Team 1

Dear Spring 2018,

Gateway to Space is definitely one of the most enjoyable classes you will take during your freshman year, but it is also probably one of the most intensive in regards to the workload. With that in mind, there are several pieces of advice Team Astro-Llama-Cal would like to give.

Overall, Team Astro-Llama-Cal was successful in completing tasks and delegating work to members. Teams just starting out should know the importance of planning ahead of time, delegating tasks, and communicating effectively. In group projects, especially for large groups, it can be easy to assume that another team member will get the work done, or to let other team members deal with an issue. While this may be helpful in the short term, at the end of the semester you will regret not having learned those skills or important details about your project. While our team did face several unexpected challenges, we were able to tackle the problems through communicating effectively.

One issue we faced was weight management. Make sure to weigh all components every step of the way and ensure early on that their combined weights do not exceed the weight limit. Always anticipate more weight than expected because the weight from wires, velcro, and tape may add up. If you think there is a chance you will be close to the weight limit, apply early for extra weight. You can bargain with other teams for them to use your extra weight if you end up not needing it.

In terms of organization, set weekly tasks for team members and make sure everyone is on task at team meetings. Approach problems with a positive attitude and work together to complete group assignments. Try to meet as often as you can with as many team members that are available, and if not everyone can make it, then delegate tasks to those who are absent. Keep meetings short and structured, and set tasks to avoid wasting time. Have fun and good luck!

Team 2

Dear Spring 2018 Gateway to Space Class,

You are probably reading this right now thinking that this will be one of the most fun classes in your college career, and you are definitely right. However, none of that fun comes without hard work, whether it be in the form of teamwork, writing, constructing, presenting, or any of the other skills you will need to succeed in this class. That being said, Team SKOing to Space has some advice for you.

When you first get assigned to a team, make sure you meet all your team members and make an attempt to get to know them as this will make the next five months much more enjoyable. Your team is greater than the sum of its parts, so if you can learn to work together, that will take you much further than you could go by yourself. Once you are acquainted with your team, get to work right away on deciding what experiment you’re going to conduct with your BalloonSat. The earlier you get this figured out, the easier it will be to finish everything else.

You should be very detailed in everything you do in this class, especially the written work. The expectation is that all of your reports could potentially be submitted to NASA, so they should be done with the highest standards in mind. If you or your group receives a bad grade early on in the class, don’t get too down on
Gateway to Space – Messages to Spring 2018 Students from Fall 2017 Teams

yourself. It will happen to everyone at some point in the semester, regardless of how well you think high school prepared you.

With all of this in mind, you should still know that this class (and launch day in particular) will give you some of the most rewarding experiences you’ve ever had. When you’re writing this advice to the next semester’s class at the end of the school year, you’ll look back on all you’ve done and think, “I did that.” You can succeed in anything if you really want to, and in Gateway to Space, if you have a little hard work, determination, and creativity, the sky will be the limit, literally. Good luck and have fun!

Sincerely,
Team SKOing to Space

Team 3

1. Begin working as hard as you can right now. Everything you can get done, get it done as soon as you can. You have no time to waste so make a schedule and stick to it as best you can, because the worst thing that can happen is your team falls behind. You should aim to have at least one of your structural tests done by your PDR presentation.
2. Make sure to weigh your payload often because you never want to unexpectedly be overweight. Have exact measurements, record everything, and make sure all team members understand design.
3. Meet as often as you can and prioritize your meetings. Organization will be your best friend, so get comfortable with your schedule and when you have time to do your other homework.
4. The most efficient way to make your team run is by dividing into sub teams and being responsible for small aspects of the project. Be accountable to your team and do your part of the work. Make sure each member does their share of the work on time, and done well.
5. This project will be the best and worst time of the semester. It will seem impossibly hard at times, but you will get through it. Everything you will do will cumulate at launch and you will remember that day for the rest of your life so make sure your proud of what you’ve done.
6. Good team chemistry will lead to a successful semester. Respect each other and work hard. This is a team project so you will need rely on each other.

Team 4

Team Spirit of Adventure was able to be efficient, dedicated, and successfully complete all work assigned. The team experienced many challenges, but was still able to find success. Through each of the experiences, Team Spirit of Adventure has gained numerous pieces of advice to pass on to future classes.

