The Faculty of Engineering at UNSW offers Australia’s first (and only) Satellite Systems engineering program. The Master of Engineering Science in Satellite Systems Engineering provides graduate students with the opportunity to train for a career in the space industry.

The space industry in Australia is a rapidly developing area that has received a significant amount of support from the government through the creation of the Australian Space Research Program. The UNSW postgraduate program has been developed in conjunction with Thales-Alenia Space, Optus, and l’Institut Superieur de l’Aeronautique et de l’Space (ISAE), ensuring standards in both the education as well as the industry-experience components.

This postgraduate course in Satellite Systems Engineering is unique to Australia and belongs to an elite handful of similar programs worldwide. Space engineering requires knowledge of specific space-related engineering principles, and graduates from the program will be “industry-ready” from their participation in coursework as well as “hands-on” projects.

Satellite Systems engineering is a multi-disciplinary area involving many facets of engineering and science. Employment opportunities with satellite builders, operators and users of satellite data include careers in:

- Space mission planning and development
- Satellite design and space component design
- Satellite operations
- Space propulsion and launch vehicle design
- Management and operation of space and supporting infrastructure
- Space law
- Design and building of ground-specific components to satellite launch
- Satellite data analysis: remote sensing, and earth observation
- Satellite applications such as: satellite communications, global navigation systems,
- Space related postgraduate research

We are seeking young Australians with fresh ideas and new takes on space engineering to take advantage of this amazing learning opportunity.

**Why consider studying satellite systems engineering at UNSW?**

UNSW has Australia’s largest and top-rated Engineering Faculty. Students will be able to take advantage of a rich set of expertise spread across the Engineering Faculty, in the School of Electrical Engineering and Telecommunications, and School of Mechanical and Manufacturing Engineering, as well as at UNSW Canberra.
As the program has been built by global academia (UNSW and French collaborators ISAE) and industry (Thales-Alenia Space and Optus), the focus is on creating satellite professionals with knowledge in all areas of satellite engineering, from management and law, satellite mission development, launch, operation and maintenance, through to satellite applications. This makes the program unique in the Australasia region, and also gives students a range of knowledge they might not have from other global space programs.

**Aims of the program**

- Deliver a ‘system-wide’ understanding of satellite systems
- Build a broad foundation of knowledge in satellite systems engineering, to allow students to make informed decisions about future sub-specialisations and career pathways
- Bridge the divide between theory and practice by embedding practical experience in the teaching units, and incorporating a year-long project
- Develop a new cohort of ‘industry-ready’ graduates well positioned to contribute strongly to the space industry
- Produce engineering graduates with strong system engineering skills who are capable of managing multi-disciplinary projects
- Demonstrate contemporary ‘best practice’ in teaching through the use of blended face-to-face and e-learning methods

**Course structure**

The structure of the satellite systems engineering course is somewhat flexible and an array of electives can be chosen in addition to the core set of required courses. There is also a high level of flexibility in the ‘hands-on’ projects, depending on the interests of the student and industry placement opportunities.

First year core courses including
- Space Systems Architectures and Orbits
- Space Mission Development
- The Space Segment
- The Ground Segment and Space Operations

Second year elective choices might include
- Satellite Applications: Communications and Navigation
- Satellite Applications: Earth Observation and Remote Sensing
- Space Law and Radio Regulations
- Advanced Aerospace Structures and Vibration

Second year ‘hands-on’ project based on the Cubesat standard

**Entry requirements**

The Masters of Engineering Science in Satellite Systems Engineering at UNSW seeks students with Bachelor honours degrees from a range of relevant engineering disciplines such as Electrical, Mechanical, or Computer Engineering or similar disciplines such as Surveying, Photovoltaic Engineering, etc. The program includes 24 units of credit of Professional Development classes that allow candidates to fill gaps in assumed knowledge and develop appropriate skills.

**To find out more**

For more information about the Masters of Engineering Science (Extension) in Satellite Systems Engineering at UNSW, please email Dr Elias Aboutanios (elias@ieee.org) or call him on (02) 9385 5010.