EXCITING CAREER OPPORTUNITIES AWAIT AT MULTIMODAL SPACEPORTS

Credit: NASA (2011)

By far, when individuals are asked to list potential careers in the space industry, they list astronauts, engineers, and scientists as their top choices. Many are not aware of the diverse job opportunities that exist beyond these highly recognized fields. To that point, Harris Poll conducted a survey involving 3,000 children (ages 8–12) from the United States (U.S.), United Kingdom, and China on space-related topics. Results showed that 86% were “interested in space,” and 90% wanted to learn more, citing educators and the Internet as the primary sources for information. However, when asked about space careers, children overwhelmingly selected familiar roles: astronaut (90%!), engineer (58%), and computer programmer (52%). Only 7% chose “farmer/gardener,” suggesting a limited understanding of the diverse career opportunities within the space sector [1]. Clearly, this gap in awareness extends beyond children to educators, parents, and guardians, as well as career-minded adults who have a passion for working in the space economy, but do not know where to begin.

Multimodal spaceports offer a compelling entry point for both science, technology, engineering, math (STEM) and non-STEM careers. A modern spaceport supports various launch and return configurations with multimodal access via rail, road, water, pipeline, air, and space as illustrated in Figure 1. Safe and efficient site operations require a wide range of disciplines and skills. Airside infrastructure includes air traffic control, terminals, runways, fuel storage, hazardous material (HAZMAT) facilities,

security, emergency services, and information technology (IT) systems. Space-specific elements include launch and mission control centers, payload processing, propellant storage, and integration facilities, among others. As space tourism becomes a norm, passenger facilities will be mandatory. All spaceport components and capabilities require a diverse workforce with varied skill sets to ensure safe, effective, and efficient operations.

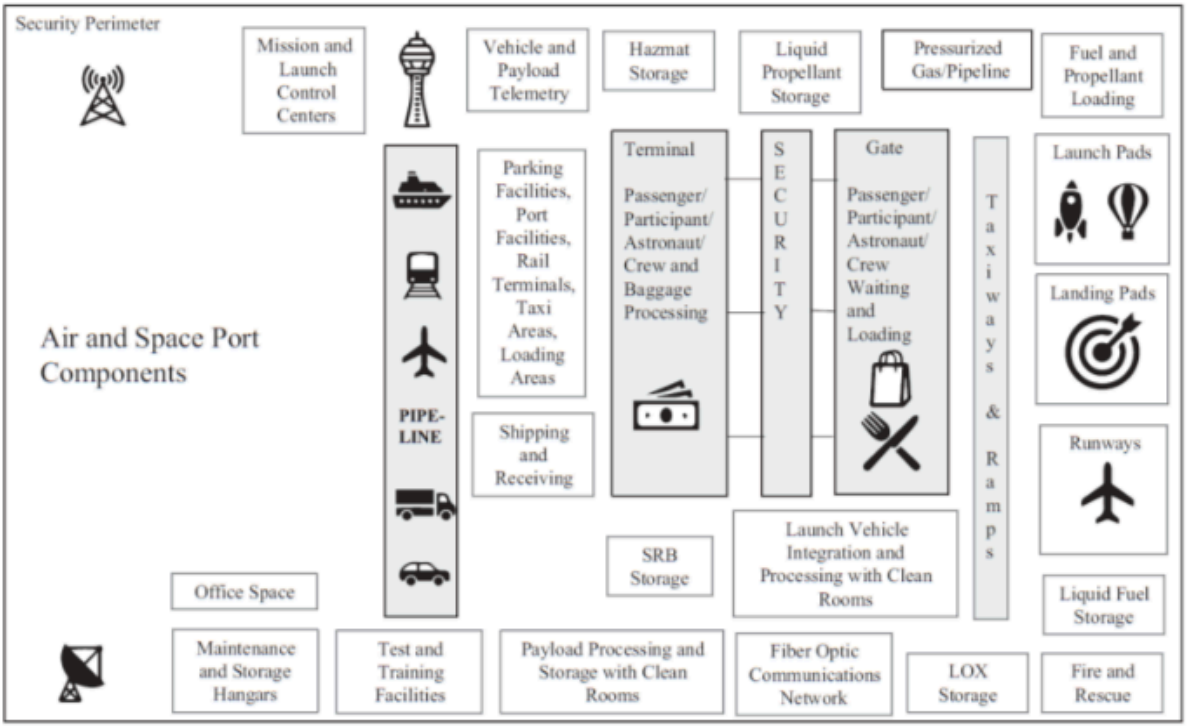

Figure 1: Main components of a spaceport [2]

