recognition goes to Mrs. Nor Janna Tammy (Secretary) and Mr. Amril Hadri Jamaludin (Special Duties) who served as committee members alongside the aforementioned editors.

Below is the list of papers submitted to the Editor-in-Chief of the Jurnal Kejuruteraan for the upcoming publications:

- RC01: The Studies on Pedestrian Walkway Characteristic in Urban Area: A Case Study of Pedestrian Walkway Jalan Tuanku Abdul Rahman in Kuala Lumpur
- RC02: The Potential of Machine Learning for Automatic Concrete Surface Defects Damage Classification
- RC06: A Study on the Potential of Sand Liquefaction Hazard at Chukai Sentral, Terengganu Using Plaxis 2D
- RC07: Enhancing Slope Stability with Different Slope Stabilization Measures: A Case Study Using SLOPE/W Software
- RC09: Performance of a Rainwater Harvesting Tank Under Varying Demand
- RC10: Current 3R Practices on Construction Waste Minimization in Construction Site
- RC12: Effect of Lead on Compressibility for Spiked Contaminated Soil
- RC13: Preliminary Evaluation of Traffic Resilience against Potential Earthquake in Penang Island
- RC17: The Need to Educate Foreign Workers Based on the Performance Factor in a Construction Project, Especially in a Highly Populated Area in Johor, Malaysia
- RC19: Structural Performance Evaluation of Horizontally Light Reinforced Dapped for Vertical Wall-To-Wall Connection of Precast Wall Panel
- RC20: Waste Materials as Extender of Bituminous Binder: A Review
- RC21: Examining Large-Scale Solar (LSS) Photovoltaic (PV) Operating Utilities by using Environmental Impact Screening (EIS)
- RC22: Mechanical Behaviour Slenderness Ratio of 13 Solid Wall Panels Under Uniformly Distributed Load
- RC23: Tensioned Fabric Structures in Jungle Design Shape
- RC24: Influence of Configuration of Extraction Wells to the Capture Zone in an Unconfined Aquifer

Program Pemindahan Ilmu di antara Pusat Pengajian Kejuruteraan Awam dan THB Maintenance Sdn. Bhd.

Oleh: Muhammad Hafeez Bin Osman, Ahmad Syauqi Bin Md. Hasan, Amir Khomeiney Bin Ruslan, Dr. Hj. Anas Bin Ibrahim, Tc. Norzurina Binti Osman

Pada 22 September 2023, satu program pemindahan ilmu (KTP) telah diadakan di antara Pusat Pengajian Kejuruteraan Awam dan THB Maintenance Sdn. Bhd. Matlamat bengkel adalah untuk berkongsi dengan pihak industri berkenaan alat dan pengetahuan yang mereka perlukan untuk menjalankan kajian perataan yang tepat menggunakan auto-level.

Sesi pertama bengkel dimulakan dengan ucapan aluan oleh Dr. Hj. Anas Bin Ibrahim selaku Ketua Pusat Pengajian. Sesi yang seterusnya yang dikendalikan oleh En. Muhammad Hafeez Bin Osman di mana ia dimulakan dengan pengenalan kepada ukur aras dan penggunaannya di dalam kerja ukur aras. Ini termasuk dengan gambaran umum mengenai fungsi-fungsi di alat auto-level. Ia disambung kemudiannya dengan sesi demonstrasi cara menggunakan auto-level. Sesi ini merangkumi modul seperti menetapkan instrumen, mengambil bacaan, dan merekod data.



Selesai sahaja sesi teori, peserta diberi peluang untuk melihat alat auto-level dengan lebih dekat. Sesi demo ini dikendalikan oleh En. Ahmad Syauqi Bin Md. Hasan dan En. Amir Khomeiny Bin Ruslan.



Sesi sebelah petang dimulakan dengan sesi praktikal ukur aras dengan alat auto-level. Peserta di pecahkan kepada beberapa kumpulan kecil. Setiap kumpulan diberikan aksesori yang lengkap termasuk manual praktikal yang mengandungi jadual kosong yang perlu di isi dengan data praktikal.



Selesai sahaja sesi praktikal, peserta membuat analisa ringkas untuk menentukan *Reduced Level* kepada data yang mereka kumpul. Perbincangan ringkas dibuat di lapangan untuk memberi pencerahan kepada beberapa isu yang berbangkit. Selesai sahaja sesi tersebut, peserta dan fasilitator mengambil gambar bersama-sama berlatarbelakangkan perpustakaan.



Madam jom bertiktok!

CERITERA KELAS TERAKHIR 20224!

Oleh: Faizah Binti Kamarudin

Setiap yang bermula pasti akan berakhir. Begitulah yang berlaku setiap semester. Sudah ditetapkan di UiTM, sesi kuliah adalah selama 14 minggu sahaja. Makanya bila kelas pada minggu ke 14 tu, pelajar-pelajar yang berani tu akan mengajak madam bergambar bersama-sama. Hehe. Tak semua pelajar yang berani nak ajak madam ni bergambar. Biasalah madam ni terkenal dengan kegarangannya. Garang sebab sayang. Tapi sering disalahertikan. Kesian madam.

Semester 20224 adalah kali ketiga madam mengajar pelajar-pelajar antarabangsa. Kali pertama dan kedua dulu, ketika madam masih mengajar di UiTM Shah Alam. Masa tu, pelajar dari Yaman dan Sudan. Kali ini, madam mengajar pelajar dari Indonesia pulak. Mungkin kerana dari rumpun yang sama, maka tiada masalah sangat dalam komunikasi. Hahaha.

Kembali ke cerita asal. Melalut pulak. Petang tu, slot kelas terakhir bila masing-masing sudah siap menjawab soalan latihan, datang lah wakil kelas, si Ucop dengan tersengih-sengih mengajak madam bertiktok. Bukan ajak bergambar, ya. Bertiktok! Yang lain macam adik-adik yang sedang menunggu si abang minta izin daripada mak yang garang. Hahaha.

Ucop : Madam, jom tiktok 05 dulu!

Madam : Apa tu? Saya ni ada je tiktok tapi tak pernah buat video muka saya.

Ucop : Macam ni, madam. Sir Mezan pun dah buat. Ni ni, madam.

Beria-ia si Ucop menunjukkan contoh tiktok yang mereka sudah buat dengan pensyarah yang lain. Riu la kelas. Masing-masing pun mengajak madam buat tiktok. Makanya, madam pun layankan juga. Hmm, kalau dulu pelajar ajak bergambar je. Sekarang pelajar ajak bertiktok. Sungguh masa sudah berubah. Pelajar pun bertukar. Generasi sudah berubah! Tengok lah gambar di bawah ini, tangkap layar dari video tiktok madam. Macam-macam aksi sebenarnya dari mereka. Muka masing-masing termasuk madam sangat gembira masa kelas terakhir bagi sesi 20224.



KEMERIAHAN PROGRAM CIS DAY 2023

Ts Fairus Azwan Azizan dan Ts Ir Noraziyan Abd Aziz

Civil Inter-batch Day 2023 merupakan satu program aktiviti riadah yang dijalankan untuk seluruh warga Pengajian Kejuruteraan Awam (PKA), UiTM Cawangan Pulau Pinang (UiTMPP). Program ini diadakan pada 14 Januari 2023 di Padang A, UiTMPP anjuran Acedemic Advisory Unit (AAU) dan telah mendapat kerjasama dengan Penang Civil Engineering Student's Society Unit (PCES). Program riadah ini adalah sebagai salah satu aktiviti pertemuan santai diantara para pelajar dan juga penasihat akademik PKA dengan melakukan aktiviti-aktiviti luar sambil bersukan. Aktiviti sukan ini melibatkan keseluruhan pelajar PKA iaitu pelajar diploma semester 1 sehingga semester 5 dan juga pelajar ijazah semester 1 sehingga semester 8 seramai 950 pelajar bersama penasihat akademik iaitu terdiri daripada 95 orang pensyarah.

Program riadah ini bermula jam 7.30 pagi sehingga 8.00 pagi dengan para peserta membuat pendaftaran dan berkumpul di atas padang mengikut rumah sukan yang telah ditetapkan. Sebanyak 9 rumah sukan telah ditetapkan iaitu hitam, ungu, biru, emas, kelabu, putih, kuning, merah, hijau. Selepas ketibaan para tetamu, aktiviti diteruskan dengan membaca doa, nyanyian lagu Negaraku dan ucapan perasmian pembukaan oleh Ketua Pusat Pengajian, Dr Hj Anas Ibrahim. Kemudian akitiviti diteruskan dengan sesi regangan badan iaitu Zumba dan seterusnya pertandingan Cheers mengikut setiap rumah sukan.

Acara sukan utama dimulakan pada jam 9.30 pagi dengan 10 permainan 'Mini Game' dijalankan serentak dan setiap rumah sukan wajib menghantar pemain untuk menyertai setiap acara tersebut. Antara permainannya ialah 'Chicken run', 'Score the goal', 'Dogde ball', Lambungan kasih, 'Attack the baloon', 'Musical stick', 'Tic tac toe', Tuju selipar, Musang berjanggut, 'Fashion show' dan Tarik tali sebagai sukan yang terakhir.

Sesi penyampaian hadiah berlangsung sekitar jam 1.00 petang dan mengumumkan bahawa rumah biru menjadi johan keseluruhan diikuti dengan rumah ungu tempat kedua dan rumah kuning tempat ketiga. Program riadah ini tamat sekitar jam 1.30 petang. Program ini telah dijalankan dengan sempurna dan telah mencapai target objektif dengan mengumpulkan semua pelajar dan penasihat akademik PKA pada satu hari yang sama dan menjalankan aktiviti bersama. Selain dari menyihatkan tubuh badan, hubungan silaturrahim antara pelajar dan penasihat akademik lebih erat dan komunikasi juga lebih berkesan. Diharap program seumpama ini dapat dijalankan lagi dilain masa secara tahunan bagi memastikan hubungan sesama warga PKA akan lebih erat tidak kira diantara sesame pelajar mahupun pensyarah sebagai penasihat akademik.



Gimik Perasmian Oleh Dr Anas Bin Ibrahim, KPP PKA



Urusetia Program Merakam Kenangan



Wakil rumah sukan memegang bendera rumah masing-masing



Johan : Rumah Biru



Permainan 'Don't drop the ball'



Naib Johan : Rumah Ungu



Permainan 'attack the ball'



Ketiga : Rumah Kuning



Permainan 'Score the goal'

MAJLIS MENANDATANGANI MEMORANDUM PERSEFAHAMAN (MoU) DI ANTARA UNIVERSITI TEKNOLOGI MARA DAN MACRO DIMENSION CONCRETE (MDC) SDN. BHD.

Oleh: Noorsuhada Md Nor, Soffian Noor Mat Saliah, Mohd Azrizal Fauzi, Amir Khomeiny Ruslan, Amril Hadri Jamaludin, Ahmad Syaqui Md Hasan dan Khairul Afinawati Hashim

6 April 2022 m / 4 Ramadan 1443h, Majlis menandatangani Memorandum Persefahaman (MoU) telah diadakan di Bilik Mesyuarat Aquamarine Aras 9, Kompleks Perdana,UiTM Cawangan Pulau Pinang.

UiTM Cawangan Pulau Pinang diwakili oleh Profesor Madya Ir. Dr Ahmad Rashidy Razali Timbalan Rektor (Akademik Dan Antarabangsa) manakala Macro Dimension Concrete (MDC) Sdn. Bhd. diwakili oleh En. Leow Khang Heng, Ketua Pegawai Eksekutif.

Profesor Madya Ir. Dr Ahmad Rashidy Razali mengucapkan setinggi tinggi penghargaan kepada pihak MDC Sdn. Bhd. di atas kesudian dalam menjalinkan kerjasama dengan pihak UiTM amnya dan UiTM Cawangan Pulau Pinang khususnya. Pengurusan Kanan UiTM Cawangan Pulau Pinang juga turut memberikan sokongan yang tidak berbelah bagi dalam kolaborasi ini.

Ketua Pegawai Eksekutif, MDC Sdn. Bhd. berkata, "Daripada hasil kolaborasi dan persefahaman ini, banyak manfaat dapat dihasilkan antaranya penyelidikan, di mana MDC Sdn. Bhd. juga mempunyai pusat pembangunan penyelidikan yang sedang pesat berkembang didalam pelbagai aspek antaranya didalam kejuruteraan awam. Selain itu, menggalakkan juga penglibatan staf dan pelajar UiTM menjalankan latihan industri di MDC Sdn. Bhd. yang terdekat adalah penawaran biasiswa kepada pelajar-pelajar UiTM yang berkelayakan."

Manakala, Profesor Madya Ir. Dr Ahmad Rashidy Razali berkata, "UiTM memainkan peranan yang sangat signifikan sebagai platform percambahan ilmu menerusi pengajaran dan pembelajaran yang berasaskan keperluan semasa. Sehubungan itu, adalah penting untuk sesebuah universiti memperkasa hubungan kerjasama antara universiti dengan industri mahupun institusi latihan dari segi reka bentuk dan penyampaian kurikulum, penyelidikan serta pembangunan pendidikan yang berterusan ke arah melahirkan graduan profesional berkualiti."

Beliau menambah lagi, "Menerusi kolaborasi sebegini secara tidak langsung akan menyumbang bukan sahaja kepada kesejahteraan diri, malahan memberi impak positif dan berguna kepada masyarakat serta negara."



Setinggi-tinggi penghargaan juga diberi kepada barisan peneraju MoU ini yang diketuai oleh Profesor Madya Dr. Noorsuhada Md Nor dari Pusat Pengajian Kejuruteraan Awam, UiTM Cawangan Pulau Pinang bersama-sama Dr Soffian Noor Mat Saliah, Ir. Ts. Mohd Azrizal Fauzi, En. Ahmad Syauqi Md Hassan, En Amir Khomeiny Ruslan, En Amril Hadri Jamaludin dan Cik Khairul Afinawati Hashim, kesemuanya merupakan pensyarah di Pusat Pengajian Kejuruteraan Awam, UiTM Cawangan Pulau Pinang.

