Chantilly Academy
A High School Application of *Engineering Math*

National Engineering Mathematics Consortium

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Overview

- AY 2009-2010
- AY 2010-2011
- AY 2011-2012
- Challenges for the Future

Academic Year 2009-2010

- 15 Students
- Ran the WSU playbook
- Main focus on getting the course up and running
  - integrating traditional math, MATLAB, labs
- Added LaPlace as DE solving technique
- Varied labs, slightly – added Vector Lab.

Academic Year 2010-2011

- 20 Students
- Focused on:

1. Meeting varied math backgrounds by working different student groups at different paces.

2. Teaching students to set up equations for:
   - Strength of Materials problems
   - ME Dynamics DE's
   - EE loop circuit matrices

Academic Year 2010-2011

- Different paces became unwieldy by Jan-Feb. Returned to traditional classroom mode for strength of materials and DE.

- 10 – 20 percent of students could not do beam deflection problems or DE, some due to aptitude, some due to attitude.

Academic Year 2010-2011

- 30+ Students
- Focus will still be on meeting varied math backgrounds
  - Continue different paces, but structure testing better throughout year; i.e. last day for Algebra test: 20 September.

Academic Year 2011-2012

- Continue teaching students to set up some equations:
  - After integrals, enter "advanced" phase consisting again of strength of materials and loop / nodal circuit analysis.
  - Expand DE to include system dynamics (*assuming instructor learns it*)
  - Shorten algebra and trig in beginning of the academic year to enable class time at end of year for advanced topics

2011-2012 Challenges

- 30+ students next year, in a non-engineering classroom with only one computer for every two students.
- Managing varied math background of 30+ students
- Improve MATLAB integration; more effective in year 1 than year 2.

2011-2012 Challenges

- Keep class together for advanced phase?
  - Motivational? Will monitor effectiveness of this option to be implemented in `11-`12.