



EDUCATION AND TRAINING



The Snowdonia Space Centre is located in Llanbedr, Gwynedd on the scenic west coast of Wales. The centre was constructed to support early-stage commercial and academic R&D activities and space-related training. Its facilities are ideally suited to providing hands-on, practical experience in space laboratory testing, rocket propulsion and flight operations, in addition to being the perfect venue for delegates requiring a broad introduction to the space industry. The Space Centre is conveniently located for many parts of the UK, for example 3 hours drive from Manchester and Birmingham, and is served by an adjacent railway station with direct services from Birmingham. It is located in a popular tourist area within Eryri National Park, with shops and amenities in nearby towns.

TRAINING FACILITIES

Rocket test stand

- 5kN rocket test stand
- High pressure feed system
- Instrumentation and data acquisition
- Remote activation and monitoring from a control cabin
- Suitable for bi-propellant and hybrid rocket engines
- Oxygen-propane spark torch
- Vertical test stand available for full system testing



Clean room laboratory

- Clean room laboratory
- Thermal vacuum chamber
- Shaker table
- Centrifuge



Launch rails

- Mobile 4m launch rail, ideal for student rocketry (1.8 km ceiling)
- Variable inclination 12m launch rail, ideal for scale prototype space planes
- Suitable for launch preparation training
- Segregated air space if required with access to the Cardigan Bay test range.



Mission control

- Well-equipped control room for flight test monitoring
- Suitable for rocket and balloon launch
- RF air-to-ground communications
- Maritime radar and ADS-B receivers for range safety



Classroom and accommodation

- 20 seat dedicated classroom
- Office space for course preparation
- Larger teaching space available in the hangar
- High-speed internet and 5G
- 20 bed accommodation block (from 2026)
- Other accommodation available locally



12 m variable inclination launch rail

COURSE OPTIONS

Courses can be organised on a range of space-related topics to suit the requirements of individual clients. The following options are intended to give a broad overview of the types of course that could be accommodated by the Snowdonia Space Centre.

A. Introduction to space technology and the UK space sector including hands-on practical experience such as use of the clean room, rocket engine testing and live tracking

Courses offering an overview of the space industry from a UK perspective with an emphasis on space technology and the basic principles of astronautics would be aimed at new entrants to the space sector and people seeking a move to the sector. Course contents could include the history of the UK space industry and its key milestones since the 1950s, satellites and their applications, rocket propulsion, space communications, the space environment and launch. Courses could also cover the basics of commercial space sector economics and key driving factors.

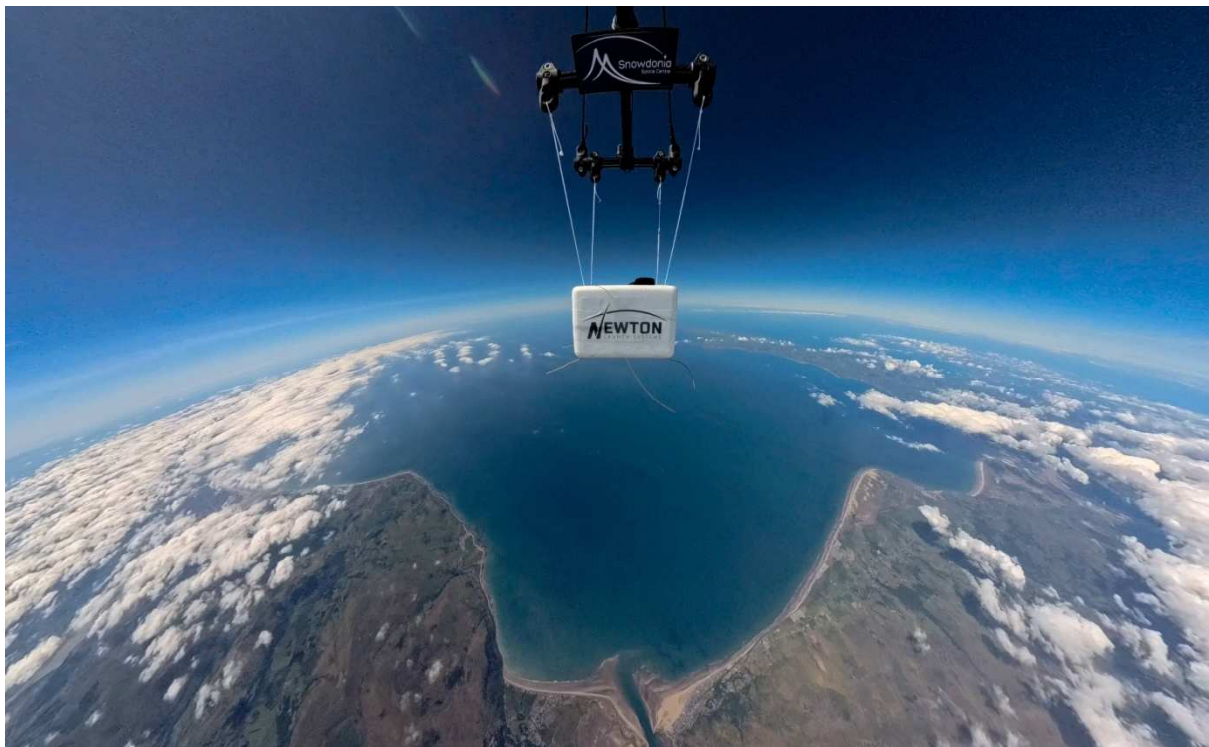
A practical element will be included in all of the courses, whereby the course attendees are divided into smaller groups to conduct supervised tests using the Snowdonia Space Centre's equipment, specifically the clean room with its vacuum chamber, the rocket engine test stand and mission control. Workshop opportunities range from assembly and testing of mock space hardware (e.g. assemble a cubesat and test it on the shaker table) to the simulation of a space mission with payloads being launched to 30 km altitude by balloon. This experience will allow delegates to see how items of technology perform under simulated launch and space conditions and give an overview of the types of test that spacecraft and their systems must undergo before launch into space.

B. Tailored courses for employers wanting to provide practical training in specific technology areas, e.g. communications

Courses offering an in-depth insight into specific aspects of space technology would be aimed at people who already work within the space sector who require further training and practical experience in their own field. These courses would develop specific subject matter expertise, such as rocket propulsion, RF communications, clean room operations and mission planning, and would be delivered with support from academic partners and guest lecturers from industry. All courses would combine classroom teaching with practical workshop sessions to maximise the learning outcomes. For example, the RF communications course would cover the theoretical background of link and power budgets and then demonstrate both in the field by flying a payload on a balloon or UAV. Similarly, the rocket propulsion course would include the testing and post-test analysis of a rocket engine.

C. Academic modules for universities, delivered in conjunction with the university using space centre's equipment and facilities

The Snowdonia Space Centre is an ideal venue for universities to host practical elements of space-related degree courses, such as field courses and practical workshops. Theoretical subjects such as designing hardware for the space environment and rocket propulsion could be significantly enhanced by coursework activity in which students design, build and test their own hardware using the space centre's clean room and rocket engine test stand. Field trip activities might include building a small cubesat, testing it on the ground and then flying it, either on a rocket or high altitude balloon. The site is also well-suited to student rocketry teams looking for somewhere to test their rocket engines in preparation for the "Race to Space" competition or test launch their vehicles. It has already hosted rocketry and 'cansat' competitions.



Balloon test of experimental payload