

UPM's aerospace engineering students better understand the various disciplines under aeronautics and astronautics through hands-on projects and research.



Leading 'rocket science' in Malaysia

UNKNOWN to many in Malaysia, aerospace engineering has been an important field of research at Universiti Putra Malaysia (UPM) for nearly 20 years.

Since its inception in 1996, UPM has been the lead university of the Aerospace Malaysia Innovation Centre (AMIC).

UPM's Department of Aerospace Engineering, founded to support the development of national aerospace interests proclaimed in the 1997 *National Aerospace Blueprint*, worked with other lead members to form AMIC.

These members are the Airbus Group (formerly EADS), Majlis Amanah Rakyat, Malaysian Industry-Government Group for High Technology (MIGHT), Rolls-Royce and Composite Technology Research Malaysia.

"Aerospace engineering is an advanced field of engineering primarily concerned with the design, analysis and operation of aircraft, spacecraft and their associated technologies," explains Dr Ahmad Salahuddin Mohd Harituddin, a senior lecturer at the Department of Aerospace Engineering.

He adds that the term aerospace, which first appeared in print in 1958, is used to mean both the sciences of navigating through the atmosphere (aeronautics) and in space (astronautics).

The field of aeronautics includes disciplines such as aerodynamics, aircraft propulsion and structures. Astronautics pertains to subjects such as orbital mechanics, aerospace materials and satellite technologies.

According to Dr Salahuddin, "Aerospace is a relatively new engineering field. However, the field has advanced by leaps and bounds, with spin-off technologies benefiting human beings in more areas than just in the sphere of aviation and space.

"We are a relatively young academic department in a university that is steeped in its tradition in agriculture. Nevertheless, aerospace engineering has grown at UPM to become an integral part of the Faculty of Engineering."

The 2016 QS World University Rankings ranked UPM's aerospace programme among the top 150 in the world.

With more than 20 academic staff with

PhD qualifications (five of them are professional engineers with Ir designations), the aerospace programme has graduated hundreds of aerospace engineers at the postgraduate level.

The department's specialised research areas include aircraft structures, technologies in unmanned aerial vehicle (UAV), and future space technologies such as tethered spacecraft and formation flight.

With national research and development grant support totalling RM1.5mil as well as international grants amounting to RM5mil, the department has produced patents that have also contributed to areas outside aerospace such as biomedical and sports engineering.

"Among our most notable achievements is the creation of a student-accessible 'makerspace' – a collaborative workspace for students to engage in hands-on engineering projects.

"This has produced international award-winning projects such as a high-altitude balloon project during the Global Space Balloon Challenge 2016 and the 2013 Airbus Fly Your Ideas challenge in Toulouse, France," says department head Dr Azmin Shakrine.

The department offers four-year PhD and two-year master's programmes with research in various fields of aerospace engineering.

It also offers the Master of Innovation and Engineering Design, which gives students the opportunity to learn a variety of subjects related to innovation and design techniques, business practices and patenting.

According to senior lecturer Dr Mohd Roshdi Hassan, UPM's PhD programme, which is jointly awarded by the University of Sheffield, allows students to benefit from the research strengths of both universities as well as Sheffield's strong alliance with Rolls-Royce, Boeing and British Aerospace. Students under this joint programme get to spend up to 18 months at each university.

If you aspire to be a "rocket scientist", UPM is the place to be.

■ For more information about the aerospace engineering programmes at UPM, visit www.eng.upm.edu.my.