TEXAS STATE UNIVERSITY

E1.05 - Hoover Headphones

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Project Overview

Our project is a headphone amplifier of pre-established design that combines vacuum-tube and solid state circuitry and allows tone shaping of the audio signal. Below are the major milestones of the project.

- Create a Characterization Plan
- Heavily Characterize The Amplifier
- Design a Bass and Treble Tone Control Circuit
- Create a Custom PCB for The Amplifier and Tone Controls

Requirements

Features

- Audio-taper Volume Control
- 3.5mm Input
- ¼' TRS and 3.5mm Output
- Custom PCB
- Shielded Enclosure
- 24VDC Power Supply

Characterizaton Plan Requirements

- Current Draw
- Input & Output Impedance
- Signal to Noise Ratio
- Crosstalk
- Using resistive loads of 25Ω, 70Ω, 300Ω, 600Ω :
  - Frequency Response
  - Slew Rate
  - Voltage Gain
  - Power Output @ 1kHz
  - Total Harmonic Distortion @ 1kHz
- Frequency Response to show effects of tone controls

Results of First Semester

- Parts and Power Supply Ordered
- Custom PCB Ordered and Construction Begun
- Loaner Amplifier Testing and Analysis Completed
- Completion of Characterization Plan

Second Semester Actions

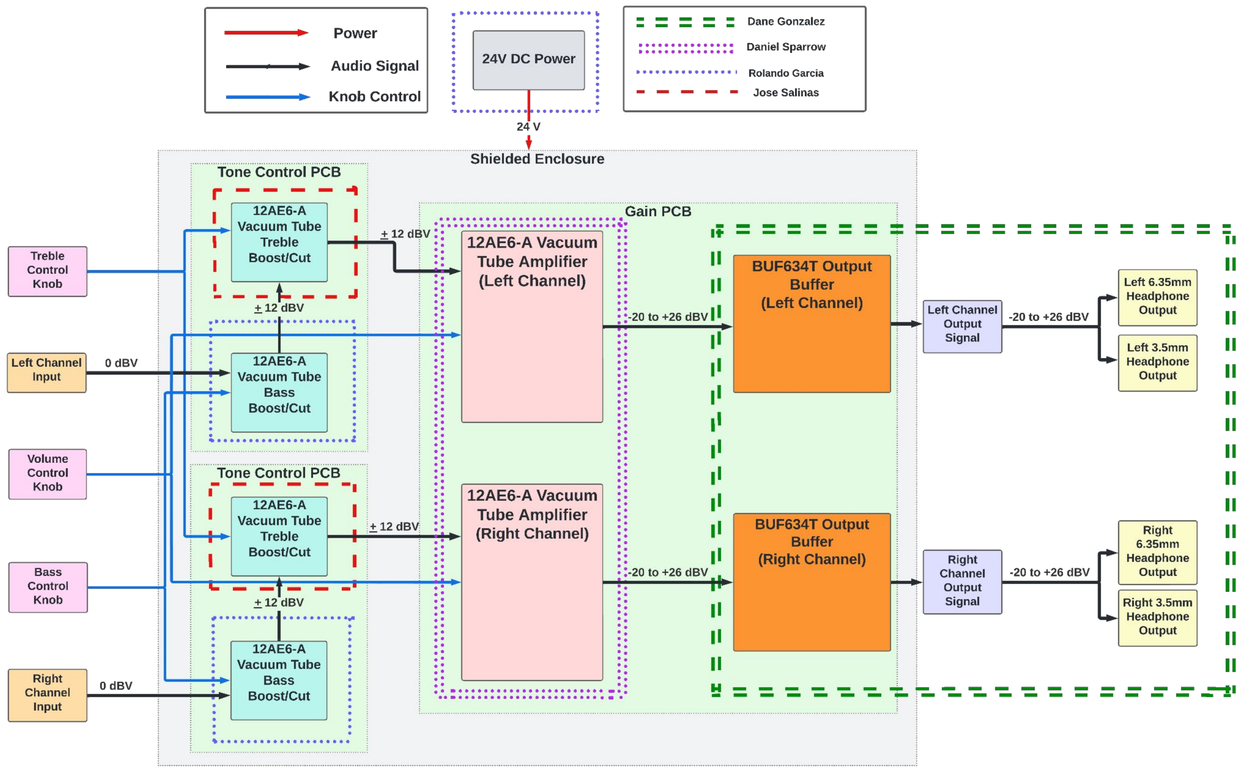
- Complete Characterization of System
- Order and Construct Tone Control PCB
- Construct Shielded Enclosure

