

Shaping the Future Workforce: Hands-On Learning with Creo

Boston University, Boston, Massachusetts

At Boston University (BU), computer-aided design (CAD) courses are designed to prepare students for industry. Professors and students depend on the industry standard CAD software, Creo, and a hands-on curriculum to build a solid foundation.



To build and apply professional development and experiential skills, BU students rely on Creo and Dr. Peter Zink's interactive learning assignments. These in-class and at home assignments help to reinforce lecture topics and grow in difficulty throughout the semester. "Many of the homework assignments provide students a drawing and ask them to create a part model from the drawing, and then re-create their own version of the drawing." As the student's skills improve, the assignments become more complex. "In more advanced homework assignments, students are creating animations of mechanisms they build from parts they download or model."

Building a Creo Curriculum



BU Lecturer Peter Zink and his student modeling in Creo.

BU students are first introduced to Creo in a course called CAD & Machine Components. This is a two-credit required Mechanical Engineering course that focuses on creating two-dimensional drawings from three-dimensional models. One main goal of this course is to get students to understand and appreciate the connection between the work they do in engineering design and how it translates to the physical manufacturing processes. Emphasis in coursework is placed on correct dimensioning and tolerances for effective design communication, and in applying these fundamental principles to different industry use cases such as gear trains.



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Dr. Peter Zink



Students create an assembly model and drawings of this vise.

A typical class session is broken into two parts. To start, a short lecture introduces the week's topic and shows examples of the applications and basic mathematics for that topic. Then, for the remainder of the class, students are given an individual, self-paced exercise designed to give them an opportunity to practice that day's lecture concept in Creo. The instructor and course learning assistants monitor progress, and students are encouraged to work with their classmates and ask questions.

Geometric dimensioning and tolerancing (GD&T) is a key topic in industry that the students use in their work to define and communicate tolerances in Creo. There are a dozen or so properties of a part feature defined by GD&T, such as location, perpendicularity, and flatness. One assignment that the students complete with GD&T is modeling and sketching a Kurt D60 Workholding Vise. The goal of this assignment is to familiarize students with a combination of different parts and their drawings and to practice creating CAD assemblies and drawings.

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