Dengan memorandum persefahaman ini, aspirasi UiTM untuk menjadi Universiti Terkemuka Dunia ataupun “Globally Renowned University” menjelang tahun 2025 adalah seiring dengan agenda yang telah direncanakan. Salah satunya melalui keberhasilan melalui program kolaborasi dengan rakan strategik. Dengan kewibawaan yang dimiliki oleh Macro Dimension Cement (MDC) Sdn Bhd dan UiTM, kerjasama ini mampu memberi manfaat kepada semua dan generasi akan datang dalam pelbagai perkara.

Dengan termeterainya MoU di antara UiTM dan MDC Sdn. Bhd. akan mewujudkan peluang baru kepada kedua-dua pihak. Kerjasama ini adalah platform yang sempurna untuk pendidikan tanpa sempadan dan global di mana semua pihak akan berpeluang menjana pengetahuan dan idea baru melalui pelbagai aktiviti dan projek yang melibatkan pelajar mahupun kakitangan UiTM dengan pihak industri.



Asian International Arbitration Centre (Malaysia) (AIAC) Roadshow 2022 – Penang

Oleh: Khairul Ammar bin Muhammad Ali dan Amalina Amirah binti Abu Bakar

Butterworth, 1 Disember 2022 - Pusat Timbang Tara Antarabangsa Asia (Malaysia) atau lebih dikenali sebagai Asian International Arbitration Centre (Malaysia) (“AIAC”) telah mengadakan “AIAC Roadshow 2022 – Penang” bertempat di Royale Chulan Penang. Siri jelajah ini bertujuan memperkenalkan produk dan perkhidmatan yang ditawarkan serta ciri-ciri yang menjadikan AIAC sebagai salah sebuah institusi timbang tara yang mampan.

Pihak AIAC telah memperbaharui dan menambah baik Kaedah-Kaedah Timbang Tara AIAC 2021 dan Kaedah-Kaedah Timbang Tara-i AIAC 2021. Pembaharuan ini bertekad untuk mengemaskini dan memperkenalkan komponen-komponen baru yang penting dalam penyelesaian pertikaian secara khususnya melalui kaedah-kaedah timbang tara, timbang tara-i, adjudikasi dan pengantaraan. Sehubungan dengan itu, para pensyarah Fakulti Kejuruteraan Awam telah dijemput untuk didedahkan dengan lebih dalam proses-proses yang terlibat di dalam pembicaraan adjudikasi (CIPAA 2012) dan timbang tara.



AIAC Roadshow 2022 – Penang

Proses timbang tara merupakan satu proses yang amat penting bagi mereka yang terlibat dengan industry pembinaan. Ianya merupakan satu alternatif penyelesaian konflik diantara pihak yang bertikai. Walaupun terdapat keluasan terhadap isu yang dibincangkan melalui system timbang tara ini, namun industry pembinaan mempunyai pengkhususan tersendiri apabila melibatkan pertikaian yang dilibatkan dalam system timbang tara ini. Oleh kerana itu, pemain-pemain industry seharusnya mengambil cakna terhadap sebarang perubahan dan penambahbaikan terhadap system yang dilakukan.



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Design Expert Workshop: a Success with Collaboration between UiTM and JKR CREaTE

By: Amir Khomeiny Ruslan, Noorsuhada Md Nor, Soffian Noor Mat Saliah, Ahmad Syauqi Md Hasan, Amril Hadri Jamaludin, Mohd Azrizal Fauzi

A Design Expert workshop was recently conducted as a result of a joint effort between the Faculty of Civil Engineering at UiTM Penang and five members of the Centre of Excellence in Engineering and Technology (CREaTE) from the Public Works Department (JKR). The workshop was held on March 2, 2023, from 9am to 12pm in the Smart Classroom of the Perdana Block and was led by expert speaker Ir. Ts. Azrizal Mohd Fauzi.

The workshop focused on the use of Design Expert software to design laboratory work for mix design testing using recycled concrete aggregate (RCA) material, which enhances research involving UiTM research grant holders and JKR CREaTE. Factorial and Response Surface Designs were utilized to determine the optimum formula for high-quality mixtures that meet standardized parameters. The process involves conducting laboratory experiments and analyzing the results, which can be time-consuming. However, by using Design Expert software, it becomes easier to design variations in the formula and analyze post-formulation experimental results.

The key point of the workshop was the mix design of RCA, which received high praise from the representatives of JKR CREaTE. They were satisfied with the knowledge sharing and the expeditious process that resulted from the mix design. According to the guest speaker, Design Expert software can be used in various fields, including structure, management, water, and geotech.

In the structure field, the software can optimize concrete strength for high-rise buildings and bridges and determine the right concrete mixture to achieve the necessary density and durability. In management, it can increase concrete production productivity by adapting to demand forecasting and raw material inventory and determine the optimal cost in construction projects to maximize profits. In water, it can determine the appropriate concrete mixture for water tanks, swimming pools, and other water infrastructure, and optimize concrete strength and durability in water and drainage systems. In geotech, it can determine the right concrete strength for constructing retaining walls and roads and adjust concrete mixtures to meet the requirements of supporting structures and underground foundations.

Design Expert enables researchers and engineers to optimize concrete mixtures, maximize product quality, and minimize costs and time. The author hopes that this Design Expert workshop will be continued with future series that involve all interested lecturers and students to enhance their knowledge and skills.



The participants look so excited and enthusiastic listening to the lecture.

Have Fun Through Virtual Penang Smart City Camp 2022 (P-SMACC)

By: Assoc. Prof. Dr. Noorsuhada Md Nor (Civil Engineering Studies), Assoc.

Prof. Dr. Abdul Hadi (Chemical Engineering Studies) and Ts. Dr. Adi Izhaz Che Ani (Electrical Engineering Studies)

11th - 21st October, 2023: Universiti Teknologi MARA (UiTM), Penang Branch, was commissioned to host a programme involving national and international students as part of the Virtual Penang Smart City Camp 2022 (P-SMACC) programme held in October 2022. The programme was organised by Academic Affairs, UiTM Penang Branch, in collaboration with the Civil, Mechanical, Chemical and Electrical Engineering Studies of UiTM Penang Branch. National and international co-hosts of this programme were Malaysia Board of Technology (MBOT), Universiti Kebangsaan Malaysia (UKM), Universitas Negeri Malang (Indonesia), Universitas Gadjah MADA (Indonesia), Abubakar Tafawa Balewa University, (Bauchi, Nigeria) and others. The aim was to harness the combined efforts of multidisciplinary engineering students from different countries to develop sustainable and practical solutions to the chosen issues.

The programme was led by Assoc. Prof. Dr. Abdul Hadi from the Chemical Engineering programme, UiTM Penang Branch, and supported by secretariats from other engineering disciplines. The beauty of this programme, which was the first edition of P-SMACC, was the challenges posed to young engineers by the key themes of the United Nations Sustainable Development Goals 2030 (SDG 2030). This edition of the camp focused specifically on SDG#9 (Industry, Innovation & Infrastructure) and SDG#11 (Sustainable Cities & Communities). During the virtual camp, students had the opportunity to gain a broader perspective on smart city issues and explore various solutions, including changes in societal behaviour and the adoption of appropriate technologies to address numerous sustainable smart city challenges, especially in the post-pandemic era.

The learning outcomes of the camp included gaining an understanding of the current global challenges facing sustainable smart cities and proposing appropriate solutions to address these issues. The students also learnt how to select appropriate technologies to solve the challenges of smart cities based on their technical discipline. The importance of involving society in the application of appropriate technologies to achieve the SDGs related to sustainable smart cities was emphasised. Furthermore, the students were able to identify the specific challenges for sustainable smart cities in their home countries and formulate concrete steps to find solutions from a technological and societal perspective.

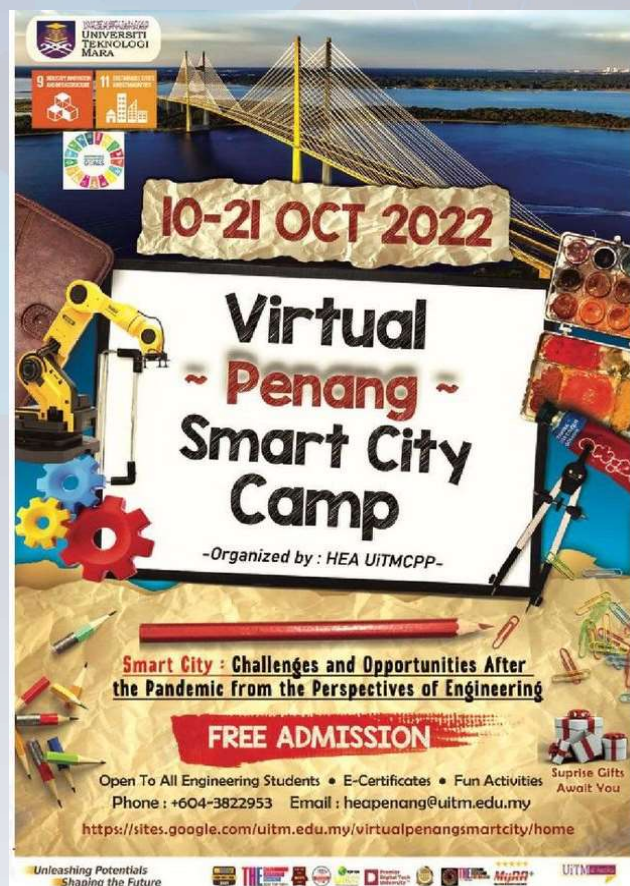


Figure 1: Poster Virtual Penang Smart City Camp 2022

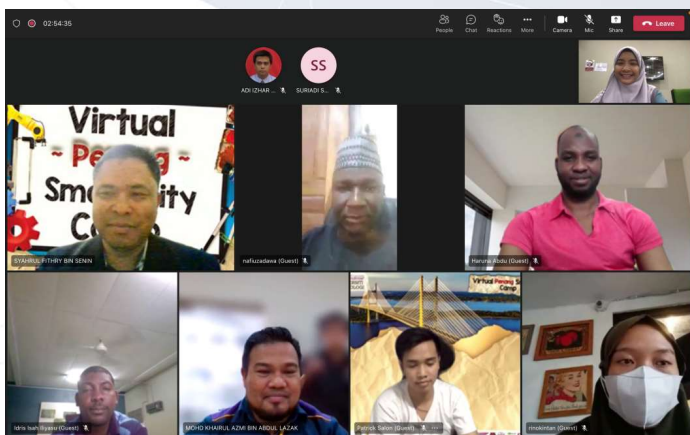


Figure 2: One of the sessions during P-SMACC 2022

A total of 15 courses were offered during the programme and speakers came from home and abroad. The opening of P-SMACC 2022 was graced by Assoc. Prof. Ir. Dr. Ahmad Rashidy Razali as the Acting Rector of UiTM Penang Branch. Distinguished speakers from academia, industry and government organisations shared their thoughts and insights on these topics with the participants, contributing to a valuable learning experience. More than 50 students from home and

abroad participated in the programme. As a reward, the students were invited to submit a video with the theme of Smart City: Post-Pandemic Challenges and Opportunities from a Technology Perspective. Three winners were announced, with first place going to Patrick B. Salon (Technological University of the Philippines - Taguig), second place to Kintan Cahyani (Institut Teknologi Sepuluh Nopember Indonesia, Indonesia) and third place to Haruna Abdu & Mohd Halim Mohd Noor (Universiti Sains Malaysia, Malaysia).

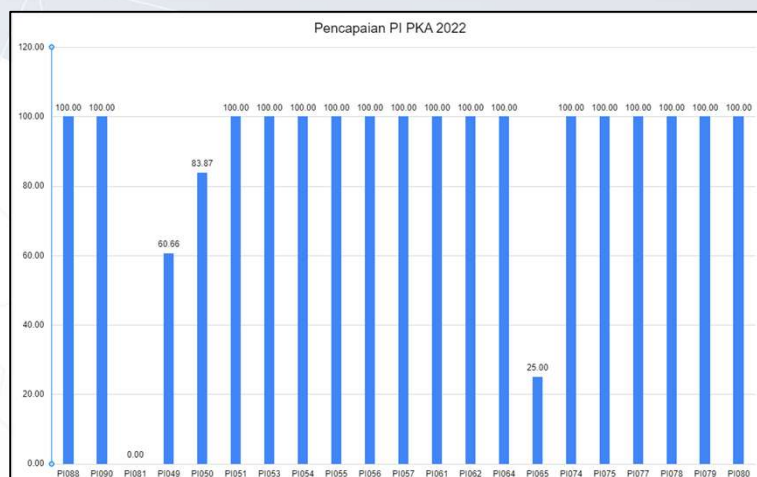


Figure 3: Another session during P-SMACC 2022

PKA Terbaik Perancangan Strategik 2022 UiTM CPP

Oleh: Ts. Dr. Mohd Samsudin Abdul Hamid

Unit Perancangan Strategik, Pengajian Kejuruteraan Awam, Kolej Pengajian Kejuruteraan, UiTM Cawangan Pulau Pinang mencipta sejarah apabila berjaya menjadi pusat pengajian terbaik dalam pencapaian KPI Perancangan Strategik UiTM CPP bagi tahun 2022. Usaha ini ada hasil bersama yang telah digembling setiap unit yang terdapat dalam PKA dengan sokongan oleh pihak pengurusan UiTM CPP. Secara keseluruhannya, PKA berjaya mencapai 88.1% Indeks i-UiTM 2022 dengan jumlah 55.5 markah daripada sasaran 63 markah. Daripada 24 'Performance Indicator' yang diberikan kepada PKA, sebanyak 20 PI berjaya memperoleh pencapaian 100%. Di antara pencapain luar biasa PKA pada tahun 2022 adalah PI064 berkenaan geran penyelidikan dalam negara sebanyak RM 995 180 dan PI77 berkenaan dana hasil daripada program USR dan KTP sebanyak RM 31645. Dalam pada itu, program yang melibatkan alumni iaitu 'Mini Exhibition Final Year Project EC221' di bawah PI80 juga telah diberikan anugerah tempat ke-3 Anugerah METIC 2022 peringkat UiTM. Kejayaan ini juga hasil sokongan dan penglibatan bersama semua warga PKA melalui perancangan pelbagai unit yang terlibat iaitu Unit Penerbitan, Unit Penyelidikan, Unit Alumni, Unit Projek Tahun Akhir, Unit Kebajikan dan lain-lain lagi. Setiap pengiktirafan yang berjaya diperolehi ini menjadi kayu pengukur kepada kebolehan dan kepakaran warga PKA dalam melaksanakan tugas hakiki dan mencapai KPI secara individu demi meningkatkan kualiti jabatan secara keseluruhan. Pihak pusat pengajian berharap agar pencapaian ini berjaya dikekalkan bagi tahun 2023 supaya menjadi medan terbaik untuk meletakkan Pengajian Kejuruteraan Awam sebagai contoh di dalam organisasi.