Acknowledgements

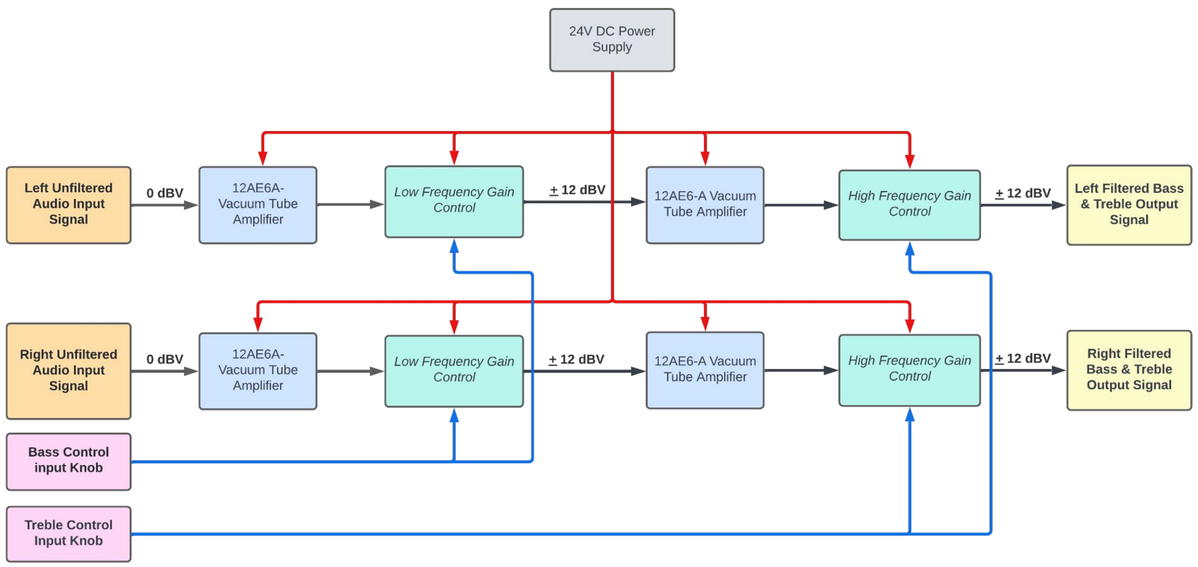
Sponsor: Dr. Richard Compeau
Faculty Advisor: Mr. Jeffrey Stevens

Special Thanks to Dr. Karl Stephan and Team 2.05: The Drifter

Top Level Block Diagram



Tone Control Block Diagram



Team Info

Daniel Sparrow Dane Gonzalez Rolando Garcia Jose Salinas

Configurations

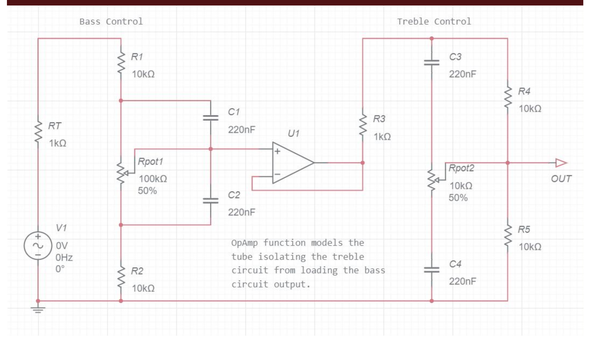
Base Amplifier Configuration: $225

- Under $500 Budget
- Vacuum Tube-based Amplification
- Adjustable Biasing Point
- Output Impedance Matching
- Adjustable Volume Control

Amplifier with Tone Control Configuration: $249.94

- Adjustable Treble Tone Control
- Adjustable Bass Tone Control

Tone Control Simulation



Simulation Results