**PSU Geosciences 1 – GeoPebble Companion Board**

**Overview**
The problem that is solved is the need for a companion board to interface with the main board of the PSU GeoPebble seismic reflection sensor system. The purpose of the companion board is to accommodate several secondary environmental sensors and send their data to the main board when the data is requested. This is accomplished by integrated internal sensors, variable external sensors and a microcontroller to coordinate and control the sensor data transmission to the main board.

**Objectives**
- Schematic of companion board system
- Prototype PCB board in PC/104 format with conformal coating
- Microcontroller code documentation and board interface protocol

**Approach**
- Met with the sponsors to determine project goals and expectations
- Brainstormed ideas for solutions
- Generated an initial design plan based on the above brainstorming
- Presented the initial design plan to the sponsors for feedback
- Adjusted our design based on the feedback from the sponsors
- Created a schematic and PCB layout
- Sent out the PCB layout for fabrication
- Soldered the parts to the PCB
- Programmed the microcontroller
- Attempted to test the full design.
- Our results indicate there is an error in our design

**Outcomes**
- Saved the sponsor time and labor corresponding to the design of the board and the selection of the sensors and microcontroller
- Gave the sponsor a head start on the coding of the microcontroller
- The sponsor will still need to finish debugging the microcontroller code in order to obtain a functional prototype