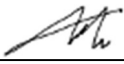# Project Team Charter
ME 476C: Senior Capstone Design

Signature Cover Page

By signing this document I fully understand that it is my responsibility to be the best teammate possible I can for my team. This means being on time and contributing to all meetings and work related to the project - which includes all course and client driven deliverables related to the team. I will not only complete my tasks as required but I will complete them on time (ahead of time if needed) and I will deliver material of the best quality to represent my team as a whole. Whenever needed, I will ask for help when I struggle, help my teammates when they struggle, and I will communicate clearly and directly on all issues related to the project.

If I do not contribute as required, I understand that my grade could be curved down for poor performance. Evidence of poor performance will be documented in peer evaluations and instructor observations throughout the semester. **Specifically, poor performance from two or more teammates in any given peer evaluation cycle will trigger a grade change on related team deliverables. Furthermore, instructor observations during staff meetings, lectures, and presentations can also trigger a grade change on team deliverables.**
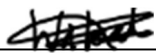

Kaled Aleweehan
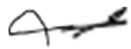Print Name

Signature

Abdullah Almutairi
Print Name

Signature

Waleed Almutairi
Print Name

Signature

Abdullah Ben Gheyam
Print Name

Signature

Omar Alotaibi
Print Name

Signature

Project Team Charter
Senior Capstone Design
Signed copy of charter is due by date posted on Bb Learn

To create a team charter for your capstone project, follow these steps:

1. Schedule a face-to-face meeting that all group members will attend.

2. In advance of the meeting, all group members should:

a) Review the attached "Ground Rules for Difficult Group Discussions." These documents contain helpful information and useful parameters for team conversation and discussion.

b) Review the attached team charter form and prepare your input for the meeting. Every team member is expected to contribute to charter development.

c) Review their MBTI personality styles. Be prepared to discuss how each team members' personalities will influence the group and the project.

3. During your meeting:

a) Designate one team-member as project manager. This person will be a single point of contact for the team.

b) To ensure that everyone's ideas will be heard and considered, establish a protocol for sharing team member input on charter contents. For example, will each team member present all prepared input up front, or will you share input and develop the contract section by section?

c) Using the protocol you've agreed on, conduct a group discussion that results in a team charter for your senior project.

- Take this discussion seriously and participate fully. The power and success of your team's charter comes from the conversation and agreements on which it is based.

- Moreover, **the roles and responsibilities documented in your charter will provide the concrete benchmarking data for assessing one another's project participation in the peer evaluations.**

d) To formalize the specifications and agreements documented in the charter, all team members must sign and date this contract prior to turning it in. In addition, the team (or a designated team representative) must review this contract with your instructor, who should also sign the contract.

4. During the term:

This charter is a living document, and the roles and responsibilities specified herein are the benchmarks by which you and your team members will be assessing one another's performance at semester's end. **If any of the team member roles and responsibilities specified in this document change during the course of the term, revise the charter accordingly.**

Team Charter for Senior Capstone Design Project

[Attach solutions to the following cover sheet and sign once finalized]

1. Project Manager: *Identify who will be the team's project manager*

Our Team Technical leader for the project titled "***Study of main parameters affecting Heat pipe efficiency***" , ***Kaled Aleweehan***, was elected by the capstone team and approved by project advisor.

2. Team Purpose: *State the reasons for this team's formation and the team's purposes. Who are your stakeholders, and what are their expectations of and for the team?*

A heat pipe is heat transfer device which is able to transfer heat with smaller temperature drop if compared with high thermal conductivity pipes. It is simply consists of a shell or called a (wall), a wick a small amount of working fluid.

The main idea of this capstone project is to study the main characteristics and specifications of heat pipe, such as the thermal response-time for heat pipe and compare it to a regular copper rod, Measure and report the response-time and temperature profile along the heat pipe, And finally calculate the effective thermal conductivity for the heat pipe and compare it to with high thermal conductivity alternatives. And Finally compare different scenarios for the wick materials.

An essential principal stakeholder for the getting benefit of the Project is the space programs, nuclear industry, And last but not least in electronics industry where the fast central processing units (CPUs) require cooling and how heat pipe could be as a heat exchanger in Arizona, and concerned stakeholders cross USA.

