

Spring 2023 ECE 445 Team Contract

Instructions: The content of this document should be specific to your goals and needs. Ideas for the content of each section are provided as suggestions.

Project No. and Name	Team #27 – Oxygen Delivery Robot
Member Name, netID	Rutvik Sayankar, rutviks2
Member Name, netID	Nazar Kalyniuk, nazark2
Member Name, netID	Aidan Dunican, dunican2

ECE 445 is a project-based course. The course includes both team and individual grades. Project teammates generally all get the same grade for team assignments based on the expectation that all team members do their fair share of the work involved. The purpose of this contract is to lay out the tasks needed for the successful completion of the project and distribute them in a fair and efficient way to the team members. It will also discuss how the teammates will work together during the project and address any issues that come up. A contract that promotes good teamwork that leads to a successful project should:

- Acknowledge that each team member has commitments and responsibilities outside of ECE 445
- Encourage open communication about challenges that team members are facing, both in and out of ECE 445
- Give team members the benefit of the doubt and the opportunity to explain themselves when something goes wrong and resist jumping to judgement

Project Description:

Children's interstitial and diffuse lung disease (ChILD) is a collection of diseases or disorders. These diseases cause a thickening of the interstitium (the tissue that extends throughout the lungs) due to scarring, inflammation, or fluid buildup. This eventually affects a patient's ability to breathe and distribute enough oxygen to the blood.

Numerous children experience the impact of this situation, requiring supplemental oxygen for their daily activities. It hampers the mobility and freedom of young infants, diminishing their growth and confidence. Moreover, parents face an increased burden, not only caring for their child but also having to be directly involved in managing the oxygen tank as their child moves around.

Given the absence of relevant solutions in the current market, our project aims to ease the challenges faced by parents and provide the freedom for young children to explore their surroundings. As a proof of concept for an affordable solution, we propose a three-wheeled

omnidirectional mobile robot capable of supporting filled oxygen tanks in the size range of M-2 to M-9, weighing 1 - 6kg (2.2 - 13.2 lbs) respectively (when full). Due to time constraints in the class and the objective to demonstrate the feasibility of a low-cost device, we plan to construct the robot at a ~50% scale of the proposed solution. Consequently, our robot will handle simulated weights/tanks with weights ranging from 0.5 - 3 kg (1.1 - 6.6 lbs).

Project Goals: *If the team is successful in its purpose, what hardware and software achievements will attest to this?*

We define the success of our project as being three-fold. Firstly, our goal is to create a functional three-wheeled omni wheel robot drive base. Secondly, we will also determine the success of the project by if we are able to determine the location of the child relative to our robot with an accuracy of around 1 meter. The goal is to process time of flight data in software to determine a location. Finally, we also aim to implement local object detection around the robot to detect nearby objects and alert the user to have the obstacle moved.

Expectations (ground rules) for each member: *Try to list six or more minimum expectations. Consider aspects such as preparation, participation, feedback, responsiveness, etc. Try to explicitly list anything that could potentially turn into a problem. Find ways to encourage everyone to communicate (this may also fall under "tasks").*

- Respond to project related messages within a day.
- Following through with individual deadlines defined by the team unless advance communication has been given.
- Come prepared to meetings with progress updates and plans going forward.
- Communicate with team members regarding progress on your work being done for the project.
- Define quality standards and expectations for project deliverables.
- Abide by ethical and safety principles outlined by ACM and IEEE.

Roles: *Do you see this team performing well because everyone works together and contributes equally? Are there certain aspects of the project that some teammates excel at? Can tasks be spread among individuals to optimize progress toward the final product?*

Rutvik: UWB subsystem, PCB

Aidan: Drive train and chassis system, PCB

Nazar: Computer Vision System

Project Meeting Time(s): *The team will meet at the scheduled team meeting with TA each week. Can you also preset an ideal time for team meetings in the lab (your team may need to sign up for lab bench access)? Is your team interested in meeting to work on other aspects of the course together such as project research?*

TA meetings:

2:30-3:00 PM on Mondays

Our meetings:

- Thursday afternoons & evenings
- Sunday evenings

Agenda: *Who will set the agenda? Beyond the weekly meetings with the TA, what will the team do to ensure that it stays on track during the semester? When a decision needs to be made, will it be approved by consensus or majority vote? Will a team member be appointed to keep records?*

Sunday meetings will be used to set the plan for the upcoming week, gauge how we're doing on progress. On Sundays we will also reserve our workbench times for the week.

In terms of making decisions, we would like to come to a consensus with any major decision, these debates will be tracked in our progress reports.

Process and penalties for dealing with team issues: What happens when ground rules are broken? Who intervenes? What happens if the situation escalates? Always remember not

to jump to judgement. Give group members the benefit of the doubt and the opportunity to explain themselves when something first goes wrong. TAs and instructors are available to help resolve issues.

First infraction will lead to one member of the team reaching out and discussing the issue.

Second infraction will lead to a team meeting discussing the issue.

Third infraction will lead to a meeting with the TA to attempt to find a solution.

Fourth infraction will lead to a meeting with a professor to address the solution.

End-of-term agreement on using final peer assessment for grade adjustment: Do you believe that this contract should hold your team accountable to its contents or that it may hold little value? There will be two formal peer assessments this semester. The first is used only to provide honest, constructive feedback to each team member. The second peer assessment affects a teammate's grade. Without accountability, many promises go by the wayside.

We believe this contract should hold our team accountable to its contents. Without accountability, promises may go unfulfilled, undermining the integrity of the agreement and potentially harming team dynamics.

Signatures: Iterate on this document until everyone is comfortable with its contents and signs (it is okay to type your printed name as your digital signature).

I affirm that I participated in generating this team charter and that I will abide by its contents to the best of my ability. Furthermore, I understand that failure to meet the expectations expressed here can lead to the stated consequences.

netID: _____rutviks2_____ (digital) Signature: _Rutvik Sayankar_____ Date: 2/8/24

netID: _____dunican2_____ (digital) Signature: _Aidan Dunican_____ Date: 2/8/24

netID: _____nazark2_____ (digital) Signature: _Nazar Kalyniuk_____ Date: 2/8/24