BENGGKEL “AGGREGATE QUALITY QUANTIFICATION” BERSAMA STAF THB MAINTENANCE SDN. BHD.

Rozaini Ramli, Zanariah Abd Rahman, Syahirah Mansor and Noraziyani Abd Aziz

Sasaran utama peserta adalah dari kakitangan THBM Sdn. Bhd.

Bilangan Penceramah : 4 orang

Bilangan Facilitator : 2 orang Bilangan peserta: 17 orang

Pada 22 November 2022 telah berlangsungnya satu bengkel bertajuk “Aggregate Quality Quantification” Bersama Staf THB Maintenance (THBM) Sdn. Bhd. Seramai 17 orang peserta dari kalangan staf THBM telah menyertai dan seramai 6 orang staf dari Pusat Pengajian Kejuruteraan Awam (PPKA) UiTM Cawangan Pulau Pinang telah berkhidmat sebagai penceramah dan fasilitator. Staf yang terlibat terdiri daripada Mohamad Azrul Aswad, Noraziyani Abd Aziz, Rozaini Ramli, Suzana Ahmad, Syahirah Mansor dan Zanariah Abd Rahman.

Program latihan ini dijalankan bagi memberi pendedahan kepada kakitangan dari THBM dalam pengendalian alat-alat ujikaji yang berkaitan dengan ujian kualiti ke atas agregat. Seperti yang diketahui, kandungan agregat di dalam bancuhan turapan berbitumen melebihi 90% daripada keseluruhan ataupun 80% daripada keseluruhan isipadunya. Fungsi utama agregat ialah menanggung beban yang dikenakan kepada turapan. Oleh itu, prestasi sesuatu turapan sangat bergantung kepada kualiti agregat yang digunakan. Terdapat dua sesi yang terlibat sepanjang program ini, di mana peserta didedahkan dengan sesi ceramah secara teori terlebih dahulu dan kemudian sesi praktikal secara “hands on”. **Gambar 1** dan **Gambar 2** menunjukkan dua sesi yang berbeza iaitu sesi ceramah dan sesi praktikal.

Antara ujikaji yang terlibat semasa sesi latihan adalah Aggregate Abrasion Test, Aggregate Impact Test, Flakiness and Elongation Test, Skid Resistance Test dan Polish Stone Value.

Program Latihan ini dilihat sebagai satu aktiviti yang sangat bermanfaat dalam membantu meningkatkan kefahaman kakitangan THBM apabila terutamanya semasa berdepan dengan situasi sebenar di tapak. Latihan ini dapat memberi gambaran kepada kakitangan THBM tentang kepentingan ujikaji kualiti agregat di makmal sebelum ianya dapat diaplikasi di lapangan. Oleh kerana penglibatan staf menyeluruh THBM dengan kerja-kerja penurapan dan membaikpulih jalan raya, maka latihan ini dilihat sangat signifikan untuk dijalankan bagi meningkatkan kemahiran dan kefahaman kakitangan THBM dalam pengendalian alat ujian berkaitan kualiti ke atas agregat.

Program ini juga menggalakkan komunikasi dua hala antara kakitangan THBM dan PPKA dalam bertukar-tukar pendapat dan pandangan berkenaan kerja di lapangan dan perkaitan dengan praktikal di makmal sendiri. **Gambar 3** menunjukkan gambar berkumpul antara staf THBM dan PPKA. Program ini berakhir dengan jayanya apabila kesemua objektif telah tercapai. Dengan kerjasama ini, adalah diharapkan aktiviti penyelidikan dan konsultasi di antara kedua-dua pihak dapat diteruskan di masa akan datang.



Gambar 1



Gambar 2



Gambar 3

PENGAJARAN KOLABORATIF: PENGURUSAN SISA PEPEJAL DAN CABARANNYA DI MALAYSIA

Oleh: Dr Nor Azliza Binti Akbar

Pengajaran kolaboratif boleh ditafsirkan sebagai suatu pendekatan pengajaran yang melibatkan tenaga pengajar yang terdiri daripada pensyarah dari institusi yang sama, institusi yang berbeza atau tenaga pengajar dari kalangan pihak industri. Pendekatan ini telah dilaksanakan kepada para pelajar Sarjana Muda (Kepujian) Kejuruteraan Awam (EC221), UiTM Cawangan Pulau Pinang yang telah mendaftar kursus Kejuruteraan Infrastruktur Alam Sekitar. Tenaga pengajar yang terlibat adalah terdiri daripada Dr Nor Azliza Akbar (UiTM CPP), Pn Nur Shafieza Azizan (UiTM CPP), Dr Herni Halim (USM) dan Ir Ts Dr Mohd Azhar Bin Abdul Hamid (SWCorp). Pengurusan sisa pepejal merupakan salah satu topik yang dipilih dalam pengajaran kolaboratif bersama pihak industri (Rajah 1). Di dalam topik tersebut, isu-isu berkaitan pengurusan sisa pepejal menjadi perhatian untuk dibincangkan bersama pelajar-pelajar EC221. Keberkesanan pengurusan sisa pepejal dalam mengurangkan pencemaran alam sekeliling merupakan cabaran besar di negara yang membangun. Ini kerana kaedah pelupusan sisa pepejal di tapak pelupusan sampah kurang efektif memandangkan jumlah sisa pepejal telah meningkat secara drastik setiap tahun.

Topik tersebut telah dikupas oleh Ir Ts Dr Mohd Azhar Bin Abdul Hamid yang merupakan Pengarah Bahagian Penyelidikan dan Teknologi, Perbadanan Pengurusan Sisa Pepejal dan Pembersihan Awam (SWCorp). Pengalaman dan kepakaran beliau dalam pengurusan sisa pepejal selama lebih 10 tahun telah memberi banyak pendedahan dan input yang meluas berkaitan dengan isu pengurusan sisa pepejal terutamanya di Malaysia. Pengurusan sisa pepejal adalah bermula daripada penjana, penstoran, pengutipan, pengangkutan, rawatan dan pelupusan. Penyelesaian dalam mengatasi isu pengurusan dan pelupusan sisa pepejal juga dikongsikan dalam pengajaran kolaboratif tersebut.

Dalam pengajaran tersebut, pelajar-pelajar juga didedahkan dengan akta, dasar, peraturan dan garis panduan pengurusan dan pelupusan sisa pepejal yang telah dikuatkuasa dan digunapakai di Malaysia. Antaranya adalah seperti Akta Pengurusan Sisa Pepejal dan Pembersihan Awam 2007 (AKTA 672), Dasar Pengurusan Sisa Pepejal Negara (2016), Dasar Kebersihan Negara (2019), Dasar Komuniti Negara (2019) dan sebagainya. Di Malaysia, pengurusan sisa pepejal dan kebersihan awam telah diuruskan oleh Perbadanan Pengurusan Sisa Pepejal dan Pembersihan Awam (SWCorp), Jabatan Pengurusan Sisa Pepejal Negara (JPSPN) serta kontraktor yang dilantik.



Rajah 1: Pengajaran kolaboratif bersama pihak industri

Selain itu, pelajar-pelajar EC221 juga perlu mengetahui kategori sisa pepejal dalam membantu keberkesanan pengurusan sisa pepejal. Sisa pepejal adalah bahan sekerap atau bahan lebih lain yang tidak dikehendaki yang bukan dalam bentuk gas dan cecair. Sisa pepejal dibahagikan kepada beberapa kategori iaitu sisa pepejal komersial, sisa pepejal pembinaan, sisa pepejal isi rumah, sisa pepejal perindustrian, sisa pepejal import. Sisa pepejal isi rumah yang terdiri daripada sisa makanan yang merupakan sisa terbesar yang dihasilkan oleh setiap individu. Jumlah sisa makanan yang terbuang di Malaysia dalam sehari adalah sebanyak 17, 000 tan (PPSPPA, 2020).

Bagi mengatasi masalah pengurusan dan pelupusan sisa makanan, teknologi rawatan sisa makanan telah dibincangkan seperti teknologi pengkomposan sisa makanan menggunakan aerobic composter untuk menghasilkan baja kompos. Teknologi mesra pengguna yang diperkenalkan ini juga menyokong objektif UN Sustainable Development Goals (SDGs) selari dengan SDG 11 (Sustainable Cities and Communities) melalui pengurusan sisa makanan yang mampan di bandar. Manakala SDG 12 (Response Consumption and Production) merupakan amalan kitar semula dan penggunaan semula sisa makanan dan SDG 13 (Climate Change) di mana pengkomposan sisa makanan boleh mengurangkan gas metana yang dihasilkan oleh sisa makanan di tapak pelupusan yang meningkatkan suhu purata global. Hasil kompos adalah selari dengan SDG 2 (Zero Hunger) yang mana kompos digunakan kembali untuk pertanian bagi memastikan penghasilan sumber makanan.

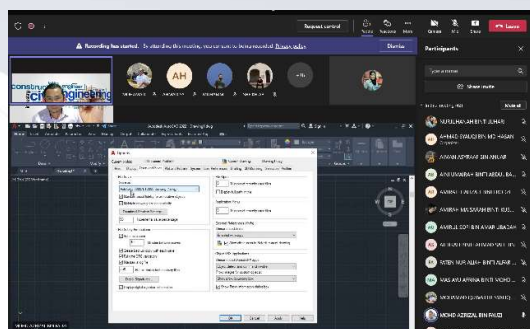
Dalam menangani isu pengurusan dan pelupusan sisa pepejal, pelbagai inisiatif telah dilakukan oleh pihak kerajaan bagi memastikan kebersihan, kesejahteraan dan kelestarian sesebuah negara. Pembudayaan amalam 3R seperti Program Bank Kitar Semuladi institusi pendidikan, komersial, industri dan komuniti telah dilaksanakan bagi membantu kesedaran alam sekitar. Kempen Hargai Makanan Elak Pembaziran, Trash to Cash, Buang Sampah Ke Dalam Tong Sampah, BeraniTegur dan Jangan Gunalah juga antara aktiviti kesedaran yang telah dijalankan bagi membantu mengatasi masalah sisa pepejal. Program-program utama seperti World Clean Up Day, Pertandingan Kitar Semula Sekolah- Sekolah (PerKISS) dan Pertandingan Waste to Art dapat meningkatkan kesedaran masyarakat untuk mengamalkan 3R (reduce, reuse, recycle) secara meluas dalam kehidupan seharian.

Inisiatif komuniti sifar sisa juga diperkenalkan bertujuan mendidik komuniti untuk mengasingkan sisa pepejal, merawat sisa disumber dan mengelakkan dari dihantar ke tapak pelupusan, mendorong komuniti supaya tidak membuang sampah serta mewujudkan perasaan kasih sayang pada sisa pepejal kerana ianya berharga. Inisiatif sebegini dapat membantu menjaga kelestarian alam sekitar.

Melalui pengajar kolaboratif ini, pelajar mendapat pendedahan terhadap cara-cara pengurusan sisa pepejal yang dinamik dari jurutera yang berpengalaman. Pengajaran kolaborasi bersama pihak industri perlu diperluaskan bagi meningkatkan pengetahuan dalam pengurusan sisa pepejal, pendedahan terhadap teknologi terkini yang digunakan serta mendalami perundangan dan peraturan berkaitan pengurusan sisa pepejal disamping dapat meningkatkan jaringan bersama pihak industri.

AutoCAD Intermediate Webinar 2022 by Skuad Motivasi dan Pembangunan Pelajar

Oleh: Roziah Keria



The 'Intermediate AutoCAD Webinar 2022' program was held on 4 June 2022 as a strategic plan for the Centre for Civil Engineering Studies, Universiti Teknologi MARA, Cawangan Pulau Pinang, Permatang Pauh Campus to improve the achievement of the Programme Outcomes (PO) for final year students of Diploma in Civil Engineering (EC110) in UiTM Cawangan Pulau Pinang. Monitoring student PO achievement is very important in the Outcome-Based Education (OBE) system to ensure that each program meets the accreditation requirements of the Engineering Technology Accreditation Council (ETAC). An experienced lecturer, Ir. Ts. Mohd. Azrizal bin Fauzi was invited by Skuad Motivasi dan Pembangunan Pelajar to provide knowledge and sharing to the students in applying theory and practice of AutoCAD in creating and analyzing civil engineering designs such as roads, buildings, and other infrastructure. Through the implementation of this program, students were given exposure and experience in applying knowledge and skills in the use of software applications and improving their PO achievements.

Sharing session by Ir. Ts. Mohd. Azrizal bin Fauzi



GEOMETRY MODEL GENERATION FOR SPACE STRUCTURE

By: Nurul Amira binti Noor Khairri, Yee Hooi Min and Tey Li Sian

Tensioned Fabric Structure (TFS) is a lightweight structure with an extremely versatile class of roofing structure that is effective for vast building application. Selection of the most effective type of surfaces for the implementation of TFS and suitable to be applied in large surface area with beautiful aesthetic value is important. The form of minimal surface was created using the mathematical model for TFS proposed. The objective of this study is to create a mathematical model for TFS and to propose an alternative shape for TFS. The study results could provide the engineers with additional shape to be considered for the implementation in TFS.

Introduction

Abdul Malek (2020) mentioned that TFS consists of arrangement of tensioned fabric as the main components where the fabric pattern is tensioned to a rigid structural element by mechanical means. Abdul Hadi & Yee (2016) described that TFS employed membrane supporting geometry resulting in a positive (upward) and negative (downward) curvature of the structural membrane, in which the external loads are resisted by an increase in the stress of hogging warp around one axis of the TFS and the inward forces are resisted by an increase in the stress of the sagging warps around the other. It comes in various shape and design. In this research, developing minimum surface of TFS is recommended and can be applied to TFS.

