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Web-Based Instructional Units for Teaching Mechanics

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A series of novel web-based instructional units that facilitate the teaching of basic concepts in mechanics are developed. The instructional units are delivered over the Web as HTML documents containing embedded Java applets. The instructional units are independent and self-contained and can be integrated in a variety of mechanics courses. Each instructional unit presents the fundamental concepts, theoretical background, instructions for running the Java applet, example problems, exercises and a feedback form. The advantage of providing these instructional units as web documents is that they can be accessed from anywhere. Examples of instructional units developed include Mohr's circle for two- and three-dimensional stress, shear center for open and closed thin walled sections, section properties of built-up sections and beam analysis. The advantages of using Java applets for teaching are discussed. The approach presented provides students with a dynamic interactive learning environment that can significantly enhance their understanding of basic mechanics concepts.

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