Organised by :
Geotechnical Engineering Technical Division (GETD), IEM

4TH IEM GEOTECHNICAL COMPETITION 2026

COMPLIMENTARY REGISTRATION

Open To: All undergraduate Civil Engineering students from public and private Institutions

IMPORTANT DATES

CLOSING DATE OF REGISTRATION : 30TH JUNE 2026
REPORT SUBMISSION : 2ND OCTOBER 2026
ANNOUNCEMENT OF SHORTLISTED TEAM : 23TH OCTOBER 2026
DATE OF PRESENTATION (SHORTLISTED) : 28TH NOVEMBER 2026
VENUE OF PRESENTATION : WISMA IEM

Note: The final presentation is a physical presentation at IEM HQ. Shortlisted teams unable to attend the physical presentation will be disqualified from the final.

PRIZES

1 RM 1,500
2 RM 1,000
3 RM 750

*Special prize
RM 500
For the team that manage to identify the probable causes of slope failure and propose effective remedial measure

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CALLING ALL UNDERGRADUATE ENGINEERS!

4th IEM GEOTECHNICAL COMPETITION 2026

Following the overwhelming support and participation in the past Geotechnical Competition since 2023, the organizing committee proposes to conduct the Geotechnical Competition 2026 to continue promoting technical excellence, critical thinking, and practical problem solving among undergraduate students in the field of geotechnical engineering.

The proposed title for the 2026 competition is "A Geotechnical Forensic Investigation Challenge – Slope Failure" Slope failures remain a significant geotechnical hazard in Malaysia due to the country's hilly terrain, tropical climate, and increasing infrastructure development in slope areas. Failures of natural and engineered slopes can result in substantial risks to public safety, infrastructure, and the environment. Conducting systematic forensic investigations of slope failures is essential for identifying the contributing factors, understanding the underlying failure mechanisms, and developing effective mitigation strategies to prevent similar incidents in the future. Through this competition, participants will be exposed to real-world geotechnical investigation scenarios that require analytical thinking, interpretation of site data, and application of engineering principles to diagnose failure causes and recommend remedial measures.

The objectives of the competition are as follows:

1. To assess participants' ability to interpret geotechnical investigation data in order to identify the probable causes and mechanisms of a slope failure.
2. To evaluate participants' engineering judgment and technical knowledge in analysing slope stability problems and proposing suitable remedial and preventive measures.
3. To encourage critical thinking and practical problem-solving skills in geotechnical forensic investigation.

Prizes
1st – RM 1,500
2nd – RM 1,000
3rd – RM 750

COMPETITION STRUCTURE:

The competition consists of two stages:

Stage 1: Technical Report Submission

Participating teams will be required to prepare and submit a comprehensive technical report outlining their forensic investigation, analysis of available data, interpretation of possible failure mechanisms, and proposed recommendations. All submitted reports will be evaluated by a panel of judges comprising industry practitioners and academic experts in geotechnical engineering. Shortlisting for the next stage will be based on the quality, technical accuracy, clarity of analysis, and engineering justification presented in the reports.

Stage 2: Final Presentation

Shortlisted teams will be invited to present their findings and methodology to the judging panel. The presentation will provide teams with the opportunity to further elaborate on their investigation approach, engineering reasoning, and recommended mitigation measures.

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COMPETITION STRUCTURE:

Information Provided to Participants

All eligible participants will be provided with relevant information required to carry out the forensic investigation, including:
1. Background details of the slope failure case study,
2. Site investigation data and relevant geotechnical information,
3. Supporting documents and site records where applicable.

Technical Report Requirements

The submitted technical report shall comply with the following requirements:

- Maximum **15 pages** (excluding appendices such as figures, diagrams, or calculation sheets),
- Clear presentation of analysis, interpretation, and engineering justification,
- Submission in **PDF format.**

Important dates:

1. Registration Deadline - 30th June 2026
2. Report submission - 2nd October 2026
3. Shortlisted Teams Announcement - 23rd October 2026
4. Presentation date - 28th November 2026

Note: The final presentation is a physical presentation at IEM HQ. Shortlisted teams unable to attend the physical presentation will be disqualified from the final.

