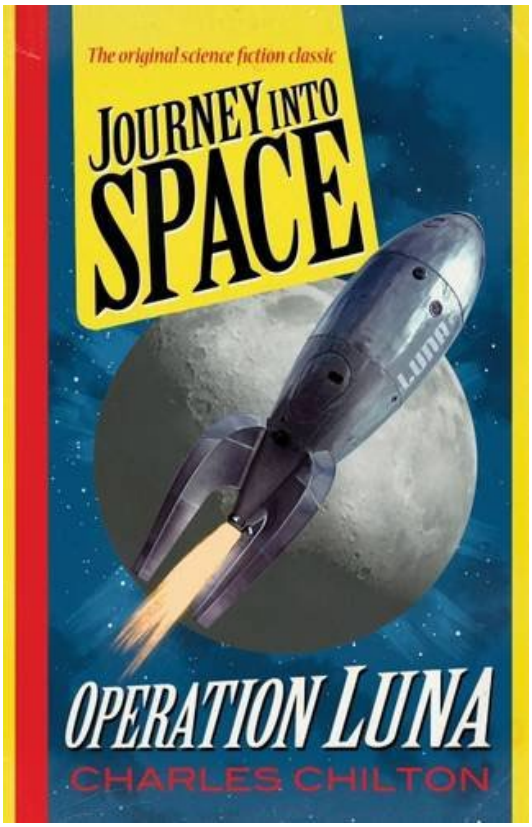
CAREERS IN SPACE – TODAY!



As previously advised, this article is the second of two loosely related articles now published by the Schools' Aerospace Careers Programme. When the Schools ACP Chairman was a little boy (7 years old) the last BBC Radio programme to attract a larger audience than television was 'Journey into Space' which commenced in 1953 with 'Operation Luna'. Like all science fiction from Jules Verne, Isaac Asimov and Arthur C Clarke, yesterday's stories of imagination are today's fact and, with Gene Roddenberry, who knows - tomorrow's reality? The following is an article by Luke Dormehl (http://www.lukedormehl.com/.) These jobs are being recruited now!

"Want to work in the stars? Here are six future space jobs you could hold. We've written plenty about the disruptive impact cutting-edge technologies are going to have on the job market. According to some experts, approximately 43% of current jobs in the United States are at risk of automation in the coming years. But according to the World Economic Forum technology will also cause plenty of new jobs to spring up, many of them in entirely new industries and locations. Here's a list of job titles that sound a lot like science fiction now, but almost certainly won't a decade from now:

Space pilot

The dream of piloting your own spaceship was once the fantasy of any kid who ever watched Star Wars and dreamed of being Han Solo at the controls of the Millennium Falcon. It won't remain a dream for much longer, however. With the likes of Richard Branson's Virgin Galactic well on their way to becoming the space equivalent of commercial airlines, and plans for space tourism on the rise, there will be a significant increase in the need for shuttle-steering space pilots. Oh, and you can add in ancillary professions such as space traffic control officials and space flight attendants, among others.

Space lawyer

No, it's not the title of John Grisham's next legal thriller, but rather a new class of legal work that's going to be available to tomorrow's lawyers. Okay, so "lawyer" might not sound like the kind of crazy, space-age job title you think of when you picture the future, but it's certainly going to be a much sought-after specialization. Regulations concerning areas [such as] who has the rights to mine asteroids are broad and vague now. But they're exactly the kind of areas that are going to be the subject of tomorrow's multi-billion dollar lawsuits. Being a space lawyer promises to be both exciting and lucrative.

Space architect and construction expert

SpaceX

How does designing a new space station strike you? What about developing future moon bases or housing on Mars? Where once the job of space architect might have meant dreaming up futuristic sets for Hollywood movies, in the near future it's going to be an existing job category.

These architects won't simply be recreating Earthbound structures that happen to float. They'll have to possess special expertise in the kinds of harsh environments you only find in space, capable of withstanding everything from extreme radiation to sub-zero temperatures. And they'll also need an understanding of fields like physical and psychological wellness in space, along with more specialized knowledge.

Of course, designing buildings is only part of the task. Carrying out construction work or repairs, some of it in situ, is also going to be a viable area of work. In some cases, materials and construction parts

may be 3D printed in space and never even set foot on Earth. Sure, self-assembling nanobots or giant 3D printers could carry out some of the construction work in space, but there will still be the need for humans to get involved.

Space medic

Did you know that prolonged time in space physically changes the structure of astronauts' eyes? What do days, weeks, or even months away from Earth in a desolate environment like the Moon mean for a person psychologically and physiologically? What happens to a passenger if they're taken ill during a commercial space flight?

A number of universities are already offering courses or modules in fields like space physiology and health. Right now, you could argue that these courses are premature in terms of training large numbers of medics for space medicine. A decade or two from now, however, we'll be glad that they exist.

Asteroid miner

Deep Space Industries

Mining asteroids isn't a thing just yet, but it will be in a decade or more from now. With depleting resources on Earth, the hope is that precious resources could be mined from the approximately 9,000 known asteroids currently traveling in orbit close to the Earth, and the 1,000-odd new ones that are discovered each year. The dream is that these asteroids could contain an abundance of fresh resources, ranging from water to platinum.