3. Team Goals: *What are the team's project, process, and quality goals? To what level of performance are team members willing to commit, and what course grade are you collectively aiming for? Articulating these goals will make a difference in your team's performance.*

The team's process goal is to develop a team of varying skills and abilities who all contribute equally to the project so that the workload is delegated evenly, and executed within a reasonable time frame. It is important for team members to follow through with tasks that have been assigned and communicate with the team early if the work will not be completed either by the assigned party, or within the assigned constructs. This will help the team stay true to its process goal, and insure success come may when it is time to compete. The quality goal of the team is to deliver professional work worthy of displaying in front of examining committee. This will be accomplished by creating deliverables that reflect hard work and a strong understanding of engineering concepts learned. Team members must be willing to commit to working extended hours on the project, in order to create and deliver quality work deserving of a top three placement at the competition. Collectively, the team is aiming to obtain an "**A**" in the capstone class.

4. Team Member Personalities/Roles/Responsibilities: *State each team member's personality style and what they can bring to the group. While some team responsibilities are shared by all members, collaborative teams work best when members also have unique roles and responsibilities. These could be technical and/or project management -related. The required positions for this course are: Budget Liaison, Client Contact, Website Developer, Project Manager, and Secretary/Document Manager. Develop other positions so that each person on the team has a defined role.* **Consider these assignments carefully. This information will constitute the benchmarking data for your end-of-term peer performance evaluations. Each team member must have a defined role and responsibility in the group.**

At this stage of the project, Our team has Five team members working together on specified components. **Kaled Aleweehan** is the "**project manager"** for the project components. **Kaled** is dedicated to his work and has experience working as a Team leader for the whole design and fabrication processes of the project. The second member of the team **Abdullah Almutairi** dedication to strong communication and hard work will help the team to accomplish their goals. **Abdullah's** managerial skills and strong interpersonal skills make him our "**Assistant Manager and Editor** " person, and an asset to the management of the team. **Waleed Almutairi**, the third team member, has experience in 3D CAD models using either AutoCAD or Solid works, which will help the team to build an efficient heat pipe project. **Waleed** worked course project such as Heat Transfer and Experimental Methods In The Thermal Sciences and developed full detailed drawing and assembly drawing for the courses' project, plus Waleed has previous organization and documentation ability stepped him up to be our "**document manager"**. **Omar Alotaibi**, the fourth team member, will use the experience from projects he has worked onto help the team in succeeding And his excellent financial command let his role be our "**Budget Liaison**". The fifth team member is **Abdullah Ben Gheyam,** Abdullah has Web design abilities so his main role will be our "**Web developer**" , his experience and plans to use this experience to benefit the team as a whole.

The technical team leader is responsible for sorting the team into extensive meetings upon need and based on interest and experience. The team has unique experiences and strengths to add to the group. Over 75% of the group has had a **Thermal courses** such as **Thermodynamics**, **Fluid Mechanics** and **Heat Transfer**. More than 60% of the students have engineering internship or management and communication experience. All members of the group will contribute their unique views to the project, aiming for success at the working model.

5. Ground Rules: *How and when will this team meet? What are the norms and ground rules the team will agree to? How will you conduct discussions and make decisions? How will you handle dissenting views among members? How will you hold each other accountable for living by these rules and for task completion? What kind of participation and level of commitment do you expect from one another? [Each team is required to meet at least once a week outside the allotted class time. It can be hard to coordinate schedules, so get it done early in the semester. All team members are expected to go to all team meetings.]*

Our group is planning to meet one time per week, plus of course the regular meetings happening during the capstone project class lectures. The meetings will take place in our engineering college and the room will be decided on later stages depending how frequent that room is vacant. During our group meetings, we will start the brain storming, explore new approaches to tackle and overcome challenges, research up-to-date methodologies for the stage or phase we are working at (i.e. Over all setup structure, used materials, working fluid, etc.). All the group members need to grasp calmly the suggested options to innovate the design and try the best to make any input in a positive way, And discuss the consequences (pros. And cons.) of that options and how it will affect the overall design. Any decision (About the selection of any parts of the machine structure), need to be voted among the tea members. Respectfulness should be present among all the team members always specially when an objection against any suggestion or voting taking place. Professionalism need also to be present among the team members when any challenges arise.

The Framework of this capstone project demand the group members engaged need to work energetically to meet the predefined tight deadlines. connection between members of the project group is very decisive and need to happen periodically to guarantee the flow of the project stages. Logbooks on biweekly basis including information about the project like progress, current challenges, any other raising issues, need to be completed and reported to our project manager. Our Capstone "Project manager" then furnish the Gantt chart with the received logbook from the team members. The "document manager" need then guarantee that all components are in place.

