

THE IMPORTANCE OF MATHEMATICS AND STATISTICS IN ENGINEERING

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ABSTRACT

Mathematics is traditionally considered necessary for engineering courses. Over the last three decades the mathematics requirements for entry into engineering programmes has steadily weakened in Australia. Further, the mathematics component of engineering programmes has progressively decreased. This research aims to investigate the following two questions. Firstly, is mathematics a barrier for students to complete an engineering programme? And secondly, is performance in mathematics associated with performance in engineering?

We investigated the significant factors associated with the weighted average mark (WAM) and completion status of engineering studies at both undergraduate and Masters level. Of particular interest was the students' mathematical background. Furthermore, a survey of students enrolled in engineering at The University of Western Australia was conducted to obtain more in-depth views of student attitudes and perceptions towards how mathematics and statistics has affected their engineering studies. Binary logistic models were fitted to the survey data. Additionally, focus group interviews were conducted to gain student insight into how effectively mathematics was taught in their courses. The results are discussed in relation to the importance of mathematics and statistics for the engineering curriculum.

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