STAGE 1 : TECHNICAL REPORT

The technical report shall be comprehensive and clearly demonstrate the technical capability of students in conducting a forensic investigation of a slope failure case study.

The report should include:
- Interpretation and analysis of site investigation and geotechnical data,
- Identification of the probable causes and mechanisms of slope failure,
- Evaluation of contributing factors leading to the failure,
- Proposal of suitable and effective remedial and stabilisation measures.

While acknowledging that not all technical factors can be pre-defined, the following criteria serve as the main benchmarks for evaluation.

1. Introduction

- Provide a concise overview of the challenges associated with slope instability and slope failures, particularly in the context of geotechnical engineering practice.
- Briefly describe the significance of forensic investigation in understanding slope failures and preventing recurrence.
- Highlight relevant theoretical background, past case studies, or research related to slope failure mechanisms and slope stabilisation methods.

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COMPETITION STRUCTURE:

2.Methodology

• Conduct a literature review on methodologies commonly used in slope failure investigation and slope stability assessment.
• Describe the investigative approach adopted to analyse the slope failure case study.
• Identify and justify the analytical or numerical methods used for slope stability assessment and failure mechanism evaluation.
• Reference any software, modelling tools, or analytical techniques utilised in the investigation (if applicable).

3.Analysis and Investigation

Failure Mechanism Assessment

• Demonstrate in-depth understanding in the interpretation and analysis of the provided geotechnical and site investigation data.
• Identify potential failure mechanisms, such as rotational failure, translational failure, seepage-related instability, or other relevant mechanisms.
• Evaluate possible contributing factors, including soil properties, groundwater conditions, slope geometry, loading conditions, and environmental factors.

Stability Assessment

• Outline key design parameters and assumptions used in the slope stability assessment.
• Perform stability analyses where necessary and present the factor of safety calculations or modelling results.
• Provide detailed explanations supported by relevant theories, equations, and geotechnical design principles.

Remedial Measures

-Propose practical and sustainable remedial measures to stabilise the failed slope.
-Justify the proposed solutions based on engineering principles, site conditions, feasibility, and effectiveness.
-Where applicable, include conceptual designs, sketches, or supporting calculations..

4.Conclusion

• Summarise the key findings of the forensic investigation, including the most probable causes and mechanisms of the slope failure.
• Discuss any limitations, uncertainties, or assumptions associated with the investigation and analysis.
• Highlight the engineering implications and lessons learned from the case study.
• Recommend practical remedial and preventive measures to reduce the likelihood of similar failures in future projects, supported by logical reasoning and relevant engineering practices.
• Propose relevant instrumentation for post remedial work and include justification on the proposed instruments.

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STAGE 2 : PRESENTATION

A separate marking scheme will be applied for the presentation, as follows:

· **Clarity and organisation of the presentation:** The presentation slides should be well-structured and coherent, with clear transitions between ideas.
· **Communication skills:** Teams should deliver clear and concise explanations and demonstrate strong technical understanding during the presentation and question-and-answer session.
· **Time management:** Additional points will be awarded for effective time management, ensuring key points are presented clearly within the allocated time.
· **Creativity and Innovation**: Additional points will be awarded for originality, innovative ideas, and engaging presentation techniques.

DISCLAIMER:
By participating in the competition, participants acknowledge and agree to comply with all rules and regulations established by the organising committee, which reserves the right to amend the rules at any time. Participants accept that all decisions regarding eligibility, judging, and awards are at the sole discretion of the organising committee and judges. Participants retain ownership of their intellectual property rights but grant the organising committee and its affiliates the right to use submitted materials for promotional purposes. The organising committee, affiliates, sponsors, and partners are not liable for any damages, losses, or injuries arising from participation in the competition, and participants indemnify them against any claims or expenses.