Components of the TFS

Abdul Hadi (2019) stated TFS has its own basic components which consist of supporting system, seam, fabric and cables where fabric surface is the main components. The selection of the fabric type is important as details shaped. Houtman (2015) stated that the TFS can divided the fibres that make up the fabric into natural fibers and chemical fibres. The fabric surface consists of three layers, one layer of woven yarn which consisted two directions of the textile warp and weft plus two layers of coating material to protect the fabric from external destruction such as ultraviolet light (UV light) radiation degradation, rainwater, snow and atmospheric moisture. Two yarns or more can be assembled by twisting in order to obtain a thread of higher strength.

Shape of Tensioned Fabric Structure

The TFS are part of a development technology which gives designers, architects and engineer ability to experiment with form and create exciting new solutions to conventional design problem. Yee (2011) has carried out form-finding in Catenoid, Helicoid, Enneper, Scherk, Moebius Strip and Costa. Abdul Hadi & Yee (2016) had proposed a Chen-Gackstatter for structural design to applied in TFS.

Geometry Generation of New TFS Models

Designing the TFS model by creating the equation then the coordinate (x axis, y axis, and z axis) of the model were identified and checked for the suitability of the shape for the model of the TFS in the Microsoft Excel. List all the coordinate numbers to prevent any overlapping code. Once the design approved, proceed to the coordinate pointed via LUSAS. The result of the geometry model will come out after the LUSAS line coordinate was created.

Table 1: Equation for All Models (redwood.edu, n.d. and mathwork.com, 2020).

Type of Model	Equation
Model 1	$z=3x + x^3 - 3xy^2$
Model 2	$z = \sin x^3 + \sin y^2$
Model 3	$z = \cos x + \cos y$

The equation for Model 1 and Model 2 were used exactly based on the given equation from the internet sources (redwood.edu, 2006) and (mathwork.com, 2020). The equation been used as the proposed shape of the given equation has not been used by other researcher. For Model 3, the equation from the internet sources (mathwork.com, 2020) but has change to get the unique shaped of the model. My own idea had been made for the Model 3.

Results and Discussion

Figure 1 shows the result for assumed shape for model 1. Figure 2 shows the final geometry for the model in different view.

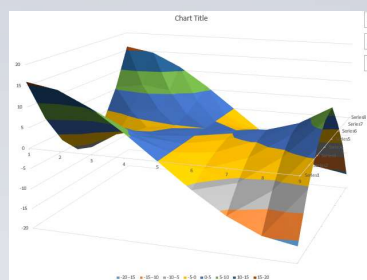


Figure 1: Assumed Shape for Model 1

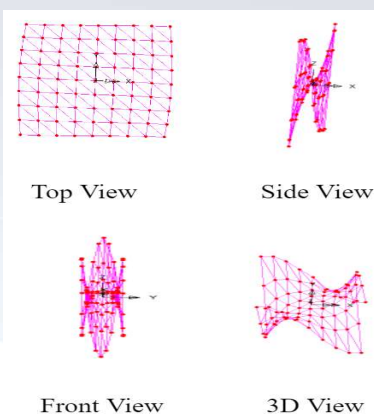


Figure 2: Final Geometry of Model 1

Conclusion

Three mathematical TFS geometry models have been proposed. Design engineers can consider its as alternative geometry shapes for development of new geometry of TFS.

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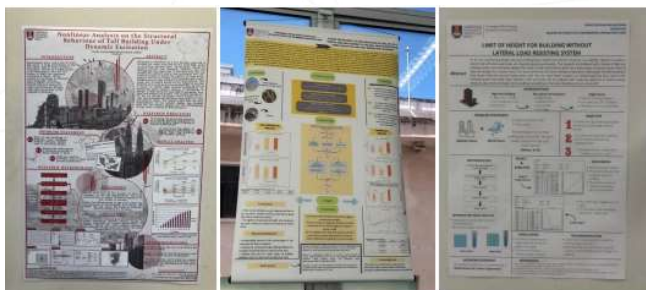
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‘MINI EXHIBITION FYP EC221’ PROGRAM TERBAIK AKADEMIK

Oleh: Ts. Dr. Mohd Samsudin Abdul Hamid, Aniza Albar, Wan Safizah Wan Salim, Nor Azliza Akbar, Nur Shafieza Azizan, Nik Farhanim Imran, Amril Hadri Jamaludin

Pada 2 Julai 2022, Unit Projek Tahun Akhir, Pengajian Kejuruteraan Awam, Kolej Pengajian Kejuruteraan telah menganjurkan ‘Mini Exhibition FYP EC221’ yang melibatkan 236 pelajar semester 8. Program ini dianjurkan bagi menilai projek akhir pelajar dan dinilai oleh panel akademik dan panel industri. Program ini telah berlangsung selama 4 jam dan pelajar-pelajar yang cemerlang telah diberikan penghargaan melalui 3 kategori iaitu ‘Best Poster’, ‘Best Presenter’ dan ‘Best Personality’. Program ini juga telah dirasmikan oleh Dr. Hj Anas Ibrahim, Ketua Pusat Pengajian Kejuruteraan Awam. Dalam pada ini program ini juga telah melibatkan seramai 42 orang panel industri dari pelbagai latarbelakang iaitu kontraktor, perunding, agensi kerajaan, dan institusi pengajian tinggi. Dalam pada itu, terdapat juga 7 orang alumni program EC221 telah hadir sebagai panel industri pada program ini.

Secara tidak langsung, program ini juga menjadi medan untuk meneruskan legasi graduan EC221 yang mampu memberikan sumbangan kembali kepada pihak universiti melalui program seperti ini. Dalam pada itu, pada Majlis Anugerah Kecemerlangan Akademik (MAKA) 2022, UiTM Cawangan Pulau Pinang yang dianjurkan oleh Bahagian Hal Ehwal Akademik, program ini telah diberikan pengiktirafan sebagai Program Akademik Terbaik dan diberikan sijil penghargaan serta piala iringin. Selain itu juga, program ini telah meraih tempat ketiga Anugerah Program Alumni Terbaik pada Mesyuarat Timbalan Rektor PJIM&A (METIC) UiTM dibawah ICAN. Hal ini kerana, program ini telah melibatkan pelbagai pihak dan berjaya dilaksanakan dengan baik hasil daripada sokongan semua pihak. Unit Projek Tahun Akhir ingin merakamkan ucapan terima kasih kepada semua pihak yang terlibat dalam penganjuran program ini iaitu AJK Projek Tahun Akhir, para pelajar, para pensyarah, panel industri dan Bahagian Hal Ehwal Akademik. Tuntasnya, program ini telah Tuntasnya, program ini telah berjaya meletakkan Pengajian Kejuruteraan Awam sebagai pusat pengajian yang telah membantu keterlihatan UiTMCPD di peringkat yang lebih tinggi.



HIGHWAY AND CONCRETE INTERVENTION WORKSHOP 2022

By: Shahreena Melati Rhasbudin Shah

The Highway and Concrete Intervention Workshop 2022 program was held on 19 – 20 May 2022 in collaboration between “Skuad Motivasi & Pembangunan Pelajar” and the respective lecturers as a platform to help Bachelor of Engineering (Hons.) Civil (Infrastructure) - EC221 students in enhancing their PO5 (Modern tool usage). Due to the Movement Control Order (MCO) in 2020 and 2021, courses involving laboratories such as Highway dan Traffic Engineering (CEG552) and Structural Engineering Laboratory (CES511) have switched to Online Distance Learning (ODL) medium, where students involved (currently in Part 6, 7, and 8) are unable to go through the experience of using laboratory equipment. Therefore, this program is one of the initiatives carried out by the faculty as an intervention program to meet EAC accreditation requirements to ensure EC221 students got appropriate disclosure. The main purpose of this workshop is to give exposure to final year students (Part 6, 7, and 8) on how to use the highway laboratory tools in the experiment involving road materials and pavement surfaces as well as making concrete in the right way and method.

This program was held for two (2) days for students in Part 6, 7, and 8 for the Highway workshop while Part 8 students are involved in the concrete workshop, with a total of 313 students. The activity that the students have gone through in the highway workshop is using and running road laboratory equipment and tests involving road construction materials, namely aggregate, and bitumen, and assessing the road surfaces condition such as skid resistance, texture depth, and surface drainage. While in the concrete workshop, the activity involved is mixing concrete in the heavy structure laboratory. All activities were carried out with the supervision of the facilitators consisting of academic staff and assistants engineer. To ensure that all students get appropriate exposure, these students were divided into small groups, according to the standard operating procedure (SOP) for activity in the laboratory. Overall, all students were very satisfied with the intervention program and gave positive feedback.



Students prepared to mix concrete



Students were listening to the facilitator's explanation regarding the Los Angeles Abrasion Test equipment



Students were operating the Aggregate Impact Test equipment (right pic.) and conducting a pavement surface drainage experiment using an outflow meter (left pic.)

CDIO FOR INTRODUCTION IN CIVIL ENGINEERING SUBJECT

By: Siti Rahimah Rosseli

Conceive - Design - Implement - Operate, or CDIO, has been essential in creating a foundation for outcome-based assessment that is inherently accessible for most engineering subjects. Students are excited because they will graduate with a distinctive range of interpersonal, personal, and system-building experiences that will enable them to flourish in actual engineering teams and create new systems or products. CDIO is advantageous not only to students, but also to lecturers, who can devise interactive activities in the CDIO workspace. In addition, CDIO produces players with the specific knowledge, skills, and experience that the industry requires, aims to enrich CDIO as a cutting-edge educational environment for the next generation of talented leaders. And with that, to provide an enjoyable and competitive CDIO learning process and to address all the mentioned future benefits, a successful event was held.

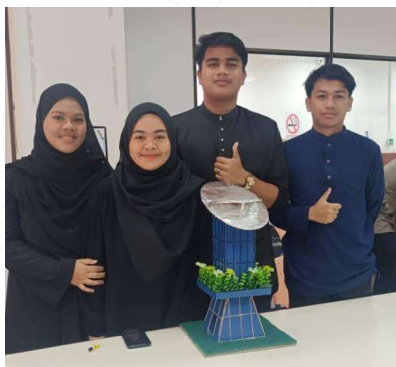


A memorial photo of lecturers and students

The CDIO competition for Introduction of Civil Engineering (ECM157) subject was conducted on 27th January 2023, at UiTM Pulau Pinang Branch and had been organized by several lecturers who taught ECM157 during the October 2022 - February 2023 semester. Part 1 students from Diploma in Civil Engineering (CEEC110) programme, 95 in total, participated in this big event.

Students were required to work in groups of four to construct a model of a high-rise structure out of recyclable materials, including paperboard, plastic, cans, and glass. Before constructing the model, students must identify the problem with conventional high-rise buildings, engaged in a brainstorming session to generate plausible design alternatives, and select the best design based on a variety of factors. The building concept must meet the requirements of the design idea, aesthetics, sustainability in the use of materials and construction, and advanced technology. Students were also required to present their projects, which were evaluated by a panel of qualified judges based on the building model and presentation skills.

As Head of Programme for EC110/CEEC110, Encik Mohd Zaini Endut was invited to officiate the closing ceremony and present prizes to the winning teams and best presenters. It is anticipated that this fruitful event will continue in the future to foster CDIO in CEEC110 programme, as it has achieved its goals.



One of the best building model design



The winning team with Encik Mohd Zaini



One of the best building model design

Akhirnya Bertentang Mata...

Oleh: Ts Ir Noraziyen Abd Aziz dan Noor Syafeekha Mohamad Sakdun

Setelah beberapa tahun menyambut kedatangan pelajar hanya di alam maya, kini Pengajian Kejuruteraan Awam (PKA) sekali lagi berpeluang untuk bertentang mata dengan semua pelajar. Pada Oktober 2022, Academic Advisory Unit (AAU) dengan kerjasama kelab pelajar, Penang Civil Engineering Student's Society (PCES) telah menganjurkan tiga perjumpaan bersama pelajar PKA.

Perjumpaan pertama ialah Taklimat Pelajar Baru bagi program Diploma Kejuruteraan Awam (CEEC110) pada 3 Oktober 2022 di Dewan Kuliah Perdana 1. Ketua Pusat Pengajian, Dr Hj Anas Ibrahim telah memberi kata-kata aluan meyambut baik kedatangan 96 orang pelajar baru CEEC110 pada semester ini. Pelajar juga telah diberi taklimat berkaitan pelan pengajian dan pendaftaran subjek oleh Koordinator Program CEEC110, En Mohd Zaini Bin Endut. Taklimat diteruskan oleh AAU dengan pembahagian pelajar kepada Penasihat Akademik (PA) masing-masing.



Taklimat Pelajar CEEC110 kemasukan Semester Oktober 2022



Taklimat Pelajar CEEC221 kemasukan Semester Oktober 2022

Perjumpaan seterusnya ialah Taklimat Pelajar Baru bagi program Ijazah Kejuruteraan Awam (CEEC221) pada 14 Oktober yang diadakan di Dewan Kuliah Perdana 1. PKA telah menerima 166 orang bagi pelajar program CEEC221. Selain kata aluan dari Pengurusan Tertinggi PKA, taklimat juga berkisarkan program dan pelan pengajian CEEC221 yang telah disampaikan oleh Koordinator Program CEEC221 iaitu Ts Dr Muhamad Faizal Bin Pakir Mohamed Latif.



Taklimat Pelajar PKA bersama Penasihat Akademik di Dewan Besar

Akhir sekali merupakan perjumpaan wajib yang diadakan pada setiap awal semester iaitu Taklimat Pelajar PKA yang diadakan pada 21 Oktober 2022 di Dewan Besar UiTM CPP. Taklimat ini melibatkan 956 orang pelajar CEEC110 dan CEEC221 bersama-sama 86 orang PA yang terdiri daripada pensyarah PKA. Perjumpaan ini terdiri daripada beberapa sesi taklimat iaitu amanat dan harapan dari Pengurusan Tertinggi PKA, taklimat ringkas dan padat dari Unit Safety, Unit OBE dan juga sesi bersama Alumni atau Industri.



