Vertical Course Alignment between Introductory Physics and Sophomore Engineering Courses JONATHAN PERRY, TATIANA ERUKHIMOVA, WILLIAM BASSICHIS, Texas AM University — Introductory physics forms a significant part of the foundation of knowledge for engineering disciplines, and as such it is vital that courses be well aligned within the progression of undergraduate curriculum. This work begins from a perceived misalignment of course content in introductory physics relative to sophomore level engineering courses. Inventories of concepts and mathematical skills used in problem solving are done by the creation of a Q-matrix for three versions of introductory physics and two follow-on engineering courses at Texas A&M University (TAMU). Alignment of course content is investigated using direct comparison and principal component analysis. Using grades received in introductory physics, paired with q-matrices, this work endeavors to create a model for student scores in subsequent engineering courses using item response theory, incorporating guess and slip parameters, as an additional evaluative measure.

Jonathan Perry
Texas A
M University