

## What Is Medical Physics?

This branch of applied physics relates to the application of physical concepts and thinking to the prevention, diagnosis and treatment of human disease. In fact, Medical Physics has been interwoven with the development of medicine. In particular, the application of ionising radiation in medicine is the main area which involves medical physicists. Such application can be traced back to the discovery of x-rays by Roentgen in 1895, Becquerel's discovery of radioactivity in 1898 and the discovery of radium by the Curies in the same year. It truly highlights the beneficial applications of physics in the real world. There are four main areas of specialisation in this field: Radiation Oncology, Nuclear Medicine, Radiology and Radiation Safety. This is an ever changing and challenging field in which to work.



## More Information

ACPSEM [www.acpsem.org.au](http://www.acpsem.org.au)

NSW Health [www.health.nsw.gov.au](http://www.health.nsw.gov.au)

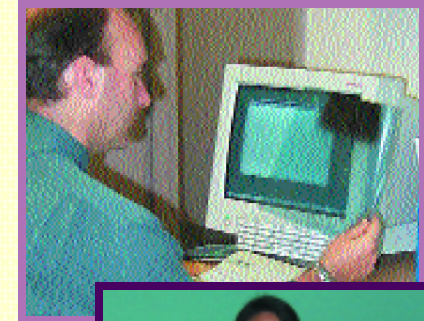
A number of universities run medical physics post graduate courses:

- n University of Sydney
- n University of Wollongong
- n University of Newcastle
- n University of NSW

Or contact your area hospital – chances are you'll find a medical physicist quite willing to talk to you.



## A Career in Medical Physics



**NSW HEALTH**  
Working as a Team

## What Do Medical Physicists Do?

In Radiation Oncology they work with specialist doctors, therapists, nurses and engineers in the delivery of radiotherapy for the treatment of cancer. This is a challenging role where many skills are required. They are responsible for high energy linear accelerators, sophisticated computerized dose planning systems and high activity radiation sources. They are involved in clinical consultancy, treatment delivery and verification, quality assurance and latest technology evaluation.

In Nuclear Medicine they are responsible for the safe handling, calibration and use of radionuclides for the diagnosis of patients. They are also involved in Positron Emission Tomography (PET) and are the resource for other professionals for advice and application of complicated medical equipment.



In Radiology medical physicists are the resident experts in the application of radiation for diagnosis. They direct and advise on the use of x-ray apparatus, computerized tomography (CT) and magnetic resonance imaging (MRI). They underpin the quality and accuracy of these imaging units.

Radiation Safety applies across all specialties and is the responsibility of the medical physicist. It can be a separate role within itself or form part of wider duties of a medical physicist. Knowledge and application of international recommendations and practices is required combined with compliance to local, state and national laws and regulations. All other professionals rely on the medical physicist for radiation safety matters and policy.



Over all these specialties, Medical Physicists provide the scientific foundation. They conduct research, publish in international journals and attend international scientific conferences. They establish links with colleagues around the world and form lifelong friendships through a shared interest in their field. They are usually members of a professional college and other scientific groups. Often they are involved in teaching and hold conjoint appointments with universities. They find satisfaction in a fine and rewarding career.

## Is Medical Physics For You?

You'll need a science background with a major in physics. Some mathematics and biology will help. Logical thinking and problem solving are key abilities. You'll be in the real world of applied science interacting with other medical professional groups and members of the public.

Good communication skills are important and familiarity with computers will be needed. You'll work in a multidisciplinary environment and your input will be valued.

## The Pathway To Becoming A Medical Physicist

University Degree BSc (Physics Major), then...

Up to five years of training in a public hospital while enrolled in the Australasian College of Physical Scientists and Engineers in Medicine (ACPSEM) Training and Education Accreditation Program (TEAP). During this period you will also undertake an approved Masters degree. It is also possible to commence a PhD as part of this program if you desire to follow that path.

After successful completion of the TEAP program you will be accredited with the ACPSEM and be recognised as a qualified medical physics specialist. You will be eligible for employment in your chosen specialty field. There is a national shortage of Medical Physicists and trained specialists are eagerly sought.