Senior Design Project:

Design and Implementation of Infrared Pulse Laser: Pulse Stretching and Compressing

Purpose of Project: Adjust laser pulse from picoseconds to femtoseconds

Semester I

Initial research, lab safety testing, solidworks tutorial: To be completed by 9/20/2013

I. Design of final step (stretching and compressing components) **Expected Date of Completion: 10/4/2013**
   
   A. Draw up pulse stretcher and compressor initial schematics
      
      1. Include diffraction gratings that will be used, mounts, and any necessary parts
      
      2. Perform necessary calculations for design

II. Ordering Parts **Expected Date of Completion: 10/18/2013**
   
   A. Find parts that can be ordered and obtain them

III. Machining Parts (parts that cannot be ordered) **Expected Date of Completion: 10/23/2013**
   
   A. Drawing of parts on Solidworks CAD software
   
   B. Putting design into CNC machine and getting out parts needed for the assembly

IV. Assembly **Expected Date of Completion: 11/01/2013**
   
   A. Implementation of parts bought and machined onto table containing laser
      
      1. This process will involve precise alignment of parts

V. Testing **Estimated Date of Completion: 11/22/2013**
   
   A. Testing of the systems performance will depend on availability of laser
      
      1. If the lab is in the process of moving to the new building testing may occur in second semester
Semester II

Completion dates to be determined based off first semester progress

I. Install, Test, and commission laser system in new laboratory space
   A. Entire Laser system will be disassembled
      1. This process will be done in sections of the laser

II. Testing
   A. Each section will reassembled on breadboards and tested on original laser before being moved.

III. Redesign for efficiency
   A. Sections of Laser will optimized where possible

IV. Testing of Redesign
   A. Final laser system will be tested thoroughly for efficiency and performance