1077-VA-1881 **Gregory R Baker*** (baker@math.ohio-state.edu), Dept Mathematics, Ohio State University, 231 W 18th Ave, Columbus, OH 43210. *An effort to coordinate conceptual development in math and physics education for engineering undergraduate students.* Preliminary report.

There is a pressing need for students to learn and understanding how to use mathematics in physics and engineering. In particular, engineering students must be able to express ideas that arise in physics and engineering in mathematical terms and then use their problem-solving skills to understand the consequences. Based on my experiences in teaching ordinary differential equations to engineering students, students see their mathematical education as simply a vast collection of specific procedures. The question raised here is whether better coordination of the content in first-year math and physics courses could improve student ability to use math in subsequent engineering courses. If this is so, then the mathematical content used in the physics course must be documented before changes in the content in the math course can be planned. At the same time, the physics course might benefit from a better illustration of important mathematics concepts, helping students to appreciate what they need to know mathematically. This talk highlights just such a documentation of the mathematical content in a typical first-year physics course. (Received September 21, 2011)