Sesi penyampaian sumbangan laptop kepada pelajar yang terpilih oleh THB Maintenance SDN BHD

Perjumpaan kali ini amat bermakna kerana terdapat sumbangan laptop istimewa untuk tiga orang pelajar PKA yang terpilih dari pihak THB Maintenance SDN BHD (THBM). THBM telah diwakili En Mohd Tarmizi Bin Che Othman untuk sesi penyampaian laptop kepada pelajar. Suasana dewan bertambah meriah dengan gelak ketawa pelajar ketika sesi bersama PCES untuk cabutan bertuah. Semoga ukhwah antara pelajar dan PA semakin erat dengan kembalinya perjumpaan fizikal ini.



Pengurusan Tertinggi PKA dan barisan Majlis Tertinggi Kelab PCES bersama tetamu THB Maintenance SDN BHD, En Mohd Tarmizi Bin Che Othman



Penggerak utama yang menjayakan semua perjumpaan pelajar PKA iaitu Academic Advisory Unit (AAU) dengan kerjasama Kelab Penang Civil Engineering Student's Society (PCES)

Knowledge Transfer Program Bridges Gap Between Academia and Vocational Education Institutions

By: Muhammad Hafeez Bin Osman, Ahmad Syauqi Bin Md Hasan, Amir Khomeiny Bin Ruslan

In a bid to strengthen the relationship between academia and vocational education institutions, Pusat Pengajian Kejuruteraan Awam (PPKA) UiTM Cawangan Pulau Pinang conducted a knowledge transfer program with three Kolej Vokasional – Perai, Taiping, and Sri Iskandar. The program was officiated by Dr Hj Anas Ibrahim, the Ketua Pusat Pengajian Kejuruteraan, and saw participation from UiTM lecturers and KV lecturers.

The course included a wide range of vocational subjects, and the participants were engaged in various activities such as workshops, practical sessions, and group discussions to share their knowledge and expertise. During the course, the participants were given handouts or other materials to supplement their learning, and brainstorming sessions were conducted to generate new ideas and solutions related to the topics covered.



The program kicked off with Kolej Vokasional Perai on 4/10/2022, where the participants explored the Makmal Ukur by learning to use the theodolite and closed traverse methods. The talk by Muhammad Hafeez Bin Osman and practical session with UiTM Penang's experts provided invaluable experience to the 17 students and 3 lecturers from Perai.

To the students of KV Seberang Perai, let us strive to embody good virtues and make lasting connections for a lifetime of meaningful encounters

Next up was Kolej Vokasional Sri Iskandar on 5/10/2022 and 6/10/2022, where 17 students and 3 lecturers learned about Particle Size Distribution test, cube test, brick compression strength test, soundness of cement, and standard consistency of cement in the Makmal Struktur Berat. Additionally, they received guidance in the Makmal Ukur by Muhammad Hafeez Bin Osman and UiTM Penang's experts.



Teamwork and Tenacity: KV Seri Iskandar and UiTM Lecturers Unite for Knowledge Transfer



Finally, on 14/10/2022, Kolej Vokasional Taiping got their turn to benefit from the program, with 14 students and 4 lecturers exploring the Makmal Geotech and conducting plastic limit, liquid limit, and plastic index tests under the guidance of Dr Hj Anas Ibrahim. They also got hands-on experience with theodolite surveying with the help of UiTM Penang's experts.

**From Challenges to Triumph:
KV Taiping Students Forge
Ahead on the Path to Success**

All participating students expressed their enthusiasm and excitement for the program, noting the new and positive learning environment. The feedback from all parties – UiTM lecturers, KV lecturers, and students – was overwhelmingly positive. They expressed their eagerness to participate in similar programs in the future.



Take inspiration from Mr. Syauqi's unwavering spirit, KV Seberang Perai students, and soar to greater heights!



Heat Can't Beat Passion:
Dedicated Teachers Deliver
Knowledge Despite the
Scorching Sun

The success of this program was made possible by the dedicated efforts of Ahmad Syauqi Bin Md Hasan, Muhammad Hafeez Bin Osman, Habibullah Bin Mahmud, Norzurina Binti Osman, Afifudin Bin Habulat, Mohd Khairul Azhar Bin Ismail, Ts Dr Mohd Ikmal Fazlan Bin Rozli@Rosli, Rohamezan Rohim, Dr. Anas Ibrahim, and Amir Khomeiny Bin Ruslan. Their contributions were invaluable in facilitating the program's success.

**Virtue and knowledge shall unite,
As the foremost guidance in life's fight,
With both we shall take flight,
Towards eternal success and delight.**



Motivational Magic: KPP Dr. Anas Inspires Students to
Reach for the Stars

Overall, the knowledge transfer program was a resounding success, bridging the gap between academia and vocational education institutions and providing valuable learning experiences for all involved.

MyReflections for CEEC221 PPKA

By: Hazrina Ahmad, Md Rasul Mohamad Noor, Noor Syafeekha Mohamad Sakdun

Starting from Semester March – August 2022 (20222), to fulfill the EAC accreditation requirement to get students feedback on their attainments, the OBE Unit of PKA UiTM CPP has taken an initiative in developing the MyReflections System via the PPKA website. This simple medium is developed allowing the students to give feedbacks on their PO attainment to the center of study

The flow of the MyReflections for every semester is as shown in Figure 1. At the beginning of the semester, a face-to-face meeting will be carried out with all PPKA both new and old students. Briefing will be given by the KPP, and KP's from both Diploma and Degree program. This is followed by students meeting with their Academic Advisors to discuss on academic matters and their PO attainment.

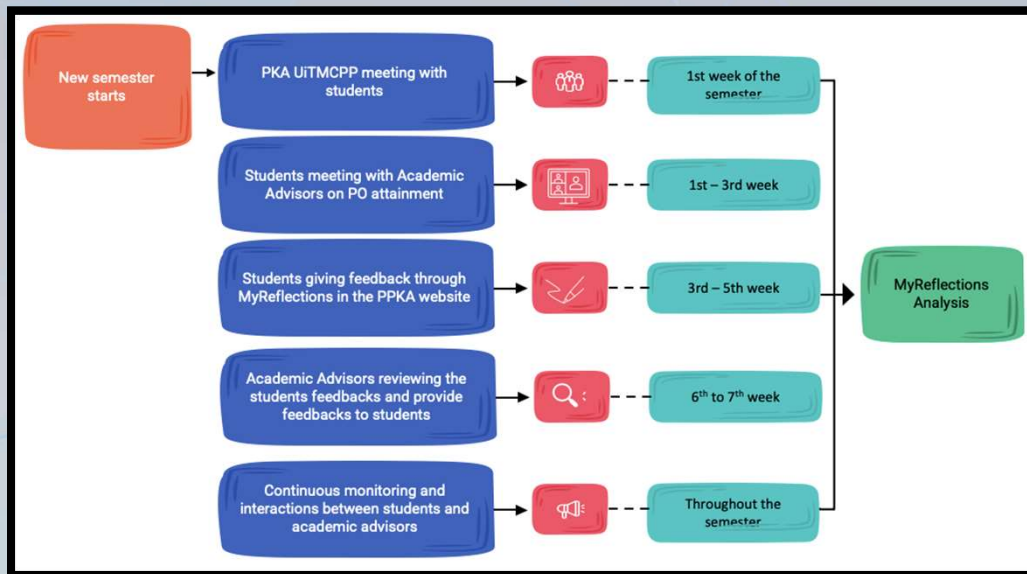


Figure 1: Flowchart of MyReflections system

This process is followed by the feedback of the students through MyReflections. Students may view their own PO attainment via PPKA website. The cumulative PO attainment is presented in spiderweb as well the PO for each subject. A sample of the MyReflections interface is shown in Figure 2.

Question 1
What PO and which course contribute to the lowest percentage/score from the previous semester?

Question 2
In your opinion, does the learning and assessment process provide you with sufficient exposure towards the EC221 Programme Outcomes / the working world?

Question 3
What are the improvements that you would suggest in enhancing the teaching and learning process?

Question 4
Does the PO attainment reflect with what you have learned so far?

Figure 3: Questions in the MyReflections

There are four questions that is asked to the student to reflect their achievement and give constructive suggestions to the center of study to improve their learning process. The questions are presented in Figure 3.

MyReflections on PO's Attainment
Last Date to answer MyReflections question expired since 22 March 2022 @ 11:59:00: pm (PO's for Semester - 20212)

Cumulative PO's Attainment for Semester - 20212											
PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
82	65	63	81	83		75	80	83	82	79	73

Q1: What PO and which course contributes to the lowest percentage/score from the previous semester?
PO12: Advance Geotech

Q2: In your opinion, does the learning and assessment process provide you with sufficient exposure towards the EC221 Programme Outcomes / the working world?
Yes, but need more exposure on the software learning

Q3: What are the improvements that you would suggest in enhancing the teaching and learning process?
Focus more on important subject that relate with infrastructure with current software being used in Malaysia

Q4: Does the PO attainment reflect with what you have learned so far?
Yes

Academic Advisor Comments
You have attained a good PO attainment so far. Only PO2 and PO3 need some attention. Look into courses that could help to control PO2 and PO3. Keep pushing yourself towards excellence.

Student

Advisors comment

Figure 2: Students interface of MyReflections

The implementation of MyReflections in PPKA UiTM CPP is hoped to be an effective means of communication with the students focusing on their PO attainment as well as comments on teaching and learning.

PPKA Juara Sukan Antara Fakulti (SAF) 2022

Oleh: Ts Fairus Azwan Azizan dan Ts Dr Mohd Samsudin Abdul Hamid

Setelah 2 tahun ditangguhkan kerana Covid-19, tahun ini acara Sukan Antara Fakulti (SAF) ini kembali diadakan di UiTM Cawangan Pulau Pinang. Acara ini berlangsung pada 8 Disember 2022 sehingga 20 Disember 2022. Pengajian Kejuruteraan Awam, UiTM Cawangan Pulau Pinang mengambil bahagian dalam kesemua acara yang dipertandingkan iaitu PUBG, Bola Tampar, Bola Jaring, Futsal, Aerodance, Badminton dan Bola Baring.

Pihak pengurusan PKA telah memberikan amanah kepada beberapa orang staf untuk menjadi pengurus pasukan bagi membantu Team PKA pada kali ini. Ts Fairus Azwan telah dipertanggungjawabkan menggalas tugas sebagai ketua kontijen PPKA dan dibantu oleh pengurus sukan yang terdiri daripada staf-staf PKA sendiri seramai 20 orang. Majlis penyerahan bendera kepada kontijen PKA untuk Sukan Antara Fakulti (SAF) diadakan pada 8 Disember 2022 dan seramai 134 orang atlet terdiri daripada pelajar PKA mengambil bahagian dalam keseluruhan acara yang dipertandingkan.



Majlis penyerahan bendera kepada kontijen PKA utk Sukan Antara Fakulti (SAF2022). Bermulanya misi para atlet PKA UiTMPP

Untuk sukan SAF ini yang berakhir pada 20 Disember 2022, team PKA telah mengutip 4 pingat emas, 1 pingat perak dan 3 gangsa. Pingat emas telah disumbangkan dalam acara bola jaring, badminton campuran, bola baling lelaki dan bola baling perempuan. Atlet aerodance lelaki menyumbang pingat perak untuk PKA manakala 3 pingat gangsa disumbangkan melalui acara bola tampar lelaki, bola tampar wanita dan futsal. Hasil kutipan pingat ini, PKA, UiTM Cawangan Pulau Pinang telah dinobatkan sebagai johan keseluruhan Sukan Antara Fakulti (SAF) 2022. Penutupan yang terindah buat Team PKA bagi tahun 2022 dengan kejayaan yang dicapai. Semoga semangat dan sokongan ini berterusan bagi memastikan PKA menjadi yang terbaik dalam kalangan yang terbaik.



Para atlet PKA dihari Sukan Antara Fakulti (SAF)

Majlis perasmian penutup SAF 2023 dan pengumuman Team PKA selaku Johan Keseluruhan



Sustainable Practices: The Production of Concrete Aggregates from Recycled Sources

By: Amir Khomeiny Ruslan, Noorsuhada Md Nor, Soffian Noor Mat Saliah, Ahmad Syauqi Md Hasan, Amril Hadri Jamaludin, Mohd Azrizal Fauzi

On March 1st to March 22nd, 2023, an activity to produce recycled fine aggregate (RCA) was conducted involving 21 students under the supervision of 6 lecturers. The aim of this activity was to produce recycled fine aggregate for wall panel construction and material testing. To conduct this test, a total of 3000 kg of RCA needed to be prepared. This was not an easy task, but with the help of many students and the use of a highly efficient jaw crusher, the work was successfully completed in just 7 days.



To produce RCA, test cubes were taken from the concrete mixing site. A total of 540 cubes were required to produce 3000 kg of fine RCA. With an average weight of 8 kg per cube, only 5.5 kg of fine RCA was successfully sieved out. On average, each concrete cube would produce approximately 70% of RCA passing through the 5 mm sieve, with the remaining retained at 5 mm.

The construction industry is constantly seeking ways to improve sustainability and reduce the impact of its activities on the environment. In this regard, recycling concrete to produce aggregates has emerged as a promising solution. The process to produce recycled concrete aggregate involves three main stages. The first stage is known as, split and break, involves splitting and breaking the concrete into manageable sizes. A hacking tool is used to split the concrete, followed by using a hammer to break it down into chunks of 5cm x 5cm. This stage is crucial in ensuring that the concrete is of the right size for further processing.

The second stage involves crushing the chunks of concrete into smaller pieces using a jaw crusher. This process produces fine aggregate with a size of less than 5mm, and it operates at a rate of approximately 3 kg per minute. The resulting product is a high-quality aggregate that can be used for a wide range of construction applications.

The work of splitting and breaking concrete cubes was carried out with great care and enthusiasm by the students



The lecturers and students were equally enthusiastic and worked together

The final stage of the process is the process sieve. A mechanical shaker is used to sieve the crushed concrete, and recycled aggregate that passes through a 5mm sieve is collected for use in construction. This stage ensures that the final product meets the required size and quality standards.