Given we don't currently know exactly how this mining will take place, it's difficult to say exactly what the jobs available to a space miner will include. However, it's likely that they will draw on a lot of the same mining expertise currently required on Earth for more terrestrial mining operations. Colorado School of Mines already offers a course in this field.

Space engineer

Of all the jobs on this list, space engineers are the ones with the biggest presence already in 2019. Thanks to the plethora of companies and organizations, both private and publicly-funded, an aerospace engineer with experience developing satellites, rockets, and space shuttles is already a sought-after occupation. But it's going to get far more so over time.

An unprecedented number of satellites are currently in the process of launching, while rockets are seeing some of their most significant advances in decades. Add in new types of space robots, rovers, and clean-up operations, and there are a ton of jobs soon to open up in space engineering.

If your chosen career isn't on this list, don't despair. While there's also the opportunity to retrain — new space resources courses like that at the Colorado School of Mines focus on supplementary training for people already working — there will be a call for many other professions, too.

"You need people from all sorts of different disciplines," Dr. Angel Abbud-Madrid, director of the Center for Space Resources and Research Associate Professor in Mechanical Engineering at Colorado School of Mines, told Digital Trends. "You need mechanical engineers, chemical engineers, mining experts, computer scientists, geologists, geophysicists, economists. Think about all of the jobs that we have here on Earth. A lot of those are also going to be used when we go to space. It opens up a whole new range of possibilities for new jobs and opportunities."

In other words, get polishing that CV — and don't forget to include a line about your general ambivalence toward working in gravity!"

So what is astronautical engineering, and how does it differ from aerospace engineering?

According to the University of California, Riverside, aerospace engineering is a broad, extensive field that has several offshoots. One of which is astronautical engineering. These professionals use many of

the same engineering skills and solutions as other professionals in science and engineering, but their field is more confined to a particular "space" – in the literal sense of the term. You may be curious, though, about what an astronautical engineer does and how the job differs from other branches of aerospace engineering.

As their title more or less implies, astronautical engineers design, develop and manufacture spacecraft, the same vehicles astronauts use to journey past the skies and into what in many ways remains the great unknown. Space vehicles have come a long way in a relatively short period of time. Thanks to state-of-the-art technology, unmanned devices can travel greater distances and remain there for longer periods through intelligent navigational systems and remote sensing. These capabilities are largely attributable to the work and technical know-how that astronautical engineers provide to aerospace systems, in particular, and the science and engineering field overall.

In addition to space vehicles, astronautical engineering experts are also commonly involved in the manufacture or design of satellites, space capsules, planetary probes, missiles and rockets. These are highly technical pieces of machinery and require a deft understanding of control systems and core principles of physics, flight and mathematics.

How is astronautical engineering different from aerospace engineering?

Perhaps the best way to think of astronautical engineering is as a derivative of aerospace engineering. In other words, aerospace is more of an umbrella term, whereas astronautical is a specialty. Those with aerospace engineering backgrounds usually have expertise in one of two engineering disciplines: aeronautical or astronautical. Whereas astronautical engineers work with the science and technology of designing spacecraft and satellites, aeronautical engineers handle aircraft and propulsion systems, confined to those that operate under the Earth's atmosphere. However, there is some overlap between the two professions because they use many of the same skills, tools and abilities for their employers. While astronautical engineers do not meet the technical definition of astronauts, many of those who went on to be astronauts came from backgrounds in astronautical engineering.

To assist further, the following is an extract from an article published in http://kiiky.com/ dated 19 July 2022 entitled: Best Aerospace Engineering Universities in UK|2022.

"Designing aircraft, missile, and spacecraft requires some level of artistry and expertise. To become an aerospace engineer students must complete an aerospace engineering program. In the UK a minimum requirement of a Bachelor of Science in aerospace engineering allows an individual to practice. However, this degree must be obtained from an accredited university. In fact, a degree in aerospace engineering from an unaccredited university is equivalent to no degree. So it is very important for students to research the aerospace engineering program hey wish to attend. By doing so they can ascertain the cost of the program, accreditation status, and quality of education in university concerned."

The article includes the following sections:

- What is aerospace engineering?
- Why study aerospace engineering in the UK?
- Where do aerospace engineers in the UK work?

- What is the salary for aerospace engineers in the UK?
- How much does it cost to study aerospace engineering in the UK?
- What are the requirements for an aeronautical engineering degree in the UK?
- What are the best universities for aerospace engineering in the UK?
- FAQs
- References

The following is a table of the, suggested, top 10 Aerospace Universities in the UK:

University	**Reputation***	**Acceptance Rate**	**Accreditation**
Cambridge	1st	21%	Royal Aeronautical Society
Imperial College London	5th	14.3%	Royal Aeronautical Society
Loughborough	6th	8%	Royal Aeronautical Society
Bath	9th	20%	Royal Aeronautical Society
Bristol	14th	63.3%	Royal Aeronautical Society
Leeds	16th	77%	Royal Aeronautical Society
Southampton	17th	84%	Royal Aeronautical Society
Glasgow	19th	74.3%	Royal Aeronautical Society
Nottingham	20th	11%	Royal Aeronautical Society
Sheffield	28th	85.6%	Royal Aeronautical Society

*University League Table

www.aerospacecareersprogramme.co.uk