BUILD IT Design Challenge
Space Station

Use your imagination to work through the Design Process and draft an original plan for a space station. Collaborate with a partner to brainstorm ideas and provide feedback on final designs, then translate your design into a 3D model using LEGO! Be sure to check out our Pass the Duck Activity warm-up to get familiar with the Design Process prior to starting this challenge!

Audience
• Builders of all ages, for individual or team building

Materials
• Sketching paper
• Pencil
• LEGO baseplates
• Assorted LEGO
• Design Process Illustration

Vocabulary
• Mixed-use skyscraper/building – a structure that brings together several uses within one building (examples: Aqua Tower, the Auditorium Building)
• Microgravity – the state of weightlessness experienced by astronauts aboard the ISS due to the station’s rapid movement around the Earth
• Modular / Module – a module is a unit of a set of standardized parts or building units. A modular structure uses these modules as the basis for the design or construction.

Guiding Questions
The International Space Station (ISS) is a lot like a mixed-use skyscraper. It can serve as an office space, laboratory, home, gym, and more! Unlike a skyscraper, the ISS is small and can only hold up to six people. Designing places for people in space poses a unique challenge!
• What is the biggest difference between living in space and living on Earth? Microgravity! The ISS is orbiting our planet at approximately 17,000 mph, and everything inside it is falling, too. Everyone inside experiences the effects of microgravity as weightlessness.
• Because the ISS is so small, think about design elements you could implement that would maximize the working space available to astronauts.
• What sorts of places do you visit every day? What places might be important to an astronaut?
• The ISS is a modular structure. 16 modules, with different purposes, make up the full assembly and are connected by the station’s truss system. Try arranging the different modules in a way that makes sense to you.
• How does the ISS get its power? The ISS is completely solar-powered and uses solar array wings (SAW) along the station to gather power. Don’t forget to add these to your design!

Instructions
1. Define the problem, collect information: You are tasked to design and construct a space station using LEGO. Use the guiding questions above to brainstorm and analyze ideas, and sketch an initial design for your structure.
2. Build and test a model: using your sketch as a guide, translate your ideas to a 3D model using LEGO.
3. Present your ideas to others for feedback: After you’ve finished your build, share it with the rest of your team! Share three unique things about your underwater hotel and what makes it special. Ask for feedback from your team to figure out what part of your design you could improve and keep building!

Share
We’d love to see your work! Share your creation with the Chicago Architecture Center on Facebook or Instagram using the hashtag #Chiarchitecture
Extend
Many more challenges await. Visit our [website](#) to see a list of more LEGO challenges, and be sure to share your work with us! #Chiarchitecture