Physics

BSc (Physics)

This course provides the greatest flexibility of the physics type programs available at Curtin. Students can structure a significant part of their course to suit their needs, either for general or career-related interest, while learning the essential concepts and skills in physics through core units. A major research project is taken by all students in the senior years of their degree program and is often directly related to the career path that they hope to follow.

Physics & Mathematical Sciences

BSc (Physics & Mathematical Sciences)

The physics core component of this course is identical to the Physics major option. The remainder of this course is a structured program in mathematics with an emphasis on applied mathematics. This course would suit students interested in working in industries, such as mining, or for government agencies, such as the Bureau of Meteorology, where knowledge of both physical and mathematical principles are required.

Physics & Scientific Computing

BSc (Physics & Scientific Computing)

This course recognises the increasingly significant role of high performance computational (HPC) techniques in solving complex problems in physics and in many industrial contexts. The intention is to meet the needs of the most capable students who wish to pursue careers at the highest levels in industry or government organisations or who intend to undertake higher degrees by research. The course has a number of optional pathways including computational methods and techniques, physical sensor hardware and scientific data collection and processing, and scientific visualisation. There is a strong emphasis on applied techniques in the areas of Atomic and Molecular Physics, Radio Astronomy, Solid State Physics, Satellite and Remote Sensing and Security System technologies.

In second year students extend their knowledge of scientific computing and physics as well as undertaking an advanced calculus unit and a physical measurements unit. There are a variety of optional units to choose from such as software technology, scientific data acquisition and introduction to operating systems that will provide students with a wide knowledge in computing.

Third year students are introduced to quantum and statistical physics, particles and waves, and solid state physics. They also extend their knowledge of physical measurements. Mathematical methods are also introduced. Once again students can choose from the optional units list to increase their computer knowledge. A research project needs to be completed.

GRADUATE PROFILE

DANIEL VEEN BSc(Physics)(Hons)
Current PhD Student, Centre for Marine Science and Technology, Curtin

When Daniel left high school he planned on becoming a pilot. However, an inspiring high school teacher encouraged him to pursue a physics degree instead and he enrolled at Curtin.

"The bachelor degree was better than I expected. I got involved in some really interesting projects related to marine science. For example, in one project I worked on modelling water flow around the fin system of an Autonomous Underwater Vehicle (AUV) using the supercomputer at the Australian Partnership for Advanced Computing Facility in Canberra. I also got involved in science education through the Siemens Science Experience and worked with organisations like SciTech on the Regional Awareness Festival where we took a science road show to secondary students in regional Western Australia."

The support and social environment at Curtin helped make the course enjoyable even during exam time.

"The physics department is small which meant that we had lots of interaction with our lecturers. This included playing on the soccer team with senior physics researchers!"

Daniel is currently undertaking a PhD in Physics at Curtin. His research involves modelling the way large marine vessels such as high speed catamarans hit waves.

"I am using a new computational method to model different hull shapes that will minimise the 'slamming' effect of waves against high speed craft such as catamarans. The research will help to influence hull designs so that ocean travel is smoother and structural fatigue is reduced. This means safer and more comfortable travel for passengers."

The research has application in other areas too and in the long term Daniel hopes to be able to use his research in hydrodynamics to work in F1 motor racing or the Aerospace industry.

Professional Recognition*

- The Australian Institute of Physics
- The Australian Mathematical Society*
- Engineers Australia*

*Graduates in appropriate double major or double degree program