Orientation Module

Student Workbook

Take a few moments to review the information on the Orientation webpage and follow along in this workbook as you complete the content online. It doesn't include everything – just the things you need to work on!

Have questions or comments? Please contact the Airport Design Challenge team at avsed.challenge@faa.gov.

Recommended Project Schedule Pg. 1 *(for reference)*

Welcome to the Airport Design Challenge! We can't wait to see what you build! Although the challenge runs in an annual cycle, we recommend that you plan to complete your initial project **in 10 weeks**! That has been most successful for past participants. From there, you can make improvements until you're ready to submit your final video!

Week 1

Orientation	
Alexander Graham Bell taught that, "before anything else, preparation is the key to success." During orientation, there are a lot of tasks that you must complete in order to be ready for the challenge to start. As you get started on the Airport Design Challenge, we want to make sure you have all the information you need to help you succeed. In this section, you will learn how to navigate the ADC modules, see how your project will be scored, hear from previous challenge winners, and more. Get ready, you are about to begin!	
Review the Orientation webpage!	☐
Watch the Minecraft Tutorial Videos!	☐
Orientation Quiz (Found in the Orientation Workbook)	☐

Choose Your Airport	
What kind of airport will you choose? Learn about the different types of airports, research ones near you or ones of interest, and choose your project!	
Review the Choose Your Airport webpage!	☐
Choose Your Airport Quiz (found in the Choose Your Airport Workbook)	☐

Weeks 2 & 3

Module 1 – Paved Surfaces	
To get started, make sure you understand how your runways and other paved surfaces are laid out, then begin building them in Minecraft. This is usually the hardest part of the entire project so take your time and make sure it is done just right. Getting all of your paved surfaces built can take a lot of time! Remember, this requirement is only to get the pavement in. You will add paint, lights, and details in Module 3.	
Review the Paved Surfaces webpage!	☐
Airport Layout Plan – Part 1	☐
Module 1 Quiz (found in the Paved Surfaces Workbook)	☐

Recommended Project Schedule Pg. 2 *(for reference)*

Week 4

Module 2 – Safety & Security Areas	
Module 2 will give you a bit of a break after all the long, hard work you did on paved surfaces. In this module you will build a perimeter fence around your airport, including gates to allow vehicles and people to pass through. In addition to fences, you will want to make sure there are no obstructions at the end of your runways. Safety is at the center of everything that the FAA does! Our mission is to maintain the safest and most efficient airspace in the world! You can be part of the safety mission by paying close attention to the features of your airport in this module!	
Review the Safety & Security Areas webpage!	☐
Airport Layout Plan – Part 2	☐
Module 2 Quiz (found in the Safety & Security Areas Workbook)	☐

Week 5

Module 3 – Lighting, Markings & Signs	
Adding airport lighting, markings, and signs requires some real attention to detail, but it is that detail that really makes your airport start to look like the real thing. Take your time this week and make sure you add as much detail as possible!	
Review the Lighting, Markings & Signs webpage!	☐
Airport Layout Plan – Part 3	☐
Module 3 Quiz (found in the Lighting, Marking & Signs Workbook)	☐

Weeks 6 & 7

Module 4 – Airport Buildings	
In Module 4, you should begin putting in all of the buildings on your airport. Some airports have a lot of buildings, and some have much less, but each building is unique so consider how you can make each one look as close to the real thing as possible. Airport buildings, fuel farms, and other details can really take some time to complete. Take this week to keep working on those details. **Hint:** If you really want to know what your airport looks like, consider asking for an airport tour!	
Review the Airport Buildings webpage!	☐
Airport Layout Plan – Part 4	☐
Module 4 Quiz (found in the Airport Buildings Workbook)	☐

Recommended Project Schedule Pg. 3 *(for reference)*

Week 8

Module 5 – Innovations & Future Growth	
Like most things, airports have grown through new technology, ideas, and needs. In Module 5, you get to stretch your creativity and determine what your airport could look like in the future. Perhaps it will have a new tower, a bigger terminal, or longer runways. Enjoy your own innovation!	
Review the **Innovations & Future Growth webpage**!	☐
Airport Layout Plan – Part 5	☐
Module 5 Quiz (found in the Innovations & Future Growth Workbook)	☐

Weeks 9 & 10

Module 6 – Final Airport Tour	
This is it! Your chance to show off all your work since Day 1! You will take our judges on a brief, virtual tour of your Minecraft airport. If you want to take more time to put some finishing touches on your project, now is the time! But don't forget to submit before the deadline!	
Review the **Final Airport Tour webpage**!	☐
Review the **Rubric** one more time!	☐
Record your Final Airport Tour Video!	☐

Submitting Your Final Project	
Submit your final project video and all required forms to avsed.challenge@faa.gov! We can't wait to see what you've created!	
Submit your final project video to avsed.challenge@faa.gov	☐

FINISH!

Grading Rubric

Category/ Points	0-5	6-10	11-15	16-20
Technical Accuracy	Completely inaccurate dimensions or scale. Missing major elements.	Some items are dimensionally correct or to scale. Missing minor elements.	Most items are dimensionally correct and to scale. All required elements are present.	All items are present, dimensionally correct and to scale.
Creativity	Terrain is flat and does not reflect the environment of the students' home. Airport components show minimal creative effort.	Terrain is present but generic. Airport components show some design and creativity in both design and decoration.	Terrain accurately reflects the students' home environment. Airport components are easily identifiable.	Terrain and all airport components reflect a high level of creativity and attention to detail.
Innovation	No innovative technology/ concepts provided on the airport.	Some innovative technology/ concepts included on the airport; not easily identifiable.	Some innovative technology/ concepts included on the airport by may not fit into the airport layout and function.	Innovative technology/ concepts are appropriately used across the airport and are very apparent.
Final Presen-tation	Presentation fails to demonstrate any of the airport's functions, size, history, etc.	5 minutes long (+/- 3 minutes), little or no narration/subtitles, minimal view of airport components.	5 minutes long (+/- 2 minutes), provides narration or subtitles, shows more than 50% of the airport but may not describe factors like operation, history, and functions of airport components.	5 minutes long (+/- 1 minute), is narrated, creative, and adequately provides the viewer with a full range perspective of the airport.

