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Classroom Illustration using MATLAB Interfaces

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Abstract

The ready availability of computer-based delivery technology brings many new challenges and opportunities to traditional lecture practice in the classroom. While these new tools facilitate efficient delivery of our materials, a passive classroom environment may result unless we carefully maintain the level of spontaneity possible in a traditional classroom. At this level, however, we may not break even in terms of learning effectiveness. Our real educational challenge is to integrate new delivery approaches that bring to the classroom a breadth of material that far exceeds what has been traditionally possible. With this view in mind, the opportunities to improve the classroom learning environment are limited only by our vision and that of the institution. In the approach explored here, lecture notes delivered via laptop computer are supplemented by other media to promote synthesis and evaluation in the classroom. Of particular interest, is the use of MATLAB interfaces as an illustration tool. While use of computational-graphical tools like MATLAB are common in engineering education, we are just now discovering how these tools can be used to advantage in the classroom. The MATLAB graphical user interface is an important mechanism for dynamic visual delivery of material. This is explored with several purposes in mind, including illustration of physical phenomena with dependence on relevant parameters, illustration of computational diagnostics to aid students programming efforts, and illustration of experimental versus computational comparisons that are conditioned on modeling assumptions.

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