T2_3 21ST CENTURY PHYSICS FOR IN-SERVICE HIGH SCHOOL PHYSICS TEACHERS

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"Matter & Interactions" is a calculus- based introductory university physics curriculum for engineering and science students which features a contemporary perspective, with emphasis on parsimony (a small number of powerful physics principles rather than a large number of formulas) and on unification (for example, mechanics and thermal physics are treated as one integrated subject rather than two disjoint ones, and electrostatic and circuit phenomena are analyzed in terms of the same fundamental principles rather than completely different methods). The atomic nature of matter is emphasized throughout. Computational modeling is an important component of the course; students write programs using VPython to model physical systems and visualize fields. A version of this curriculum consisting of a semester of mechanics and a semester of electricity and magnetism is now offered to in-service high school physics teachers in a technologically advanced distance education format, including innovative interactive lectures on DVD. The goal is not to train teachers to teach this university curriculum in high school (though a few teachers are now using it with students who take a second year of physics) but rather to give teachers a contemporary perspective on introductory-level physics which they did not experience when they were in college. During the distance education course teachers write reflections on their own learning, which are quite illuminating. Matter & Interactions: http://www4.ncsu.edu/~rwchabay (see distance education course at bottom of this page) VPython: http://vpython.org