In 2023, the U.S. space sector employed over 373,000 private workers. Government statistical data (2017-2022) show the makeup consisted of 56 percent STEM jobs, leaving 44 percent as non-STEM jobs [3]. While these statistics were spread across the space sector as whole, they provide a glimpse into the depth and breadth of job opportunities in the space economy.

Relevant STEM-based spaceport career opportunities include engineering, engineering technicians, biologists, environmentalists, materials science experts, logisticians, architects, data analysts, cybersecurity experts, among others. Non-STEM spaceport jobs include a wide range of administrative, business, and communications roles, such as project management, public relations, marketing, human resources, accounting, and finance. Other positions involve areas like logistics, contracting, public

outreach, business development/sales, and government relations, which are critical to a spaceport's operation and growth.

Many crucial jobs do not require advanced degrees, making spaceport careers accessible to a broader population. Technology education with certifications and occupational licenses support a myriad of vital jobs available at a spaceport. Expert welders, heating, ventilation, and air conditioning (HVAC) technicians, electricians, and plumbers, as well as surveyors, drafters, dispatchers, industrial truck and tractor operators, laborers and material movers, stock clerks, janitorial services, food service, groundskeepers, etc. [1] are all needed. As shown in Table 1, when reviewing job opportunities through the lens of a multimodal spaceport, the breadth and depth of job possibilities become even clearer.

Table 1: Spaceport jobs by transportation mode [1]

Air	Rail	Space	Pipeline	Road	Water
Pilots, flight engineers; Air traffic controller Cargo and freight agents Aircraft mechanics and service technicians Airport managers	Locomotive engineers Rail car repairers Rail-track laying and maintenance equipment operators Railroad brake, signal, and switch operators; conductors, yardmasters	Pilots, crew Spaceport managers Launch and mission controller HAZMAT specialists Spacecraft mechanics and service technicians Assemblers	Installers and repairers Gas compressor and gas pumping station operators Gas plant operators Industrial machinery mechanics	Bus and truck mechanics/ drivers; diesel engine specialists Supervisors/ managers of transportation and material-moving; Laborers and freight, stock, material movers, drivers, light, heavy, and tractor-trailer	Captains, mates, and pilots of water vessels Laborers and freight, stock, and material movers, hand Sailors and marine oilers Ship engineers

The continuous growth of the commercial space sector and government initiatives ensures that spaceport career opportunities will only multiply in the coming years. The development of a robust and skilled STEM and non-STEM workforce will be paramount to building a sustainable future in space, beginning with a fully functional and safe spaceport. It is this integrated effort—spanning everything from infrastructure planning to actual launch operations—that ultimately propels humanity toward new frontiers. The list of opportunities is endless! If your passion is space and you don’t know where to begin, consider the careers available at spaceports!

References

[1] Tinoco, J., Moragne, K., Gallo, J., and Cogdell, A. (2022). Space is for everyone: Curriculum for children on spaceports and careers. *Proceedings of the 73rd International Astronautical Congress (IAC)*. Paris, France, 19-22 September 2022.

[2] Tinoco, J., Yu, C., Stilwell, R., and Howard, D. (2020). *An Introduction to the Spaceport Industry: Runways to Space* (1st ed.). Routledge Publisher. https://doi.org/10.4324/97813511658461st.

[3] Goldman, A.R., Balakrishnan, A., and Highfill, T. (2025) The Space Economy Workforce and STEM Occupations. U. S. Bureau of Economic Analysis. https://www.bea.gov/research/papers/2025/space-economy-workforce-and-stem-occupations