BULETIN FKA

UNIVERSITI TEKNOLOGI MARA

Cawangan Pulau Pinang
Kampus Permatang Pauh

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PENGAJIAN KEJURUTERAAN AWAM

UNIVERSITI TEKNOLOGI MARA CAWANGAN PULAU PINANG







Message from Ketua Pusat Pengajian



Assalamualaikum Warahmatullahi Wabarakatuh and greetings,

It is a pleasure to welcome you to the 2025 edition of Buletin FKA. This bulletin brings together the activities, achievements and memorable moments of the School of Civil Engineering, UiTM Cawangan Pulau Pinang throughout the year.

Looking back, 2025 has been a meaningful year for our School. While the achievements recorded in this bulletin deserve recognition, I believe our true strength lies in the people behind them. Every programme, student activity, research initiative and community engagement reflects the time and effort contributed by our lecturers, administrative staff, technical staff and students.

As educators, our responsibility extends beyond delivering academic content. We must prepare our students to think carefully, act professionally and respond confidently to the challenges they will encounter as civil engineers. The engineering profession continues to change, and our students must be ready to work with new technologies while remaining attentive to public safety, environmental concerns and the needs of society.

I am particularly grateful for the cooperation shown by everyone throughout the year. Some contributions are clearly visible through awards, publications and successful programmes, while many others take place quietly behind the scenes. Both are equally important to the continued success of our School.

To our students, I encourage you to make full use of every opportunity available during your time at UiTM. Academic knowledge provides the foundation, but your willingness to learn, communicate and take responsibility will shape the kind of engineer you eventually become.

I would also like to thank our alumni, industry partners and collaborators for continuing to share their knowledge and experience with us. Their involvement helps ensure that our teaching and activities remain relevant to professional practice.

Finally, congratulations to the editorial team and everyone who contributed to this edition. I hope Buletin FKA 2025 will serve as a meaningful record of our shared journey and remind us of what we can accomplish when everyone contributes.

Thank you and Wassalam.

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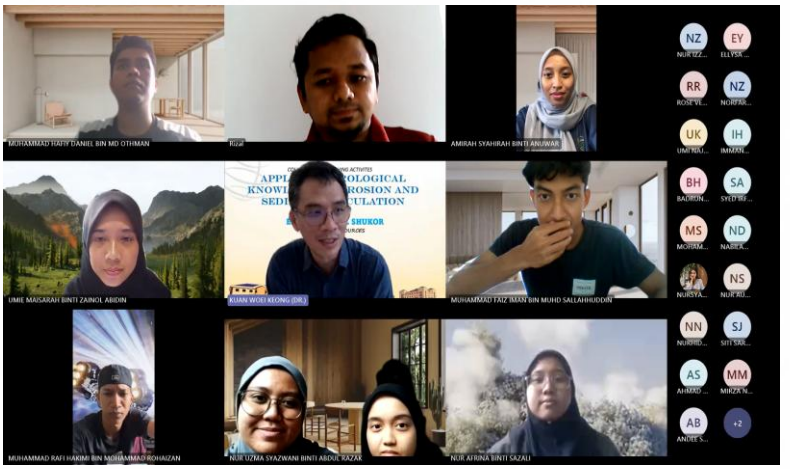
Collaborative Teaching: Applied Hydrology in Erosion and Sediment Control

Kuan Woei Keong

In the realm of environmental engineering, managing soil erosion and river sedimentation is vital for protecting infrastructure, preserving water quality, and mitigating flood risks. To expose students to these complex, real-world challenges, our department has organized an online collaborative teaching session on 23 May 2025. En. Mohd Rizal bin Shukor, Technical Manager of Senviro Resources, was invited to deliver lecture on "Applied Hydrological Knowledge in Erosion and Sediment Calculation" to students of the CEW541 and CEW547 Engineering Hydrology courses conducted via Microsoft Teams.

Rather than focusing purely on textbook equations, En. Mohd Rizal framed sediment yield estimation as an essential tool for environmental regulation and regulatory compliance, such as Environmental Impact Assessments (EIAs). He explained how sediment accumulation severely reduces reservoir storage capacity, degrades aquatic habitats, and causes drainage clogs that lead to localized flooding. He mapped out the entire physical process, tracing how sediment moves from high-gradient headwater erosion zones through transport zones, and finally deposits at river mouths—emphasizing that successful engineering designs must account for each distinct phase.



Screenshot of the event presentation. The speaker (top middle) addresses the participants during the interactive portion of the session.

A key highlight of the sharing session was the comparison of empirical calculation models used in Malaysia's Stormwater Management Manual (MSMA). En. Mohd Rizal explained the practical differences between the Revised Universal Soil Loss Equation (RUSLE)—which predicts average annual soil loss—and the Modified Universal Soil Loss Equation (MUSLE), which uses runoff volume and peak discharge to estimate event-specific sediment yield. Using sample results from actual catchments like the Cameron Highlands, he illustrated how land use changes, such as conventional agriculture versus plastic-roof farming, dramatically shift calculated soil loss rates.

The webinar also demystified how hydrologists gather reliable, field-verified data under challenging environmental conditions. Students learned about flow and sediment rating curves and the sophisticated instrumentation required for river cross-section and velocity measurements. En. Mohd Rizal showcased various field techniques—from wading and temporary suspended bridges to truck-mounted winches—and introduced advanced tools like Acoustic Doppler Current Profilers (ADCP) and Helley-Smith bed load samplers. This emphasized that robust computational models are only as good as the field measurements backing them.

Beyond technical formulas, the session provided students with a clear professional roadmap. En. Mohd Rizal outlined the essential competencies required of modern hydrologists, highlighting the importance of software proficiency (like AutoCAD, ArcGIS, and HEC-HMS) alongside analytical skills. He strongly encouraged aspiring engineers to pursue professional credentials, such as becoming a Certified Erosion, Sediment and Stormwater Inspector (CESSWI) and registering as a Subject Specialist in Hydrology with the Department of Environment (DOE). This enriching collaborative session ultimately left the next generation of civil engineers inspired and equipped with a practical understanding of sustainable water resource management.