

Active Learning Activities for Engineering Dynamics Course

1. (Modified) Send/Pass-a-Problem

The first activity is based on the Send/Pass-a-Problem structure identified in the reading assignment. In dynamics, often the most difficult task for students is identifying the best approach to solving a particular problem. In this activity, the class will be divided into teams and each team will be handed an envelope with a problem on the front. Teams will then be asked to brainstorm how to solve their problem and generate a list of the steps to be taken to solve the problem using their approach and place it in the envelope. At the end of the allotted time, each team will repeat the exercise with another envelope without looking at the other suggested solutions in the envelope. The exercise will be repeated until all students have discussed each problem in their teams. The instructor will then reveal the contents of the envelopes. When there are multiple approaches proposed for a problem, students will be invited to defend or justify their selected method.

This activity is particularly useful to reinforce that there may be multiple ways to solve a given problem (e.g. equations of motion vs. principle of work and energy), and that individual approaches may have advantages and/or disadvantages associated with it.

2. Visible Quiz

A quiz comprised of true or false or multiple choice questions based on common misconceptions students have coming into dynamics as well as basic concepts from pre-requisite courses will be given during the first week of class. Student will work on this activity in groups and the quiz can be administered either with clickers or as described in the reading assignment with the responses will be visible to students. This activity will serve both as an ice-breaker or team building exercise, as well as way to clear up any misconceptions or erroneous ideas as well as to strengthen concepts learned in the pre-requisite physics course.