The RCA that passed through the 5 mm sieve was stored in containers

Although it was tiring, the valuable experience outweighed everything. Praise be to Allah, after a week, 3000 kg of RCA has been successfully loaded into 14 containers. May all our efforts be blessed and accepted by Allah.



The joyful faces of the students who contributed their energy with enthusiasm and responsibility were evident. On the last day, pizza was treated as a celebration

In conclusion, the process to produce recycled concrete aggregate involves three main stages: split and break, fine crushing, and sieving process. This process is an eco-friendly and sustainable solution that provides high-quality aggregates for construction projects. As the construction industry seeks to reduce its environmental impact, the use of recycled concrete aggregate is becoming more prevalent.



The process to produce recycled concrete aggregate is gaining popularity in the construction industry due to its numerous benefits. The use of recycled aggregates reduces the need for natural resources, saves energy, and decreases landfill waste. Additionally, the resulting product is often cheaper than using natural aggregates, which makes it an attractive option for many construction projects.



The 14 containers were a testament to the determination and pride of the PPKA students



Even on the last day, they were still smiling

Joint Expertise Partnership Talk with the National Water Services Commission (SPAN)

By: Salina Binti Alias, Zuhaida Binti Mohd Zaki, Amir Khomeiny Bin Ruslan

UITM, Pulau Pinang - On December 12, 2023, Pusat Pengajian Kejuruteraan Awam, Universiti Teknologi MARA (UITM) Cawangan Pulau Pinang organized an Industry Professional Talk Program entitled "Perkongsian Kepakaran Bersama Suruhanjaya Perkhidmatan Air Negara (SPAN)." The talk aimed to provide insights into the management of water services in Malaysia and was organized by the lecturer of CEW555 "Water and Wastewater Infrastructural Design" course. The event, which took place in Bilik Perdana, was attended by 88 students and three lecturers from the Faculty of Civil Engineering. The keynote speaker for the talk was Ir. Ts. Mohd Zaidi Mohamad Saad, who is an expert in water management and currently working with SPAN. The talk covered a range of topics related to the management of water services in Malaysia, including the roles and functions of SPAN, the responsibilities of SPAN towards the public, the SPAN Act, and social responsibilities in water management. According to Rachel Anak Hyacinth, a student who attended the talk, "The program provided us with a valuable opportunity to learn about the management of water services in Malaysia. The talk was very informative and provided insights into the various challenges faced by SPAN in managing water services in the country." Normashita Binti Abdul Halim, another student who attended the talk, stated that "The program has piqued my interest in the field of water management, and I look forward to learning more about this topic in

the future." To further enhance the engagement of students, the event also included a quiz, which was well-received by the participants. The organizers also gave out prizes to the students who answered the quiz questions correctly. Overall, the event was a success, providing students with a unique opportunity to learn from industry experts and gain insights into the management of water services in Malaysia. The organizers hope to continue organizing such events in the future to further enhance the knowledge and skills of the students in the field of civil engineering.



The students are focusing on the lecture being delivered



A cheerful and enthusiastic face



The lecturers and students together with speaker Ir. Ts. Mohd Zaidi Mohamad Saad



“Amalan 8R Dan Kitar Semula Minyak Masak Terpakai”

Oleh: Nuraini Tutur, Nurhidayati Mat Daud

Program live webinar anjuran Unit Kebajikan, Sukan dan Khidmat Masyarakat, Pengajian Kejuruteraan Awam, UiTM Cawangan Pulau Pinang (PKA), Bahagian Penyelidikan, Jaringan Industri, Komuniti, dan Alumni, UiTM Cawangan Pulau Pinang dengan kerjasama Majlis Bandaraya Seberang Perai, dan Arus Oil Sdn Bhd telah membawakan tajuk “Amalan 8R Dan Kitar Semula Minyak Masak Terpakai” dengan menjemput dua orang panel, Dr. Chatichai Chong yang merupakan Chief Marketing Officer Arus Oil dan Puan Nur Shafieza Azizan, Pensyarah Kanan, Pengajian Kejuruteraan Awam Pulau . Program yang diadakan pada 25 Ogos 2022 ini telah bersiaran secara langsung di laman Facebook Pengajian Kejuruteraan Awam-UiTM Caw. Pulau Pinang dan telah ditonton oleh seramai 452 orang penonton ketika program berlangsung.

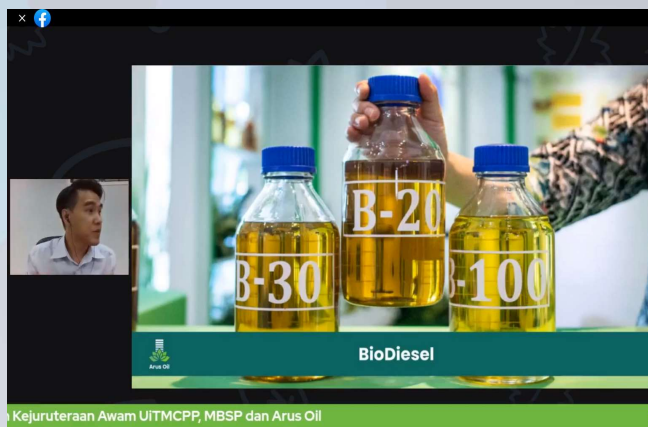
Webinar dimulakan dengan perkongsian daripada Puan Shafieza yang berkongsi kepentingan amalan 8R. Puan Shafieza memaklumkan hampir 80% sampah yang dihasilkan boleh dikitar semula dengan pelbagai cara. Puan Shafieza juga menekankan bahawa minyak masak terpakai tidak boleh dibuang ke sinki, dituang di longkang atau dicampak ke tanah sebagaimana yang dilakukan oleh segelintir pengguna kerana ia akan merosakkan ekosistem, pencemaran sungai dan membuatkan paip, longkang dan parit tersumbat dan kotor.

Perkongsian diteruskan dengan slot Dr. Chatichai Chong yang menerangkan apakah yang dimaksudkan dengan minyak masak terpakai. Minyak masak terpakai adalah minyak masak yang telah digunakan untuk menggoreng dan telah mencapai 'smoking point'. Minyak masak ini perlu dibuang dan seharusnya ditukar dengan minyak yang baru.

Di akhir sesi perkongsian, kedua-dua panel juga sangat menggalakkan para pengguna untuk mengitar semula minyak masak terpakai kerana ianya dapat menjaga alam sekitar, menghasilkan produk lain seperti sabun, lilin, pelita dan menjana pendapatan.



The students are focusing on the lecture being delivered



A cheerful and enthusiastic face



Bersama wakil daripada MBSP, ARUS OIL, PJI UiTMCP dan AJK terlibat

SINK OR FLOAT?

By: Nurakmal binti Hamzah, Amalina Amirah binti Abu Bakar, Satira binti Hambali

C-D-I-O can be defined as Conceive, Design, Implement and Operate. It is one of the teaching and learning methods used in Diploma in Civil Engineering (CEEC110). For course ECW231 – Fluid Mechanics, the CDIO component is applied in the assignment, specifically on the topic of buoyancy. In the assignment, the designed CDIO activities are assessed in three (3) stages which are; (i) exposed and teach students with skills (T), (ii) utilized skills (U) and (iii) assessed (A) in the final stage. Ideally, the CDIO assignment requires students to work in a group maximum of four (4) to design and produce a clay boat model which can float and at least carry a minimum mass of 200g. However, several requirements should be met during designing the boat such as, the boat must be in rectangular shape and the clay/plasticine ball used to create the boat should not exceed 5cm in diameter. The test run of the constructed boat model was conducted on 15th December 2022 at Hydraulics Laboratory UiTM Cawangan Pulau Pinang. Each group presented with variety of boat shape and colour, and ready to see either their boat is capable to float or will sink down. The initial dimensions (height, depth, width) and initial weight of the boat were recorded before the testing. The boat was placed in the hydraulic bench and the initial immersed depth of the boat was recorded. Then, coins were given as the testing load and were arranged carefully in the boat until it reached the minimum carrying load of 200g. Some of the clay boats sink before they reach the minimum load but surprisingly several boats are able to float not only at the minimum load of 200g but also more than that! Thirteen (13) groups out of twenty-one (21) achieved loads more than 200g with the highest recorded load is 320.56g while the lowest recorded load is 54.9g. Kudos to all the students! At the end of the day, all the students claimed that they enjoyed this hands-on CDIO assignment, especially on the testing of their clay boat as they never experienced such activities like this. This is due to fully online classes in the last two semesters, where all of their assignments were submitted online. (Let's put the blame on COVID-19). Consequently, implementation of CDIO activity in the course does promote great exposure among the students as it emphasizes active and experiential learning process.



Evidence during testing of the boat model



One of the group with their clay boat



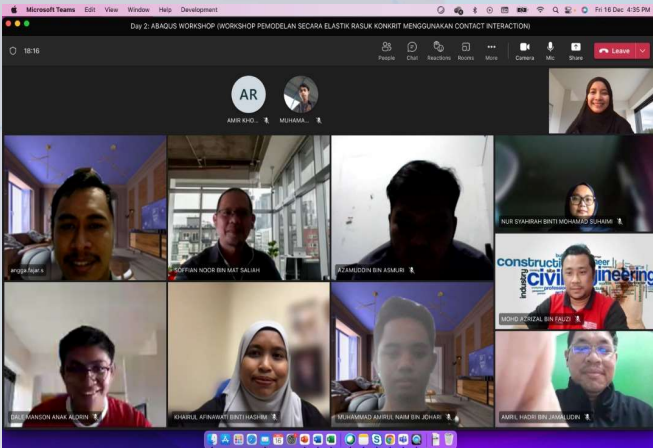
Student carefully placed the coins in the boat

Workshop on Finite Element Method (FEM) for Final Year Project Student and Supervisors

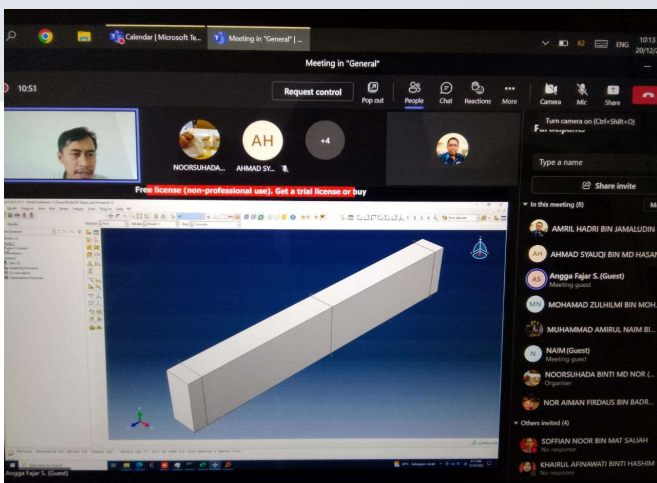
By: Noorsuhada Md Nor, Soffian Noor Mat Saliah, Ahmad Syauqi Md Hasan, Amril Hadri Jamaludin, Mohd Azrizal Fauzi, Amir Khomeiny Ruslan, Khairul Afinawati



The cheerful and prepared faces of Dr. Soffian and Dr. Angga at the opening of the workshop



The happiness and seriousness on the faces of the workshop participants



Dr. Angga explained FEM on a sample beam

A workshop on Finite Element Method (FEM) was held virtually on Microsoft Teams from 9th to 23rd December 2022. The workshop was led by Noorsuhada Binti Md Nor and attended by 21 final year project students, supervisors and staff from UiTM Cawangan Pulau Pinang. The workshop was conducted in collaboration with expert speaker Dr. Angga Fajar Setiawan from Universitas Gadjah Mada.

The first day of the workshop, 9th December 2022, focused on "ABAQUS for Analysis". The participants were given an introduction to FEM concepts and available tools in ABAQUS. However, due to the high cost of ABAQUS, the participants used The ABAQUS Learning Edition, which is available free of charge and supports structural models up to 1000 nodes on Windows platform only.

The subsequent days of the workshop, held on 12th, 16th, 19th, and 23rd December 2022, focused on "Elastic Modelling of Concrete Structures using Contact Interaction", "Inelastic Modelling of Concrete Structures containing Single Reinforcement", "Inelastic Modelling of Beams containing Doubly Reinforced Steel", and "Analysis of Simulation Results using Abaqus", respectively.

The workshop highlighted the benefits of ABAQUS FEM in engineering analysis, including its ability to solve complex problems such as dynamic, thermal, and structural stability analyses. ABAQUS FEM is a flexible and user-friendly software that enables users to create complex models quickly and efficiently. The software can model various types of materials, including plastics, metals, composites, and elastomeric materials. It provides high-quality and accurate analysis results that can be trusted by users.

The workshop concluded with positive feedback from participants. One participant expressed their satisfaction with the workshop, stating that it helped them achieve their final year project objective of completing their wall panel model. The workshop was short, informative, and beneficial to the participants. The hope is that by conducting this short course, it will encourage more curiosity and understanding of modelling concepts among future students in Malaysia.

In conclusion, the workshop was a success, and the author hopes that this series will continue in the future, involving more lecturers and students who are interested in expanding their knowledge beyond what is taught in university classes. The author extends their gratitude to all those involved in the workshop.

Academic Visit at Liverpool John Moore University, United Kingdom in 2022

By: Noorsuhada Md Nor

2022: From an invitation from a friend at the Faculty of Engineering and Technology, Liverpool John Moore University (LJMU), United Kingdom, which says: "As you will be posted to the United Kingdom for two months in 2022, it is my pleasure to invite you for an academic visit to our Faculty of Engineering and Technology, LJMU, to collaborate and discuss with my group in the field of marine and offshore structural design and structural integrity management." I spent a few days getting a breath of fresh air in Liverpool.



The invitation brings me to this university, as shown in Figure 1. Of course, the invitation provides an invaluable opportunity to expand my international network with other universities. This is in line with UiTM's mission to establish itself as a world-renowned university for science and technology, while contributing to the QS world university ranking.

