

Project Title:

Re-visioning the first year physics lab with student-built magnetic resonance imaging.

Project Summary (150 words maximum)

Because such a large fraction of 1st year science students plan a future in medicine, we believe that presenting the physics curriculum in a familiar, real-life, medical context will have a dramatic effect on the engagement of the students with the course material. We propose to completely re-architect the Physics 102 laboratory, so that the lab curriculum facilitates the construction of a Magnetic Resonance Imaging (MRI) system. The fundamentals of the operation of this instrument embody many of the key physics concepts taught in Physics 102. The students will spend their lab sessions investigating the important physical phenomena that make MRI work while assembling components of a system that will ultimately allow small teams of students to use their system to obtain MRI images.

Our proposal requests funds to build the equipment, write required software, and develop the lab activity guide needed to implement this complete overhaul of the Physics 102 laboratory.