Be realistic when selecting a mission. When pondering mission ideas for your project, focus on one mission that everyone in the group is interested in – it will become most team member’s entire lives for the next semester. Also, when considering a mission, make sure the team fully understands the challenges you will face in accomplishing the mission, no matter what it is. If Team Spirit of Adventure was given another chance, each team member would say to not choose a mission involving gas sensors.
Meet with the team frequently. It is recommended to meet with the team at least three times a week, as well as being flexible enough to meet outside of the typical meeting schedule. Good communication is important for a schedule to be successful as it enables the team to be aware of conflicts that may arise. It is also very important to make sure that everyone in the team is contributing an equal amount of work. Make sure that the work is evenly distributed among the team members, as this will make the workload much easier to handle. Also, assign more members to sub-teams that will have a higher amount of work and fewer members to sub-teams with lower amounts of work in order to keep the work per person consistent.

Work hard, and learn a lot. This class requires team members to contribute a ton of time and energy to the project if success is desired. Every team will run into many stressful obstacles but these obstacles are always manageable. It is important to work hard, however it is also important to enjoy the experience and realize how much knowledge is being gained from each and every one of the challenges faced.

Team 5

Aerospace Anonymous developed an efficient and effective work group ethic. The team encountered many challenges over the semester, but found solutions to the obstacles. Aerospace Anonymous created a positive connection between teammates, which reduced the difficulty of the tasks. In conclusion, Aerospace Anonymous highly recommends three crucial key factors for being successful in this class.

Time Is Your Worst Enemy: Although at the beginning of class, two and a half months seemed like plenty of time until launch, time flies in the blink of an eye. We highly encourage future teams to start the work as soon as possible, keep an eye on the deadlines, and expect to need extra time for any kind of problem you will encounter. It's highly unlikely that everything will work as anticipated on your first attempt, so once again be fully aware of time.

Communication: Communication is what makes a strong team. We highly encourage you to meet several times a week, discuss how to get things done as best as possible, and divide the work equally to every team member. Teams should have weekly accomplishments according to schedule. It's also highly unlikely that every team member has the same class schedule, and therefore meetings should be scheduled at a time which is possible for the majority of the members to attend. What makes a team unique is that everyone has different skills, strengths and capabilities. To make a team as efficient as possible is to hear out everyone's ideas, work collaboratively, and develop a friendly work relationship.

Problem Solving As A Team: “Houston we have a problem”: Through the course of this class you will face a variety of challenges, unexpected failures, time setbacks, even internal team problems. Teams will have to develop problem solving skills as a group, have patience and get used to the “Engineering Pressure-Rush.” Don't hesitate to contact Chris, CA’s, or ITLL faculty for support and guidance. They have seen this a million times before and will often be able to give you the best advice on how to approach a situation. Humanity’s greatest accomplishments were not achieved by one person, there were groups of people who collaborated, gave up their time, and made many sacrifices to achieve greater accomplishments.

Our last advice is “Have Fun!” This is an extraordinary class, you will enjoy everything out of it and it is an experience you will remember for the rest of your life. Don't let the amount of work, difficulties, or
problems distract you of how beneficial and amazing this class is. With that said, Aerospace Anonymous wishes you the best of the luck on your future journey in Gateway to Space! Godspeed.

Team 6

Start working on your project as soon and as consistently as possible. Don’t be afraid to choose something unique and ambitious as it is a lot more fun to do something you will become invested in. While 4 months may seem like a large chunk of time, it really isn’t. The sooner you get started, the better off you’ll be. Create a schedule that enables you to finish your project two weeks before launch. Those two weeks are a buffer for all of the unforeseen circumstances that will inevitably happen. After you’ve set a schedule for your project, create another schedule with your group for when you’ll be meeting and stick to that schedule as best as possible. When making this schedule, keep in mind that it’s much better to meet too often than not often enough. Having a set schedule not only holds group members accountable, but also facilitates consistent progress. Once the schedule has been set, make sure you establish some form of group communication. GroupMe and Slack are two of the most common and easy to use apps for group chats.

There will be times during this project where you come across problems you don’t know how to solve and that’s okay. There are plenty of resources that you can go to in the engineering center. Some of the best sources available to you are the staff in the ITLL. They have many years of experience and have all worked on projects similar to yours. When exams come around, make sure to give yourselves plenty of time to study. Taking a break from working on your project is necessary. It gives you time for your other classes but it’s also a good mental break from your project. There will be times when it feels like nothing’s going your way and that you won’t finish on time, but if you continue to work hard and consistently, you’ll find that it was all worth it in the end.

Team 7

Hi Guys!

You have embarked on a journey. It will be one of the hardest things you will ever do in your life, but will ultimately tell you a lot about yourself. It is likely that you have read a lot of messages about how time-consuming this class is, how rewarding the launch is, and how hard it is to build something technical from scratch for the first time in your life. While these are all true (and Team Airheads thoroughly endorses them), there is much more to be said.