6. Potential Barriers and Coping Strategies: *What barriers to effective teamwork might potentially arise in the course of completing your senior project and other team obligations, and how will you handle them if they materialize? What problems with team dynamics have you experienced in the past, and how will you handle them if they come up again?*

Teamwork can be hindered through a lack of communication, misunderstandings between teammates, and scheduling conflicts. Successful teamwork includes understood communication between teammates. Therefore, to keep quality communication between teammates, we will have a team drive on Google Drive, a group text, and frequent meetings. Our team has components that each member will be responsible for relating aspects of the "***Study of main parameters affecting Heat pipe efficiency***" project. This will help keep communication flow on relevant topics going through their respective components. Questions that teammates may have on certain aspects of the wind turbine will be able to direct themselves to the correct sub-teams and then the correct subject matter expert.

Every other week, the capstone project team will meet to discuss the overall progress of the project and discuss any issues that have been encountered. This means that every other week.

7. Charter signed and dated by all team members and given to the instructor (legible signature, please!). Attach the following page to the front of your team charter.

GROUND RULES FOR DIFFICULT GROUP DISCUSSIONS

Ideally, group discussions should be calm, focused conversations in which various ideas and opinions are considered, leading to useful, productive outcomes. But in the real world, many groups just can't pull this off. When members have conflicting interests, personal agendas, or aggressive personalities, meetings often deteriorate into angry conflicts, thereby wasting time and harming relationships.

If you anticipate that your group could head down this destructive path, try to get agreement on how the discussion will be conducted before leaping right into the issues. Unless they just enjoy anger and hostility, group members will usually agree to a reasonable set of Ground Rules. Then, if things start to get out of hand, the leader or facilitator can simply remind the wayward members of their previous agreement.

Although each group may have specific needs, the Ground Rules listed below are often useful. (These can apply to personal conversations as well.)

1. **Stay focused on the purpose and goals.** The group should clearly define what they hope to accomplish at the beginning of a discussion. This makes it easier to determine when people are getting off track.
2. **Listen when others are speaking.** During difficult discussions, people often mentally rehearse their next comment while someone else is talking, with the result that no one is really listening. When this happens, the conversation tends to turn into a pointless debate.
3. **Be sure that all viewpoints are heard.** Since most groups have both talkative and quiet members, efforts should be made to invite the quiet people to share their thoughts and keep the talkers from dominating the discussion.
4. **Consider different points of view.** People easily get "locked in" to their own opinions and don't even think about the possible merits of other ideas. Members need to be encouraged to think beyond their own point of view.
5. **Look for areas of agreement.** Argumentative group members often agree on more things than they realize. Before discussing disagreements, members should identify the things they do agree on.
6. **Discuss differences respectfully.** Hostile, insulting remarks add nothing to a group discussion and often permanently damage relationships. Members should be reminded about basic "good manners" for meetings.
7. **Remember that facts can be wrong, but opinions are just different.** Most of the time, people are not arguing about facts, but expressing differences of opinion. However, they often act as though their views are "right" and others are "wrong". It helps to recognize that they are simply different.
8. **Look for the good points in new ideas.** Useful ideas may get rejected when people are too quick to find flaws. By initially exploring the benefits of an idea, the group can avoid becoming overly critical.
9. **Focus on the future, not the past.** Disagreements can easily deteriorate into finger---pointing about past mistakes and problems, which accomplishes absolutely nothing. Use past experience to inform your decisions, but focus the discussion on future goals.
10. **Look for solutions, not someone to blame.** The worst debates about the past are those which involve placing blame. Any conversation focused on blaming is unproductive and should be turned into a search for solutions.
11. **Don't use group time for individual issues.** When two or three members start discussing their own issues in a group meeting, it just wastes everyone else's time. If this happens, the people involved should be politely asked to continue their personal discussion after the meeting.
12. **"Sidebar" any issues that are important but off---topic.** Occasionally, important matters are raised that have nothing to do with the goals of the meeting. To keep the group on task, but avoid losing the issue, create a "sidebar" where these topics can be listed and dealt with later.
13. **Agree upon specific action steps.** In most situations, members need to end the discussion with specific "next steps" that can be acted on after the meeting. Otherwise, the whole thing may turn out to be a waste of time.