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Using Laboratory Homework to Facilitate Skill Integration and Assess Understanding in Intermediate Physics Courses[1] MARTY JOHNSTON, JEFFREY JALKIO, University of St. Thomas — By the time students have reached the intermediate level physics courses they have been exposed to a broad set of analytical, experimental, and computational skills. However, their ability to independently integrate these skills into the study of a physical system is often weak. To address this weakness and assess their understanding of the underlying physical concepts we have introduced laboratory homework into lecture based, junior level theoretical mechanics and electromagnetics courses. A laboratory homework set replaces a traditional one and emphasizes the analysis of a single system. In an exercise, students use analytical and computational tools to predict the behavior of a system and design a simple measurement to test their model. The laboratory portion of the exercises is straight forward and the emphasis is on concept integration and application. The short student reports we collect have revealed misconceptions that were not apparent in reviewing the traditional homework and test problems. Work continues on refining the current problems and expanding the problem sets.

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