

# Project Team Charter

ME476C: Capstone I

Signature Cover Page

Each team member will copy the following statement in their own handwriting (LEGIBLY) in one of the designated areas below:

I agree to do an equal amount of work in the team. I understand that my grade will reflect my effort in the team.

Print Name: Hunter Daniel

Signature: Hunter Daniel

I agree to do an equal amount of work in the team. I understand that my grade will reflect my effort in the team.

Print Name: KATHERINE RIFFLE

Signature: Katherine Riffle

I AGREE TO DO AN EQUAL AMOUNT OF WORK IN THE TEAM. I UNDERSTAND THAT MY GRADE WILL REFLECT MY WORK IN THE TEAM.

Print Name: Kenyon Rowley

Signature: Kenyon Rowley

I agree to do an equal amount of work in the team. I understand that my grade will reflect my work in the team.

Print Name:

Signature:

Print Name:

Signature:

This team charter establishes the roles and responsibilities of the team and its members. This provides concrete benchmarking data for assessing one another in peer evaluations and at the semester end. It instructs how to professionally respond to difficulties in the group dynamic. If the roles and responsibilities change during the Capstone period, the charter will be revised.

### **Team Purpose**

Anevas Technologies, Inc (ATI), a company located in Flagstaff, AZ, formed and hired this team to design a portable medical bench. ATI is a medical device company with the purpose of bringing PPODA-QT, a new neurovascular device that aids in the treatment of aneurysms, to clinical trial and to marketplace. PPODA-QT removes the aneurysm from and heals the vessel by filling the aneurysm with a liquid embolic. ATI improves treatment of aneurysms and other vascular defects by developing micro-catheter based medical devices for minimally invasive delivery to brain blood vessels.

The team is designing and constructing a bench compatible with ATI's devices, procedures, and delicate brain blood flow model. The bench will be used to transport the experimental setup to adjacent buildings, in addition to the usual requirements of a medical bench - compatible with and non-intrusive of ATI's medical tests, supportive of the setup's size and weight, and providing security of additional accessories and storage. A working portable bench will be tested, prototyped, and constructed by the end of the Capstone period.

Because of the medical compatibility of this project, its stakeholders include patients whose aneurysms will be treated by the portable bench's setup, so the bench is expected to be thoroughly tested, prototyped, constructed, and tested again to federal regulations, as well as meticulously follow the standards put forth by ATI in correspondence with their devices and procedures. The main stakeholders of the project are ATI, because they are funding this project and are storing and transporting their valuable and medically important devices upon the bench. The last stakeholder is Tim Becker because he is the Faculty Advisor to this project, and also because he works as part of ATI. He expects us to correspond professionally and often with him and ATI, and that all documentation, testing, prototyping, and construction of the project is quality work.

### **Team Goals**

This team is tasked with designing a portable bench that can transport delicate medical supplies in the field. The bench must be able to contain the experimental setup, transport the supplies safely, and be made of material such that minimal interference is experienced in fluoroscopic imaging. The design of the bench must have a waterproof countertop and raised sides to prevent spills. The bench is required to be of 2' x 4' x 4' dimensions as well as being able to support 75lbs. The wheels of the bench need to be designed for shock absorption when the device is

moving. There needs to be a sufficient amount of storage space under the bench for medical supplies as well.

In the process of developing the device, the team hopes to gain experience in working with project expectations and designing a functioning product that meets requirements and is of high quality. The team wants to honor Anevas Technologies, Inc.'s mission to improve human healthcare by designing minimally invasive devices for treatment of vascular defects. The team not only wants the design to function correctly but to also be easily accessible, portable, and be aesthetically pleasing when used in the field. While keeping these expectations and goals in mind, the team will strive to stay within the budget of the project, creating the most cost effective device. This team members are dedicated to completing this project with all of these goals and expectations in mind to the fullest of their abilities. They commit to earning high grades.

### **Team Member Personalities/Roles/Responsibilities**

This team has three members. Kenyon's personality type is ENFJ. He can bring leadership to the group. Leadership will be important in achieving the team's goals, as well as in attaining client satisfaction. Kenyon is also good at analyzing complex ideas, which is necessary for deciding designs and running through calculations. Katherine's personality type is ESFJ. She trusts facts over theories which will help with the overall scope of the project's design and implementation. She is also a CAD expert which will help in the modeling, prototype, and final design. Her organization skills will emerge during experimental design of the project. Hunter's personality type is ENFJ. He brings communication to the group, which helps with contacting and maintaining strong communication with our client. He emulates reliability, which will contribute to the overall design and success of the project. He also excels at problem solving, which helps the overall scope of the project.

