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Student conceptual understanding of energy

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Nearly all physics courses include the concept of energy, and many choose energy as a unifying theme for the course. In this talk, we examine conceptual understanding of energy among student who have completed a diverse array of courses, including a lecture course for non-science majors, an inquiry-based course for pre-service K-8 teachers, and lecture and lab courses for science and engineering majors. We will examine student conceptions of gravitational potential energy and the motion of bodies in a gravitational field and illustrate common incorrect predictions. In addition, we will present results from a series of questions probing student characterization of energy as a material substance. Implications for the development of a model of energy conservation will be discussed.