APS April Meeting

April 3 - 6, 2024
Sacramento & Virtual

B16: Mini-Symposium: Physics Education Research Incorporating Big Data and Data Mining

Wed. April 3, 10:45 a.m. – 12:21 p.m. PDT
Ballroom B5, Floor 2

Sponsoring Units: GPER
Chair: Eric Burkholder, Auburn University
Session Tags:
Education
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Undergrad Friendly

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Utility of pre-instruction diagnostic tests for estimating probabilities of final course grades in introductory physics

Wed. April 3, 12:09 p.m. – 12:21 p.m. PDT
Ballroom B5, Floor 2

We have examined the relationship between various pre-instruction assessment measures and final course grades for students enrolled in introductory general physics courses at five campuses of four universities; the total sample included 25 separate classes and over 2000 students. The three assessments were the Force Concept Inventory, the Lawson Test of Scientific Reasoning, and a mathematics diagnostic test that we have developed and tested over the past seven years. We find, with nearly 90 percent consistency, that top-quartile scorers on the pre-instruction assessments have double or greater probability of receiving high (top quartile) course grades, and half or less probability of receiving low (bottom quartile) course grades, compared to students who scored in the bottom quartile on the assessments. Predictor variables have some inter-correlation but models incorporating two or more predictors generally have somewhat more predictive power than single-variable models, although the most successful sets of predictors vary from course to course.

Presented By

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