<b>Team Member</b>	<b>Role Description</b>
Kenyon	Manages tasks, develops overall schedule, runs meetings, reviews individual contributions, provides safe and welcoming team environment, does NOT make all decisions (rather facilitates discussion of the team to arrive at team decisions)
Hunter	Manages internal and external communication (point of contact for client), documents meeting minutes, manages facility and resource usage

Kenyon	Oversees all purchases, main contact with Front office for budget management, monitors and records all purchases for budget tracking, updates Bill of Materials
Katherine	Oversees experimental design and testing, plans testing procedures, acquires necessary equipment for testing, runs all tests for team
Hunter	Coordinates fabrication of design (does NOT do all manufacturing themselves), reviews design at all steps, ensures design can be manufactured, finds outsourcing opportunities manufacturing can't be done in-house, develops schedule of manufacturing
Katherine	Coordinates and oversees CAD development throughout project, creates protocol for revision management, manages CAD files, ensures CAD model matches physical design, does NOT do entire CAD package themselves

### **Ground Rules**

This team will meet in-person, regularly, at the Engineering Building. Most meetings will be case-by-case depending on the immediate and long-term needs of the project. The team will definitely meet on Monday nights after the Capstone Lecture. The team will avoid meetings held by text or email and will strive to meet in-person to avoid confusion. This type of in-person communication is necessary to the project's advancement, but communication of all kinds is the most important aspect of the team's coordination, and should be done at every development in the project. Communication with ATI and/or the Faculty Advisor Tim Becker will be assured of at a frequency determined by the clients - it is the responsibility of all team members to make sure this communication is established regularly, but this communication is lead by Hunter. Early and thorough communication is expected of team members who need help with an assignment, because it is expected that the assignments will be completed by each individual by the agreed-upon time. Every aspect of each part of the project will be assigned to team members at in-person meetings, as well as the time that the assignment is expected to be completed.

Respect of one another is a necessary foundation to team meetings and to working together on the project. Respect means understanding the best ways to help one another and addressing each other and the stakeholders professionally and meticulously. Part of respecting one another is

respecting meeting times, even just between the team members, and conducting team meetings without delay and staying on-topic. The expected way to conduct team meetings is to arrive with discussion ideas determined ahead of time, meaning that a meeting agenda is formed ahead of time or is easily formed by combining the individual members' deliberate talking points. Because there are only three team members, it is important that all members understand the decided-upon course of action. The best way to decide on actions is through a voting system. It is expected that each discussion item is lead by one member who is in charge of that specific aspect of the project, so that if there is a difficult decision or the team is indecisive, the person responsible for that project aspect can make the final decision when necessary. Individual responsibility for aspects of the project will also make decision-making and task-assigning more fair, simple, and efficient.

Because there are three members, it will be apparent if one person is not maintaining accountability for their assignments. Communication is expected from a member who is struggling with their assignments, but also communication is expected from a member who notices that another is not completing their assignments by the agreed-upon time. Communication is expected before completing the course's team-member evaluations, and final accountability will be provided through these evaluations. It is expected that every assignment will be completed and turned in by at least 12 hours before the posted bblearn due-date, and this will be achieved by creating team due dates for individual aspects of the larger assignment. If an assignment is due on a Friday midnight, it should be completed by 2:00pm that Friday. This applies only to team assignments; team members are not responsible for each others' individual self-learning assignments or peer evaluations, or anything that does not affect or contribute to the team project. Equal participation and commitment is expected from each of the three team members. This will be assured through equal assigning of tasks and larger responsibilities. Participation expectations and due dates will be assigned during meetings and accessible through the comprehensive GANTT chart.

### **Potential Barriers and Coping Strategies**

A major barrier to effective teamwork is a lack of productive communication. This can happen through a lack of comprehensive communication. In a team there needs to be an established form of communication that works for all team members. Regardless of if they choose group chat, email, or another form, the team needs to agree on something that is easily accessible to everyone. After establishing the best form of communication based on the team, it is equally as important to discuss how each team member communicates. Due to different cultural backgrounds and upbringings, it can at times be hard to understand the meaning behind what individuals express. Saying one thing from one person may carry different meaning to another.

Having different approaches to tasks can also cause problems within a team. Similar to communication, people have their own way of expressing themselves or completing an expectation. In reality, the differences that came about in the way people do things causes diversity within a project and better achieves unique, authentic, and comprehensive ideas. However, people may view differences in how others do things as unproductive and cause resentment amongst team members. It is important to understand the differences in team members and to see unique ideas as strengths and not detrimental to the project goals.

Another barrier that comes about in team work is a struggle with coming to one concise decision. When team members have different ways of communicating as well as completing tasks, and different experiences and expertise, making decisions as a group can become difficult. The team needs to establish a diplomatic form of voting to move forward with the project so that everyone's ideas are regarded. Decisions should be made while keeping the project goals as well as the clients' vision in mind. If a decision through diplomatic means can not be made, the project manager must make a final decision.

Engineers can experience all of these barriers, and most have. The best way to combat these challenges is through patience, awareness, and communication. To be an effective team, members must exercise patience and respect for their peers. Being aware of personal weaknesses is also important in moving forward with issues one may come across in a team. Striving to articulate oneself as well as understand how others express themselves is dire and expected.