

962-S1-1260

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Like most colleges, students at our university were often receiving unsatisfactory grades in introductory calculus. To address this problem, we required all incoming freshman to complete a calculus placement test. In this talk, we demonstrate that this placement test is quite predictive of students' calculus grades and is more predictive than other available measures (e.g. math SATs). The pre-calculus questions on the placement test account for most of the test's predictive power. In fact, the students' pre-calculus knowledge proved to be more predictive of their grade in calculus than their mathematical ability (as measured by math SATs), calculus knowledge, and field of study combined. In particular, students performing poorly on this test are likely to earn an unsatisfactory grade in the course. Since these students' difficulty is primarily insufficient pre-calculus knowledge, this situation is remediable. Students demonstrating this deficiency are now required to enroll in a pre-calculus class. Since implementing this policy, the number of students receiving unsatisfactory grades has decreased dramatically. (Received October 03, 2000)