Forming Your Team

I am participating as a:

❑ Individual!

❑ Member of a Group!

- ❑ Group Member #1: _____
- ❑ Group Member #2: _____
- ❑ Group Member #3: _____
- ❑ Group Member #4: _____
- ❑ Group Member #5: _____

My/Our Team Name Is: _____

THE SET UP FOR SUCCESS

Having a successful Airport Design Challenge (ADC) team (and future teams in your career!) requires certain skills and capabilities. As you get started, think through each of the following and how you'll integrate them into your ADC experience!

Teamwork

Definition: Working together toward a shared goal by combining everyone's strengths, supporting each other, and dividing tasks in a fair way.

Why It Matters: No one person can do every part of a big project well. Teamwork helps the group produce better, faster, and more creative and accurate results!

Reflection: One is one way you can personally help your team work better?

_____

_____

Perseverance

Definition: Sticking with a task even when it becomes challenging, confusing, or frustrating.

Why It Matters: Creative and technical projects almost always involve obstacles – failed attempts, glitches, or ideas that don't work yet. Perseverance keeps the team moving forward.

Reflection: Describe a time when you didn't give up on something hard. How might that help your team now?

_____

_____

Communication

Definition: Sharing ideas clearly, listening actively, asking questions, and making sure everyone understands the plan.

Why It Matters: Miscommunication leads to mistakes, delays, and conflict. Strong communication helps the team stay aligned and avoid confusion.

Reflection: What is one communication habit you want to improve during this project?

_____

_____

Organization

Definition: Keeping tasks, materials, schedules, and responsibilities in order so the team stays on track.

Why It Matters: Creative and technical projects often involve many moving parts. Good organization helps teams meet deadlines and produce higher-quality work.

Reflection: What organizational strategies could your team use in ADC?

_____

_____

Vision

Definition: Knowing what you want the final project to look like and understating the purpose and direction of your team's work.

Why It Matters: A strong vision keeps the team focused and makes decisions easier because everyone knows what they're working toward.

Reflection: In one sentence, describe your team's big goal for this project.

_____

_____

BRINGING IT ALL TOGETHER

Which of the five skills above do you think will be the most challenging for your team and why?

_____

_____

You're ready for take-off! Good luck, have fun, and always reach out with questions!

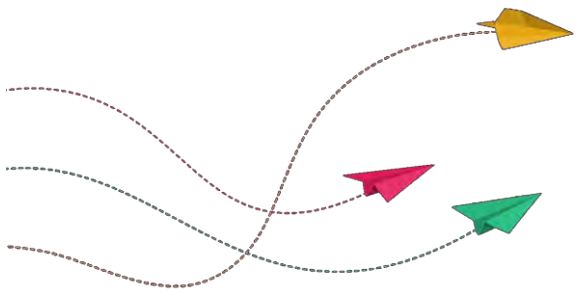
Get Ready To Take Off!

We sincerely hope that you enjoy this opportunity to learn a small part about your local airport, how it is developed, and how it can grow in the years ahead. Exercise creativity and be mindful of the small details that will make your final project stand out above the others. Wilbur Wright taught that, “it is possible to fly without motors, but not without knowledge and skill”. During this challenge, we will provide you with the knowledge, you will develop your own skills, and together we will fly through your airport. Enjoy it!

Next Steps…

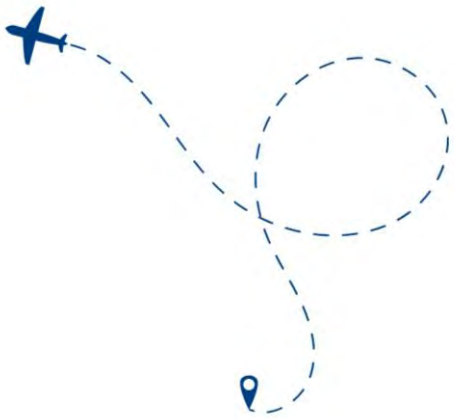
- ❑Test your knowledge with the Orientation Quiz!
- ❑Then, move on to picking your airport and take off!
- ❑Follow the six fun lessons, aiming to complete one every 1-2 weeks. Check them off as you go.

Let’s build, learn, and fly together!



Check Your Knowledge! Orientation Quiz

1. True of False. Aviation is an exciting industry.
   - ❑ True
   - ❑ False
2. Is it better to build a huge airport?
   a) Yes! The bigger the better!
   b) Smaller airports can add more detail, but larger airports would require more work.
   c) No. You should really choose the smallest airport possible.
   d) It really doesn't matter.
3. Which of the following impacts your score on your final project? Select all that apply.
   - ❑ Technical Accuracy
   - ❑ Creativity
   - ❑ Innovation
   - ❑ Final Presentation



Check Your Knowledge!
Orientation Quiz – Answer Key

1. True!

   Aviation IS an exciting industry! Overall, the aviation industry is seen as exciting because of its continuous evolution, its role in global society, and the unique opportunities it presents to those who work within it.

2. B!

   You may have to weigh the benefits of choosing a smaller airport where you can add more detail, versus a larger airport with less detail but more required work.

3. All of them!

   Your project will be judged on Technical Accuracy, Creativity, Innovation, and the Final Presentation!