

# EE 491 Weekly Report    DEC15-17    Week 6 (2/23/15-3/1/15)

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**Advisors: Dr. Ravi Hadimani and Neelam Prahbu            Client: Iowa State University**  
**Members (roles): Marion Okoth (Team Leader), Elizabeth Clarkin (Website) and**  
**Matthew Mulloy (Weekly Reports)**  
**Project Title: Magnetic Sensor Design.**

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## Weekly Summary

The main goals this week was to prepare to create the core, test the solenoid, and update the website for a more professional look.

## Meeting notes:

### 2/23 Group Meeting

**Duration:** 30 min            **Members Present:** All

- Discussed website design and aesthetics
- Discussed magnetic field results
- Discussed material creation timeline

### 2/27 Group Meeting with Advisors

**Duration:** 60 min            **Members Present:** All

## Purpose and Goals:

Discussed hysteresis graph, website, and solenoid results

- Hysteresis Graph
  - Remanence and Coercivity plots
  - Sample preparation and methods
    - Rapid quenching should have higher coercivity but research in iron gives different results
    - Quenching increases dislocation density
  - Amorphous material by rapid quenching produces lowest coercivity in non-crystalline materials
- Material cost
- Website
  - Organization and setup
  - LinkedIn links
  - Self-summaries
- COMSOL simulations and solenoid results
- Shielding (nickel verses aluminum)

## Pending issues

1. GUI (Fast Fourier Transforms, frequency peaks, spectrums)
2. Material creation
3. COMSOL simulation

## Plans for next week

1. Matt: Will continue simulating in COMSOL
2. Elizabeth: Will continue working on the website and continue working with MATLAB on the GUI for the software interface with the machine
3. Marion: Will continue begin creating the core materials

## Individual Contributions (this week)

Matthew Mulloy: Attended the meetings, reading, weekly reports, solenoid testing (6 hrs.)

Elizabeth Clarkin: Attended the meetings, website design, Ames Lab, GUI and MATLAB (10 hrs.)

Marion Okoth: Attended meetings, composition tables for samples, reading (7.5 hrs.)

## Total contributions for the project

Matthew Mulloy (44 hrs.)

Elizabeth Clarkin (48 hrs.)

Marion Okoth (46.5 hrs.)