

**Physics Courses for Teachers**  
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The descriptions of two Physics courses offered to in-service and pre-service science teachers are provided below, along with an explanation on what they are and how they were developed. They are part of a more comprehensive program for professional development of grade 6-12 science teachers and have been developed as part of a \$13m 5-year MSP NSF grant, the Boston Science Partnership ([www.bostonscience.org](http://www.bostonscience.org)), which is presently in its fourth year. The core partners in this grant are : Boston Public Schools, UMASS Boston and Northeastern University.

These courses were originally developed for Boston Public School teachers, but their value is universal. More than 100 teachers from other school systems who have taken them have found them very useful. As a result of their success, we are presently expanding them to other districts through state funding.

**Contextualized Content Courses (CCC) - A General Introduction**

CCCs are university-based, graduate level science content courses for teachers, taught within the context of the science curriculum materials used in BPS, which are based on the Massachusetts Science and Technology/Engineering Standards. The courses are taught by instructional teams that include a university STEM faculty member in the content area, and two middle and/or high school science teacher leaders from BPS who are peer instructional team leaders for the curricula to which the courses are contextualized. Within BPS, these courses help to insure a high-fidelity implementation of the BPS science curriculum. The courses provide the adult-level content knowledge necessary for teaching the state-mandated science curriculum, and the universities are investing substantial resources in creating a permanent structure around the CCCs for supporting the continuing science content needs of teachers in BPS and in the larger Boston metropolitan area.

**Physics I: *Forces, Energy & Motion***

**Course Description:** This course is contextualized to the FOSS “Force & Motion” and to the *Active Physics* “Sports” curriculum modules. Using hands-on inquiry experiences, many similar to those used in these curriculum modules, this course will provide participants with an in-depth understanding of the following concepts and principles: position, distance, displacement, speed, velocity and acceleration (Motion: Kinematics), forces, Newton's Laws of Motion and their application to one- and two-dimensional motion (Motion: Dynamics), work, mechanical energy (kinetic & potential), momentum and energy conservation. In addition to providing high-level content while modeling modern pedagogical techniques, this course aspires to immerse teachers in the process of inquiry, build teachers' awareness of their role as facilitators in a student- centered environment and help them address effectively students', as well as their own, common pre- and misconceptions specific to the curriculum materials. (Appropriate mathematical rigor will be used to prepare those who are interested in taking the MTEL licensure exam in Physics.)

**Physics II: *Waves, Electricity & Magnetism***

**Course Description:** Physics II is a contextualized content graduate level course offered to provide pre- and in-service teachers with the in-depth knowledge of waves, electricity and magnetism that is

necessary for effective physics instruction. It provides this in-depth knowledge while modeling research-based instructional practices.