

Integrating Pneumatics Into Introductory Mechanical Design
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This project used funding from NFPA to buy pneumatic supplies for introductory mechanical design courses at Armstrong Atlantic State University and Georgia Southern. These two universities send many of their students on to Georgia Tech for their Junior and Senior years. Given that Georgia Tech students use pneumatic supplies starting in their Sophomore year, it was important to upgrade the supplies at Armstrong Atlantic State University and Georgia Southern so that their Sophomore students have the same preparation in pneumatics as those students at Georgia Tech.

At Armstrong Atlantic State University, the design course is called Creative Decisions and Design (ENGR2110). As a component of ENGR2110, students must work in teams to build robots to accomplish a series of tasks such as picking up balls and placing them in a rotating bin with obstacles present, knocking over targets, and collecting items of various shapes and placing them in new locations. Pictures of the student teams are shown in the pictures below. Students are provided with only one controller box, a few motors, sensors (flex, infrared) and the pneumatic system.

In lab, students were introduced to the pneumatic system kits with a discussion of the system, a demonstration and supporting literature. They were then asked to put their own systems together and test their system using PBASIC code. This was the first time all the students were working with a computer controlled pneumatic system. They were then asked to devise methods with which the pneumatic system might be utilized on their robots in order to achieve rudimentary tasks such as switch controlled shooting (eg. a series of small light balls), knocking over targets at odd angles, or lifting or laying down heavy objects. Students were tasked with writing code that would integrate usage of their sensors with their pneumatic systems to accomplish these tasks. Students will be improving and testing their ideas this spring for incorporation into their robotics systems for entry in the "Economic Bailout" competition to be held at Georgia Tech on March 27, 2009. Details of the competition can be found at the course website:
singhose.marc.gatech.edu/courses/me2110/

Specifically, the contest description is at:

http://singhose.marc.gatech.edu/courses/me2110/Studios/Studio3_Bailout.pdf



Team 1



Team 2