Figure 1: At the entrance of Liverpool John Moores University, United Kingdom

During the visit, I had the privilege of having several conversations/discussion with Dr Musa Bashir (Figure 2), who had previously appeared as one of the keynote speakers at the faculty's conference, the 5th Symposium on Damage Mechanics of Materials and Structures, in 2021. I did not miss the opportunity to visit the civil engineering laboratory (Figure 3) and indeed the laboratory staff were extremely helpful and generous in explaining the laboratory, laboratory procedures and ongoing research in the faculty. I also met a new acquaintance, Assoc. Prof. Dr. Andrea Batako, the structural integrity expert, and we discussed many things, especially about research.



Figure 2: Discussion in research with Dr Musa Bashir

As LJMU has partnerships with renowned institutions both in the UK and internationally, I very much hope for further collaboration in the near future, e.g. in the form of student and academic exchange programmes, joint research projects and other academic activities. The University's global outlook and international connections contribute to a diverse and inclusive learning environment.



Figure 3: A visit to Civil Engineering Laboratory



Figure 4: Another visit to Engineering Laboratory and discussion for future collaboration on research with Associate Professor Dr. Andrea Batako



ENVIRONMENTAL IMPACT SCREENING (EIS) AND SOCIAL IMPACT ASSESSMENT (SIA) FOR PROPOSED NEW ROAD ALIGNMENT AT CAMERON HIGHLANDS, PAHANG, MALAYSIA

Prof Dr Shanker Kumar Sinnakaudan, Ts. Siti Isma Hani Ismail, Zarina Rahmat, Mohd Rizal Shukor, Maisarah Abd Ghani

Cameron Highlands can be access by road via Tapah, Simpang Pulai, Gua Musang or Sungai Koyan. Until 1990s, the only access road to Cameron Highlands was by FT59 which begins in Tapah, Perak. In 2004, a new access road, FT185 was open connecting Simpang Pulai, Perak through the northern part of the Highlands and Gua Musang in Southern Kelantan before terminating in Kampung Kuala Jenderis in Hulu Terengganu, Terengganu. By 2010, the third access road, FT102 was opened connecting Ringlet to Felda Sungai Koyan, Pahang. However, the main access road within Cameron Highlands itself only via FT59 connecting Blue Valley to Ringlet (**Figure 1**).

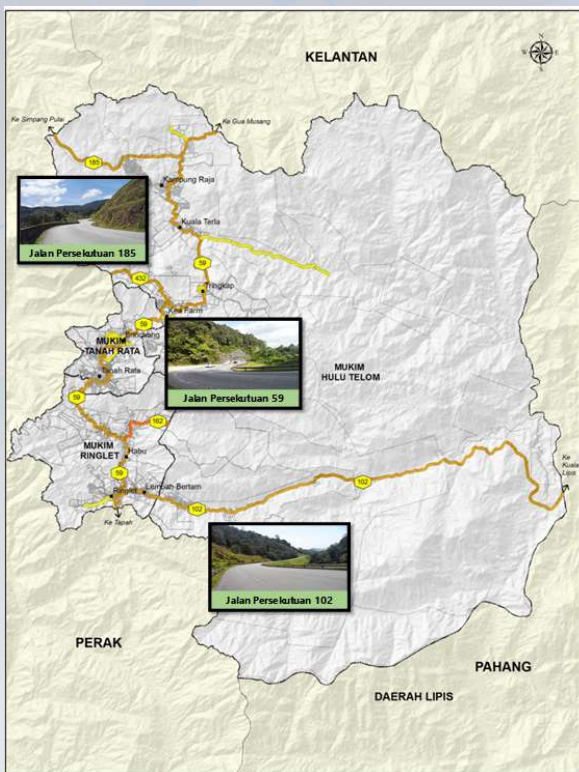


Figure 1: Existing Access Road

Source: RTD Cameron Highlands (Amendment) 2030



Figure 2: Existing Traffic Condition

Due to the existence of multiple access roads to Cameron Highlands, the number of tourists had increased tremendously especially during public and school holidays. The traffic condition at FT59 is getting worse as there are many tourist attractions spots along the route. Because of this problem, local people have experienced severe traffic congestion due to this sudden traffic influx (**Figure 2**).

Therefore, a study to propose alternative road to serve the traffic demand is urgently in need to overcome this problem. As such Kementerian Kerja Raya Malaysia (KKR) via ZR Traffic & Planner has appointed WAREM to carry out specialized studies on Environmental Impact Screening (EIS) and Social Impact Assessment (SIA) for the proposed road alternatives to curb the Traffic Congestions at Cameron Highlands. Since environmental and social impact awareness in the country has significantly increased in recent years, the government has been developing and reviewing national policies to address environmental and social impact findings in various projects before granting any development approval. The

construction, maintenance and rehabilitation of roads, however, have caused widespread environmental and social degradation to the surrounding area. Poorly planned roads and bad practices in construction, maintenance and rehabilitation works have far-reaching and leading to negative effects. The resulting damages, in many cases, are left permanent without any mitigation actions. The negative effects continue for a long time and have lasting consequences. In such cases, the adverse impacts are so severe that they offset their benefits of facilitated linkages, enhanced mobility and improved accessibility. Hence, to materialise these critical findings, the research project is granted under the Directly Funded Research (PBT) Scheme.

Environmental Impact Screening (EIS) sector was led by Prof Dr Shanker Kumar Sinnakaudan, a Registered EIA Consultant with Department of Environment Malaysia (CEP-C0372) while the Social Impact Assessment (SIA) was led by Ts Siti Isma Hani Ismail, a Professional Registered SIA Consultant (MSIA A023) with Malaysia Social Impact Assessment Association.

The main objectives of EIS for the said project are set as follows: a) To outline the necessary requirements for the proposed project to undergo initial screening and assessment; b) To outline the relevant baseline information required for incorporation into the EIA study; c) To outline the methodology and tools to identify, predict, evaluate and assess the significant environmental issues; d) To identify suitable pollution prevention and mitigation measures (P2M2s) to minimize the significant environmental issues arising from implementation of the proposed project and identification of residual impacts; e) To outline an Environmental Management Plan (EMP) framework for EIA study; f) To outline the environmental monitoring and audit programmes for EIA study. Furthermore, the budget for a new alignment in Cameron Highlands allocated in the Belanjawan 2021 emphasized the need for environmental consideration in constructing the new road alignment.

While the critical objectives for SIA is to address the social issues due to the project development during the construction and operation stages of the proposed road alignment; a) To identify and determine the targeted groups that may be affected by the proposed project; b) To assess the impacts on community affected by the proposed project, c) To assess issues and options that lead to the identification of alternatives in the design of the project, plan and program, d) To propose appropriate mitigation measures whereby the recommendations may include avoidance of impacts by not taking or modifying an action, minimizing, rectifying, or reducing impacts through changes in design or operation of the project; e) To propose Social Impact Management Plan (SIMP) of the project for future mitigation planning; e) To propose monitoring an audit program that should be carried out during the implementation of the project.

The proposed study area shown in **Figure 3** which comprises a 5 km radius impact zone from the prophetic road alignments.

The environmental and social study can give exposure greater exposure Postgraduate and Under Graduate students in carrying out questionnaire survey that they can practice in Industrial Design and Final Year Projects (IDP and FYP). Some of the students participated at SIA field surveys.

While there exist various forms of adverse impacts on the natural environment in the region, the negative effects of road development on the environmental social are also highly significant. Undesirable consequences in terms of health, safety, economic wellbeing, security, community cohesiveness, social values, and cultural heritage have been observed. As we are aware, sustainable urban and rural development requires a systematic and comprehensive transport infrastructure to complement the current and future land use development trend. Hence, the present study which was carried out in line with *Rancangan Tempatan Daerah Cameron Highlands 2030 (Penggantian)*, aiming to restore Cameron Highlands' pre-eminence as a prosperous and sustainable highland tourism destination by 2030 without compromising Environmental and Social impacts which may arise due to the proposed development.

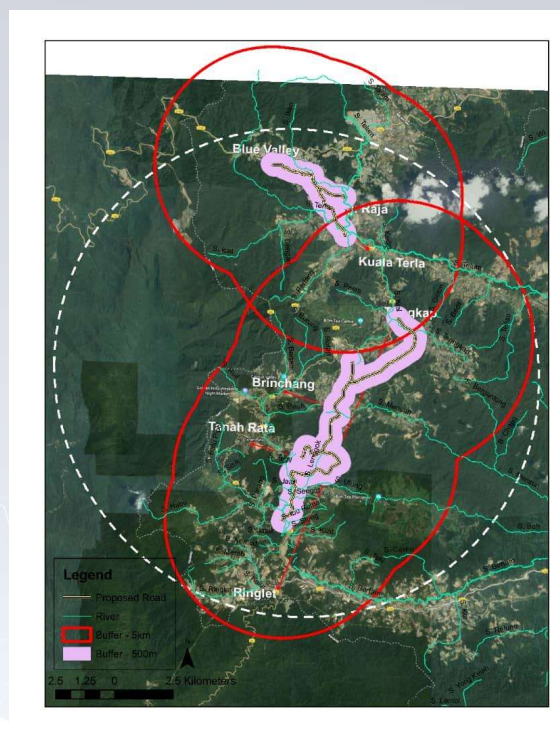


Figure 3 Proposed ZOS and ZOI for the Study Area Reference to RTD

“HOW TO IMPLEMENT BIM IN JKR’S PROJECTS”

Mohamad Zain Hashim (PPKA) and Muriatul Khusmah Musa (APB)

PENGENALAN

Pada 1/11/2022, telah diadakan seminar yang dianjurkan oleh pihak CP DEVELOPMENT(M) SDN BHD dengan kerjasama pihak JKR dari UNIT BIM. Seminar dijalankan di Dewan Myristica, JKR Timur Laut. Tujuan seminar ini adalah untuk memberi kefahaman kepada pihak yang terlibat dengan industry pembinaan tentang proses yang perlu dilalui dalam mengintegrasikan BIM di dalam projek-projek JKR.

1. PEMBENTANGAN PERTAMA

PENGENALAN MODEL BIM

Pembentangan 1 bertajuk “Aspirasi dan Hala tuju Perlaksanaan BIM di JKR yang telah disampaikan oleh Ir Ahmad Ridzuan B. Abu Bakar. Pembentangan dimulakan dengan penerangan tentang kronologi dan evolusi industry pembinaan daripada proses rekabentuk secara manual sehingga kepada penggunaan BIM. Diteruskan dengan memberi definisi BIM iaitu:

“**Building Information Modelling (BIM)** merupakan proses penyediaan, penggunaan dan pengurusan **Model 3D Berinformasi** dalam kitar hayat pelaksanaan sesebuah projek dimana model digital ini digunakan oleh pelbagai pihak untuk tujuan tertentu bagi meningkatkan tahap keberkesanan **Pengurusan Aset Menyeluruh**.”—**GARIS PANDUAN BIM JKR 2021**.

Model 3D BIM yang mengandungi pelbagai informasi iaitu; spesifikasi bahan, jenis bahan, dimensi dan data asset yang boleh digunakan bagi tujuan lukisan pembinaan, analisis pembinaan, kuantiti, koordinasi, rekod asset dan sebagainya. Model 3D BIM ini boleh digunakan pada peringkat perancangan, peringkat rekabentuk dan perolehan, peringkat pembinaan dan juga peringkat penyelenggaraan (rujuk Jadual 1). Dinyatakan juga daripada kajian sebelumnya tentang beberapa peringkat pembinaan yang mendapat faedah serta kebaikan yang sangat tinggi iaitu melebihi 50% iaitu “3D coordination” dan “Design reviews”.

Jadual 1: Penggunaan BIM dalam peringkat pembinaan

BIM dalam projek JKR		
Peringkat pembinaan		Faedah penggunaan BIM
Perancangan	a) Perancangan	<ul style="list-style-type: none"> • Pemodelan Tapak • Pengaturan Ruang • Analisis Tapak
Pewujudan Aset	b) Rekabentuk	<ul style="list-style-type: none"> • Analisis Kejuruteraan • Visualisasi Reka Bentuk • Koordinasi 3D • Dokumentasi Lukisan • Kejuruteraan Nilai • Penilaian Kemampanan
	c) Perolehan	<ul style="list-style-type: none"> • Anggaran Kuantiti
	d) Pembinaan	<ul style="list-style-type: none"> • Simulasi Pembinaan • Pemantauan Projek • Unjuran Kos • Perancangan Tapak Bina • Fabrikasi Digital
	e) Pentauliahan	<ul style="list-style-type: none"> • Validasi Kerja Pembinaan
Penggunaan Aset	f) Penerimaan	<ul style="list-style-type: none"> • Pendaftaran Rekod Aset
	g) Operasi dan senggara	<ul style="list-style-type: none"> • Pengurusan Ruang • Pengurusan Aset • Penyelenggaraan Berjadual • Pengurusan Kecemasan
	h) Penilaian	<ul style="list-style-type: none"> • Analisis Sistem Bangunan
	i) Pemulihan dan naiktaraf	<ul style="list-style-type: none"> • Penilaian Bangunan
Pelupusan	j) Pelupusan	

Penggunaan BIM berasas autodesk Revit yang mana sumber komponen adalah daripada katalog produk yang diperolehi secara online. Ditunjukkan juga model elektrik, model mekanikal, model struktur dan model akitek menggunakan perisian autodesk revit. Kaedah dan aliran kerja kolaborasi yang digunakan. Penerangan berkaitan terminology yang biasa digunakan dalam menerangkan tahap pencapaian penggunaan BIM dimana seperti berikut:


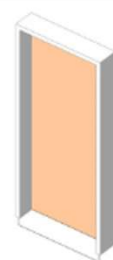
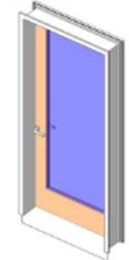
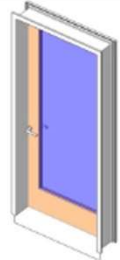

- a) "Level of development" (LOD) – LOD100,LOD200,LOD300,LOD400,LOD500.
- b) "Model dimension" (nD) – Model 3D,4D,5D,6D,7D,Nd.
- c) "BIM maturity level" – BIM Level 0, 1, 2, 3.

