**HIGH TEMPERATURE VACUUM SYSTEM**

**Motivation**
- Contribute in the development of high vacuum high temperature furnace used for manufacturing of retinal implants
- Fundamental Heat Transfer, materials, and programming knowledge

**Problem Statement**
- Braze Titanium metal with 96% alumina ceramic using gold as a filler material
- Archive brazing in vacuum system in less than 20 seconds

**Objective**
- Design and manufacturing of mini furnace to work in vacuum
- Design and assembly of system inside vacuum
- Programming of control
- Heat transfer simulation analysis

**Final Design**
- Single hot zone alumina furnace with tungsten wire, and zirconia insolation
- Linear mechanism for vertical motion

**Analysis**
- Radiation heat transfer analysis in SolidWorks
- Furnace
- Linear mechanism

**Task Name**
- Project Discussion: 14 days
- Research: 36 days
- Alternative Designs: 81 days
- Final Design: 7 days
- Cost Analysis: 17 days
- Model & Simulations: 19 days
- Prototype and Testing: 14 days
- Product Manufacturing: 36 days
- Testing: 35 days
- Final Report: 29 days
- Prepare for Presentation: 17 days
- Final Presentation: 1 day

**Project Advisor**
- Dr. W. Kinzy Jones

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