

## Predicting Student Performance in a Caribbean Engineering Undergraduate Programme

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**Abstract:** *In the Caribbean context, entry into university is primarily based on Caribbean Examinations Council (CXC) qualifications, and specifically the CXC Advanced Proficiency Examination (CAPE). The goal of this work is to examine the degree to which CAPE entry-grades predict both student final-graduating and in-programme course performance in a Caribbean engineering undergraduate programme. The data set included graduation, course and entry data for 140 students who graduated from the programme between 2014 and 2016. Students in the sample had grades in the four CAPE units associated with Pure Mathematics and Physics upon entry into the programme. The data data set was analysed using cross-correlation, linear regression, classification and logistic regression. We note that a significant correlation of 0.40 to 0.51 exists between the scores of the four CAPE units. However, the multiple linear regression models reflect the relatively low influence of two of the CAPE units on graduating and course GPA. Despite the poor fit of the regression models (i.e.,  $R^2$  of 17% for graduating GPA and  $R^2$  of 7% for course GPA) we were able to demonstrate clear patterns in the success rates, based on entry bands (e.g., approximately 45% of top-scoring entrants graduate with First Class Honours degrees, whereas 12.5% of lower-scoring entrants achieved same). There was no inherent bias by gender or entry band in any of the models generated. The results suggest that the entry criteria serve as a means of predicting the probability of achieving success, rather than the actual success level.*

**Keywords:** *Entrance qualifications, performance prediction, undergraduate engineering education*