ECE451/551
Classical Control Design of a DC-DC Voltage Regulator System

We had discussed in lectures a classical control approach to the design of a voltage regulator using the D4 power converter. Recently a document entitled 'D4 Regulator Classical Control Design', which summarizes the approach, was made available on the course webpage and related Matlab and PECS files were distributed.

Using the provided Matlab code, students have the option of easily redesigning the compensator, for example by changing the unity gain frequency, to arrive at their own design for the compensator. Alternatively, students can just accept the design as currently given. In either case your short report should include the following:

1) The loop gain Bode plot, provided by the Matlab code.
2) A complete circuit schematic of the final design of your hardware implementation. Please use the Latex file provided and edit it appropriated to reflect your design.
3) A PECS schematic used to provide output responses to two external disturbances:
   i)   Step load change
   ii)   Step input voltage change (10V to 11V to 10V)
   You can edit the PECS file that was provided to reflect your design.
4) The obtained responses, discussed in (3), given by PECS.
5) The responses, discussed in (3), given by your hardware implementation. Please present these in the format discussed in the Modern Control design project statement previously distributed.

The main purpose of this work is twofold:
1) To contrast it with the Modern Control design approach,
2) To quickly complete the hardware implementation, which will be subsequently modified to implement the Modern Control designed compensator.

Providing only the above stated items is sufficient for this report.
Please email your report, one per group, to tymerski@ee.pdx.edu by the start of class on Monday Nov, 28.