Peringkat pembangunan (LOD) yang mempunyai kaitan dengan tahap maklumat yang ada di dalam model yang digunakan seperti dibawah:-

Contoh: Pintu (maklumat yang perlu disediakan)

- a) LOD100 – "conceptual design" – secara konsep sahaja
- b) LOD200 – "preliminary design" – ada dimensi(lebar,tinggi tebal –pintu)
- c) LOD300 – "detailed design" – tambahan (bahan, kemasan dan identity data-ketahanan api)
- d) LOD400 – "construction" – tambahan (pengilang,model,ketahanan api, kos dan tarikh pemasangan)
- e) LOD500 – "as-built" – sama seperti LOD400

Jadual 2: Tahap pembinaan elemen BIM semasa fasa project

LOD 100	LOD 200	LOD 300/350	LOD 400	LOD 500
				
Concept phase	Conceptual design	Tender project	Construction state project	As built project

Sumber: <https://www.teamcad.rs/index.php/en/news/330-what-is-lod>

Dua jenis projek pembinaan yang dijalankan oleh Perekabentuk;

- a) Projek Konvensional – pasukan rekabentuk JKR, perunding rekabentuk (lantikan MOF/JKR).
- b) Projek Reka dan Bina – perunding rekabentuk (lantikan kontraktor)

Perekabentuk diatas samada dari JKR atau perunding swasta(lantikan JKR/MOF) akan terlibat dari peringkat LOD100 hingga LOD300. Manakala LOD400 dan LOD500 akan dilaksanakan oleh kontraktor.

Tahap dokumen yang perlu disediakan adalah juga berbeza mengikut tahap LOD yang berbeza (rujuk Jadual 3).

Jadual 3: Tahap penyediaan dokumentasi

LOD	Tahap dokumen (LODc)
100	Pelan konsep susunatur bangunan dan tapak (Zon/Ruang). Jadual keluasan lantai, Kuantiti kerja tanah dan Kos PDA berdasarkan reka bentuk konsep
200	Pelan reka bentuk awalan susun atur bangunan dan tapak (1:100) bagi tujuan kelulusan Kebenaran Merancang dan Pihak Berkuasa Tempatan Jadual Komponen (Loi200), Kuantiti kerja tanah dan Kos PDA berdasarkan reka bentuk awalan
300	Lukisan tender Jadual komponen (Loi300), Laporan kerja tanah dan Senarai Kuantiti
400	Lukisan pembinaan termasuk Fabrication/Working/Shop Drawing Jadual komponen (Loi400)
500	Lukisan siap bina Jadual komponen (Loi500) dan Rekod Aset Tak Alih

Jadual 4: Dimensi pada BIM model

Model	Maklumat
3D	Paparan model dalam pelbagai visualisasi dan perspektif 3D
4D	Kombinasi Model 3D dan jadual program kerja pembinaan yang mampu menghasilkan simulasi pembinaan
5D	Kombinasi Model 4D dan data kos bahan binaan yang mampu menghasilkan unjuran kos pembinaan
6D	Model 3D yang mengandungi maklumat bahan binaan dan rekabentuk untuk kegunaan analisis kecekapan tenaga dan penilaian kemampuan
7D	Model 3D yang mengandungi maklumat asset untuk kegunaan pengurusan fasiliti dan penyenggaraan
nD	??

Jadual 5: Tahap kematangan penggunaan BIM model

Tahap	Maklumat
0 "manual CAD"	Lukisan 2D disimpan secara berasingan dalam computer.
1 "CDE modelling"	Lukisan 2D dan model BIM disimpan dan dikongsi di peringkat dalaman menggunakan "local server" dan konsep CDE.
2 "CDE collaboration"	Model BIM disimpan dan dikongsi bersama pihak luar untuk kolaborasi menggunakan "local/cloud server" dan konsep CDE.
3 "CDE integration"	Model BIM disimpan dalam "cloud server" dan menggunakan konsep CDE. Semua pihak mempunyai akses untuk <i>bekerja</i> didalam talian atau "server".

OBJEKTIF PENGGUNAAN MODEL BIM

Objektif penggunaan model BIM adalah:

- Mengenal pasti dan mengurangkan kesilapan pembinaan yang disebabkan oleh percanggahan dan kelemahan dokumentasi rekabentuk seterusnya dapat meningkatkan tahap produktiviti.
- Menambahbaik kaedah pelaksanaan dan tadbirurus projek melalui ekosistem BIM dalam usaha meningkatkan tahap keberkesanan koordinasi dan komunikasi diantara setiap pemegang taruh.
- Menyokong penyediaan rekabentuk lestari secara optimum dan ekonomik melalui adaptasi BIM dalam proses kejuruteraan nilai, penarafan hijau dan pelbagai inisiatif selaras dengan sinergi pendigitalan mampan.
- Menyediakan maklumat digital siapbina bangunan, jalan dan infrastruktur secara bersepadu melalui pembangunan Model BIM bagi meningkatkan tahap kecekapan pengurusan data dalam pelaksanaan projek dan pengurusan fasiliti.
- Memperluaskan potensi inovasi teknologi 4IR berasaskan adaptasi BIM yang mampu meningkatkan tahap produktiviti dan keberkesanan pengurusan projek selain berupaya memacu pertumbuhan ekonomi digital yang mampan dan berdayasaing.

Jadual 6: Fasa penggunaan model BIM dalam organisasi JKR

Fasa	Tahun	P
1	2007-2015 (RMK9 –RMK10)	"Awareness & Fundamental" - BIM diperkenalkan
2	2016-2020 (RMK11)	"Development & Implementation" -Projek rintis reka dan bina
3	2021-2025 (RMK12)	"Integration & Expansion"

INISIATIF YANG DIHASILKAN UNTUK PENGGUNAAN MODEL BIM

Dari segi inisiatif teknologi kemajuan semasa, telah dibangunkan 1300 komponen BIM, 6 templat perisian BIM, penggunaan ICT dan pembangunan platform perkongsian fail (CDE). Manakala dari segi pembangunan proses penggunaan model BIM, telah dihasilkan 20 dokumen rujukan untuk pengamal industry yang menyertai pembinaan secara model BIM.

CABARAN YANG DIHADAPI

Cabaran yang perlu diatasi adalah:

- Meliputi kemahiran penggunaan perisian dan adaptasi kaedah pelaksanaan BIM dalam proses kerjasaada.
- Kefahaman tentang Garis Panduan dan Piawaian BIM JKR yang mengambilkira keperluan Pendaftaran Aset Tak Alih Kerajaan dan Sistem Kod Aset Tak Alih Kerajaan.
- Masih mengamalkan konsep penyediaan Lukisan 2D CAD terlebih dahulu sebelum membangunkan Model BIM yang menyebabkan “doublework”
- Zon kritikal – Pantai Timur, Sabah dan Sarawak
- Staf baharu perlu mengambil masa untuk mempelajari BIM dan pada masa yang sama perlu menjalankan tugas hakiki mengikut tempoh yang ditetapkan.
- Sebahagian staf mahir yang berpindah/bertukar tidak dapat menyambung dan mengekalkan kemahiran sediaada kerana ditempatkan dipejabat/syarikat yang tidak terlibat dalam pelaksanaan BIM.
- Kesukaran untuk mengkaji potensi peluasan penggunaan BIM mengikut arus teknologi semasa yang mengakibatkan tiada perkembangan dan kemajuan yang boleh dicapai (Kekalstatik).
- Komputer yang digunakan hendaklah “compatible” dengan versi perisian BIM semasa.
- Bilangan computer yang sesuai hendaklah mencukupi mengikut nisbah staf.
- Bilangan lessen perisian BIM perlu diperbaharui setiap tahun.
- Kapasiti semasa platform perkongsian fail pelaksanaan projek BIM dikalangan pegawai JKR, perunding dan kontraktor perlu diberi perhatian dari semasa ke semasa

HALATUJU PENGGUNAAN MODEL BIM DI MASA HADAPAN

Dibentangkan beberapa halatuju masa depan dalam punggunaan dan pembangunan model BIM iaitu:

- Pendigitalan lukisan terukur bangunan & infrastruktrur sedia ada.
- Integrase BIM dan “Geographic Information Syatem (GIS)”.
- Kajian pelaksanaan BIM dalam fasa operasi & senggara.
- Pendigitalan pengurusan asset menyeluruh.
- Pembangunan “MS Standard: Building Information Modelling”

2. PEMBENTANGAN KEDUA

“Pelaksanaan BIM dalam projek JKR” disampaikan oleh Ir Ts Mohd Faiz Bin Shapiai daripada Unit BIM JKR. Pembentangan dimulai dengan pengenalan kepada BIM, penggunaan BIM dalam JKR, proses atau cara kerja BIM, keperluan untuk penggunaan BIM dan senarai boring-borang yang digunakan. Dasar Pembinaan Negara 2030 diharapkan dapat mempercepatkan adaptasi teknologi dalam sector pembinaan. Difahamkan mengikut plan strategic JKR 2016-2020, JKR telah mencapai 20% daripada projek bangunan JKR menggunakan BIM. Dimana pihak JKR telah mewajibkan projek yang mempunyai nilai lebih daripada 10juta untuk meggunakan BIM. Dengan pelancaran pelan strategic JKR 2021-2025, pihak JKR mengasasarkan pencapaian 50% daripada projek bangunan dan projek infra akan menggunakan system BIM dalam pembinaan.

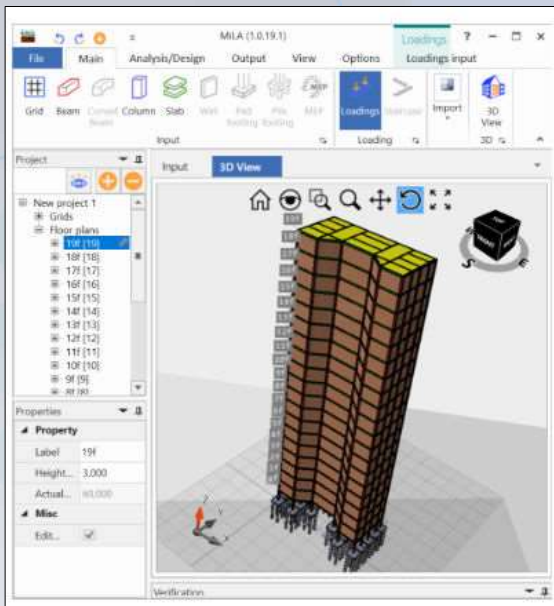
CONTENTS

INTRODUCTION	BIM IN JKR	BIM WORK PROCESS
BIM REQUIREMENT	BIM CHECKLIST FORM	CONCLUSION


Rajah 1: Kandungan pembentangan kedua

3. PEMBENTANGAN KETIGA

Pembentangan ketiga bertajuk “Intergrasi BIM dalam projek pembinaan (*Structure Analysis and Design*)” disampaikan oleh pihak CP DEVELOPMENT (M) SDN BHD mengenai penggunaan perkakasan MiLA.



- Integrated with MES Infra Software for 3D BIM analysis
- Real-time verification and integrity check
- 3D input (e.g. Staircase) and edit
- Mechanical and Electrical BIM modelling
- IBS BIM Family (Drag and Drop modelling)
- 4D BIM Construction Sequencing
- 5D BIM Construction Cost Estimation
- Integrated with MiLA Steel and MiLA Geotechnical
- Integrated with other BIM Softwares (import/export IFC file)



Rajah 2: Fungsi-fungsi perkakasan MiLA

4. PEMBENTANGAN KEEMPAT, KELIMA DAN KEENAM

Pembentangan keempat bertajuk “Intergrasi BIM dan GIS dalam projek infrastruktur JKR” (Rajah 3) disampaikan oleh Muhammad Iyas Bin Mahzan daripada UTNM RESOURCES SDN BHD manakala pembentangan kelima bertajuk “Integrasi BIM dalam projek pembinaan (*Road and Infrastructure Design*)” (Rajah 4) disampaikan oleh En Razak dari Geodelta System Sdn Bhd. Pembentangan keenam bertajuk “Penyediaan lukisan Terukur/ Validasi kerja pembinaan melalui BIM”.



Rajah 3: Intergrasi perkakasan Autodesk dan GIS



Rajah 4: Penyelesaian secara digital

KESIMPULAN

Seminar yang dianjurkan oleh CP Development dengan kerjasama pihak JKR dapat memberi pendedahan awal tentang penggunaan model BIM dalam projek-projek JKR kepada pihak Kontraktor, Pemaju, dan Perunding. Pengetahuan tentang cabaran, halatuju dan juga kebaikan dalam penggunaan model BIM yang disampaikan oleh pembentang-pembentang diharapkan akan meningkatkan kesedaran pihak industry.

BIOMASS WASTE COATING SOLUTION: A WATERPROOFING COATING FOR BUILDING APPLICATIONS

By: Noor Syafeekha Mohamad Sakdun, Ts. Hafizah Muhamad Azlan and Nurasini Tutur

Every year, between September to February, Malaysia experiences heavy rainfalls due to the seasonal monsoon thus causing excessive flooding especially on the East Coast of Peninsular Malaysia. Many structures, mostly houses were affected by the flood and resulting in extensive building damage and loss of property. Therefore, precautions are essential to extend the service life of the structure, especially concrete structures. One such measure is the application of a waterproofing coating. Silica Gel 60 and Cellulose Nanofibres (CNFs) coating solution is a waterproofing material used on concrete surfaces for building protection. Concrete is a porous material where water can permeate easily into the concrete and cause a decrement in the durability of concrete. By applying a layer of special coating containing Silica Gel 60 and CNFs, the waterproof coating can create an impermeable layer on the concrete surface and prevent water ingress inside the concrete. It will infiltrate into the concrete and will fill the voids in the concrete.

This product is environmentally friendly. The silica gel 60 and CNFs which are produced from industrial waste and biomass waste were used as the recycled material and this product also use green solvent (alcohol instead of acetone). It has been tested on uncoated and coated concrete and has proven results in engineering evaluations. This is due to the coating solution providing a near superhydrophobic layer surface and only leaving a little stain of water droplets on the coated concrete. As a result, the coated concrete absorbed significantly less amount of water by capillary action which means less permeable on concrete. Another benefit of using this waterproofing coating is also can protect the concrete from chloride ions that came from seawater which can lead to reinforcement steel corrosion. Also, it can reduce water and chemicals used for surface cleaning and repair. This innovation has won a gold medal at PIID 2021 and a silver medal at IDEX 2021.