Space is something that is exciting. We enjoy learning about new space discoveries, we are captivated by YouTube videos of rocket launches, planes are and always will be cool, and we are the kind of people that are friends with Curiosity rover on Twitter.

This class is not entirely about space though. You are in college now—in the college of Engineering specifically. No matter how much you love space, this is a class devoted to getting engaged with the
material. You will be building, testing, repairing, and writing. Along with all of your work outside of class, during class will be lectures from many elite people in the Aerospace Industry.

We learned that in order to be able to say that you have learned much in this class, you have to get involved. You have to be willing to try new things such as programming or breadboarding. I also learned that it is important to take seriously what you want to build. If you make a design that is the easy way out or something that you’re uninterested in, it is unlikely you will find success in enjoying your project. I highly recommend to challenge yourself and build something new. The judges and the public love seeing students be successful with foreign ideas.

Even if you are not as successful as you intended, like us, you will learn that failure analysis can go a long way and end up solving your problems. We, and many others were much more impressed with our satellite when we got it to work after launch at the Design Expo.

Try your hardest. Balance your time. Be there on launch day. You’ll be glad you did. Even if you find out you love Engineering or do not, this class will have helped you and your future. Not to mention, as much as some of you may be hesitant to announce to friends that you are an Aerospace major, being able to say that you built and sent a satellite up to near space your first semester is truly very impressive to anyone.

And please, please don’t leave your tests for the last week before launch. If you have hardware that you ordered from Texas, get extras in case something breaks. Don’t drink two cups of coffee before you go on the satellite chase. Don’t get pulled over on the chase. Divide up your tasks between team members and take the time to bond with them. Video everything you do. And expect the unexpected, this might easily be the best class you have ever taken.

You guys will rock it. Have a great semester and happy satellite chasing.

-Team Airheads

**Team 8**

There are many important lessons that team *Millennial Falcons* wishes to pass down to next semester’s teams. With regards to team organization, it is very important that regular meetings are held. Team *Millennial Falcons* arranged meetings on a weekly basis and though they were not always on the same day or at the same time, the times set were not changed after being set. Additionally, team *Millennial Falcons* learned to divide their work and never let anyone on the team work alone. Even if there is only one person working on a certain area of the project, such as coding or structural design, it is beneficial for the assigned person and another team member to work together. It is a great learning experience to watch someone work and have them explain things to you. This observation also has the benefit of potentially catching errors though asking questions. Overall, the team found that showing up to meetings, being nice to your teammates, respecting each other’s ideas, having fun, and not buying cheap batteries were the most important lessons. This class will require a lot of hard work and long hours, but you and your team will come out the other end a better and more knowledgeable engineer if you put in the effort all the way through.
Team 9

Team Major Tom x Cosmo’s hit a few bumps through the semester, but overall, the team had a very successful semester. In order for you to succeed as a Gateway student this semester, Team Major Tom x Cosmo’s recommends that you follow these rules.

**Rule number 1:** Be a good teammate. This class is extremely collaborative, and you are going to have to learn how to work well in a group. If you say you are going to do something, make sure you do it. If for some reason you can’t do it, let your teammates know and ask for their help. Don’t just assume someone else will do it. If everyone sticks to their roles and is honest about what needs to be done at any given time, you will have no trouble completing your project in a timely manner.

**Rule number 2:** Test everything early, often, and extensively. It is much easier to test something before launch and fix any potential problems than to have to do failure analysis later.

**Rule number 3:** If you value your sanity, do not use gas sensors in your mission unless you have some prior experience with them. If you do choose to use gas sensors, make sure they use infrared (IR) sensing, non-heater-based sensors. Testing gas emissions in the atmosphere seems like a simple and relevant mission, but it is actually really difficult. Most of the sensors available for Arduino are either nonexistent, cheap and unreliable, or only available to be shipped from China. It is also really difficult to test and calibrate gas sensors. Every year, a team tries to use gas sensors, and they always struggle with it, so trust us; your life will be much easier if you pick a different mission.

**Rule number 4:** If you feel it is appropriate, ask a local company to sponsor your mission and your team. Companies in Boulder thrive off of the college community and many would love to get involved in your work.

With that said, don’t forget to have fun! This class requires a lot of hard work, but it is also extremely rewarding. You will learn a ton about teamwork, real world engineering, and the Aerospace industry. Lastly, pizza truly does make everything better! Thank you, Cosmo’s Pizza! From Team Major Tom x Cosmo’s, good luck!