

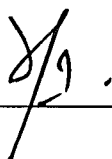
**STUDENT UNDERSTANDING OF ELECTRICITY AND MAGNETISM
CONCEPTS**

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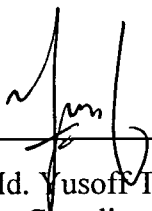
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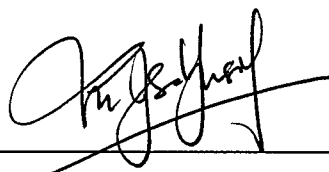
This Final Year Project Report entitled “**Student Understanding of Electricity and Magnetism Concepts**” was submitted by Nurul Fatimah Che Othman, in partial fulfillment of the requirements for the Degree of Bachelor of Science (Hons) Industrial Physics, in the Faculty of Applied Sciences, and was approved by



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ABSTRACT

STUDENT UNDERSTANDING OF ELECTRICITY AND MAGNETISM CONCEPTS

Student difficulties in electricity and magnetism are well documented in many physics education researches. This study investigates student understanding of electricity and magnetism concepts in a Malaysian public university. The instrument selected for this research is the 32-item conceptual survey of electricity and magnetism (CSEM) due to its established validity, reliability, and its reasonable difficulty and discrimination index. The CSEM was administered to 80 students currently enrolled in two electricity and magnetism courses at the bachelor degree level. The student responses were analysed by calculating their percentages of responses in the five options of each CSEM item. The results show that generally the students performed poorly on all the seven subtopics in CSEM: charge distribution on conductors and insulators; Coulomb's law; force and field superposition; force, field, work and electric potential; magnetic force; Faraday's law; and Newton's third law. Comparing the student performance in this study to that of US students carried out in 2001 by Maloney et al. using the same CSEM instrument shows similar trend of student difficulties in electricity and magnetism. However, the US student percentages of correct answers for most of the CSEM items are better than the results of this study.

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