

ClearPulse: Stethoscope with noise canceling headphones (and amplification option)

Date: 9/04/26 - 9/10/26

Client: Dr. Lenard Markman

Advisor: Prof. Randy Bartels

Team: Charlie Fischesser, Christian Dittmar Greaves, Johnny Sellers, Jonas Zhang, Josh Slager, Sam Wallin

Name	Email	Role
Josh Slager	jslager@wisc.edu	Co-leader
Charlie Fischesser	fischesser@wisc.edu	Co-leader
Christian Dittmar Greaves	cdittmargrea@wisc.edu	Communicator
Johnny Sellers	jsellers4@wisc.edu	BSAC
Sam Wallin	swallin3@wisc.edu	BWIG
Jonas Zhang	jjzhang6@wisc.edu	BPAG

Problem statement:

Traditional stethoscopes can be difficult to use effectively in noisy or high-vibration environments, including hospitals, helicopters, and ambulances. Environmental noise and poor acoustic conditions can interfere with healthcare providers' ability to accurately hear and distinguish heart and lung sounds, potentially compromising the reliability of auscultation. Additionally, prolonged use of traditional stethoscope ear pieces can lead to discomfort or ear canal irritation.

Our team will address these limitations by designing and fabricating a stethoscope system that incorporates active noise cancellation and optional noise amplification with passive noise isolation of over-the-ear headphones. The system will improve the clarity of heart and lung sounds across a broad range of environmental conditions while prioritizing comfort and ease of use. The final design must be durable, cost-effective, and manufacturable, with potential for commercial development through WARF or other outside organizations.

Brief status update:

To begin, our team started with introductions and established a means of communication. Our team spent this week trying to better understand the requirements and constraints of our project. We also looked over the materials provided and work done by last year's design team as a starting point for where we need to focus our efforts. We also had our first meeting with our client to discuss his goals for us this semester and to answer any/all questions that have arisen thus far.

Difficulties / advice requests:

None at the present moment.

Goals:

Major team goals for the next week

1. Begin working on the Product Design Specification document
2. Begin brainstorming design ideas
3. Perform background & market research

Next week's individual goals

Josh:

- Begin work on the PDS
- Conduct background research on existing products/solutions
- Start brainstorming potential designs / angles to approach the problem

Charlie:

- Begin working on the PDS with ensuring the team understands which section to focus on
- Conduct research on previous year's attempt on the design project
- Start brainstorming some broad ideas for the design

Christian:

- Perform qualitative background research to validate the market need of this project via multiple EMT persons that I know, and document the findings.
- Study existing solutions and their success in the market.
 - Identify what is missing in the market, what is our competitive advantage?

- Based on the competitive advantage found, ideate different solutions and collaborate with the team to create a Design Matrix.

Johnny:

- Begin working on the PDS
- Research existing products on the market, and potential solutions to our problem statement
- Come up with a few ideas for potential solutions or methods of approaching our project and research different aspects of each idea we come up with.

Sam:

- Begin working on PDS document
- Further review previous attempts at project design and research similar market solutions, along with the gap between what currently exists and what our client is requesting
- Begin the process of planning a preliminary design based on initial research
- Complete training material

Jonas:

- Begin working on the PDS
- Continue Intro to Machining Training and finish Biosafety Required Training
- Come up with solution ideas and research things we may need to buy

Timeline

Task	Sept				October				November					December		
	8	15	22	30	2	9	16	23	1	8	15	22	29	5	12	19
Project R&D																
Empathize																
Background...																
Prototyping																
Testings																
Deliverables																
Progress Reports	X															
Prelim presentation																
Final Poster																
Meetings																
Client	X															
Advisor																
Website																
Update	X															

Filled boxes = projected timeline

X = task was worked on or completed

Previous week's goals and accomplishments

Get to know teammates, outline roles and responsibilities, create a communication plan.

Activities

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Josh Slager	9/10/2026	Formatting Progress Report & writing Problem Statement Background research Brainstormed questions for client Client Meeting	1.5 1 .5 .5	3.5	3.5
Charlie Fischesser	9/10/2026	Established communications with client and team Setting up LabArchives Background research Client Meeting	1 .5 1 .5	3.0	3.0
Christian Dittmar Greaves	9/10/2026	Studying last year's progress. Client meeting Researching ANC technology Formulating Questions for client	1.5 .5 .5 .5	3.0	3.0
Johnny Sellers	9/10/2026	Background research Client Meeting	1 .5	1.5	1.5
Sam Wallin	9/10/2026	Background research/looking over previous work Set up website/team roles Client Meeting	1 .5 .5	2	2
Jonas Zhang	9/10/2026	Client Meeting Background research+read last year's documents Read through BPAG role info and worked through required training	.5 1 .5	2	2

Current design:

No current design to report.

BME Design: 200, 300, 301, 400 and 402

Materials and expenses:

No expenses to report.