Antenna testing requires both the proper testing environment and testing system. An anechoic chamber isolates antennas from the outside environment and also prevents reflection of electromagnetic waves. Professor Zoya Popovic has built an anechoic chamber which is a stable environment for antenna testing; however, the testing system within this chamber has fallen into disrepair. Without the proper testing system, researchers cannot measure received power, a crucial parameter for the calculation of antenna characteristics such as radiation pattern and overall gain.

Objectives:

One way to measure the received power of an antenna is to construct a testing system with one antenna as a source antenna and another antenna as the test antenna which combines both hardware and software to control the measurement system.

Hardware:
- Rotary tables were used to rotate both the source antenna and the antenna under test (AUT). The third rotary table is used to rotate the arm mount for the AUT.
- Motors/Motor Drivers were used to control the rotation of the rotary tables.
- Signal Generator used to create the signal to send through the source antenna.
- Power Meter used to measure the power received by the AUT.
- AUT/Source Antennas are provided by the researchers.

Software:
- Communicating with the MCU to accurately control motor positioning, and receive feedback from the system.
- MATLAB user interface for researchers to define their desired test parameters.
- Plotting of data received by the AUT to show researchers their measured antenna radiation patterns.

Mounts:
- Mounting mechanism to securely connect source antenna and AUT to the system.
- Arm mounting mechanism connected to rotary tables and AUT for accurate positioning.

Acknowledgements:
A special thanks to our sponsors Zoya Popovic and Gregor Lasser as well as instructor team Andrew Femrite, Leland Moore, and Prerit Oberai.