Research Project Details for Graduate Research Assistant (GRA) Recruitment

Research Project Title

An Exploratory Study on Education for Sustainable Development (ESD) Competencies among Engineering and Technology Students in Malaysia

Programme Name

Master of New Energy Science and Engineering (Research Mode)

Details of Primary Supervisor

1. Name: Ir. Dr. Liew Chia Pao
2. Department and University: School of Energy and Chemical Engineering
3. Email address: chiapao.liew@xmu.edu.my
4. Research interests: STEM Education

Details of Research Project

1. Duration: 2 (TWO) years
2. Monthly allowance: Up to RM2,500
3. Summary: The urgency of global sustainability challenges has increased expectations for engineers and technologists to address environmental, social, and economic issues. While the SDGs are promoted within higher education, there remains limited empirical understanding of how SDG awareness among students translates into internalisation of ESD competencies, particularly in shaping values and professional identity. In Malaysia, despite national policies and accreditation frameworks emphasising sustainability, current approaches focus mainly on curriculum alignment and awareness, with limited evidence of deeper internalisation among students. Building upon a 2025 Malaysian Qualifications Agency-funded national study on institutional implementation and industry expectations, this exploratory research extends the investigation to the student perspective. The study aims to: (1) examine students' perceptions of how pedagogical practices support ESD competency development; (2) determine levels of SDG awareness, understanding, and perceived disciplinary relevance; and (3) evaluate relationships between awareness, learning experiences, and the internalisation of sustainability principles in students' values and professional identities. The research adopts an exploratory sequential mixed-method design involving nationwide data collection from students in accredited engineering and technology programmes in Malaysian public universities. The study is expected to generate validated assessment instruments and an empirically grounded conceptual framework. Findings will inform curriculum, accreditation, and policy development, supporting evidence-based

improvements at institutional and national levels, including transformative impact through national benchmarking tools and accreditation integration, and provide insights for developing future-ready engineers and technologists aligned with sustainability priorities.

4. Skills/techniques development: Qualitative and quantitative analysis in social sciences
5. Location: Xiamen University Malaysia, Sepang, Selangor, Malaysia

GRA Requirements:

Number of Master vacancies available: 1

1. The candidate must be enrolled in XMUM Master programme.
2. The candidate must hold a Bachelor's Degree in a related science or engineering discipline