Medical Sciences

Faculties of Science and Medicine
Our Disciplines

Anatomy

Anatomy is the study of the structure of the human body. The discipline occupies a central place in medical science. In all courses in Anatomy, strong emphasis is placed on the functional significance of structure in health and in disease. Anatomy involves:

- Gross Anatomy – learning about bones, muscles and organs; how to interpret X-rays, CT and MRI scans and ultrasound images;
- Histology – the microscopic structure of the body; studying the structure of cells and the organisation of those cells into tissues, using the virtual microscope and a wide range of imaging techniques;
- Embryology – how the body develops from conception to birth;
- Neuroanatomy – the structural elements of the brain and how these help to monitor and control bodily functions.

Medical Sciences

Medical Sciences at UNSW

The School of Medical Sciences is part of the UNSW Medicine, and one of the largest Schools at the University of New South Wales. We employ over 200 academic, research and professional staff, and teach students from first year undergraduates through to Honours level and on to post-graduate degrees such as PhD’s.

Medical science underpins our current understanding of the way the human body is structured, how it develops, and how it works in both health and disease. Knowledge of medical science is thus essential for those responsible for maintaining the health of people in our community, and for preventing or treating disease. It is also central to a diverse range of professional activities, from biomedical research to the development of new pharmaceuticals.

Within the School of Medical Sciences, we provide a wide range of undergraduate courses in which students can engage. Depending on your particular interests, you could study subjects such as: functional anatomy, research methods in microscopy, molecular and cellular neuroscience, muscle and motor control, cardiovascular physiology and pathophysiology, rational drug design, clinical and experimental pharmacology, or the molecular basis for disease.

Undergraduate courses offered by the School of Medical Sciences may be taken as part of degrees offered by the Faculty of Science, including the Bachelor of Science, Medical Science and Advanced Science, as well as through degrees offered by UNSW Medicine, including Medicine and Exercise Physiology.

Postgraduate degrees are offered both as coursework (Masters of Drug Development) and as a research-based higher degree (Masters, PhD). In these degrees, students are able to tailor their areas of study so that they can develop their professional careers in areas of particular interest.
Pathology

Pathology looks at the many different diseases that affect humans, from the common cold to cancers and heart attacks.

It explores what happens to our bodies when we are ill (the disease process); the symptoms that result from disease, why diseases arise and how they can be prevented. Pathology is, therefore, the scientific study of disease at the level of gene, molecule, cell, tissue and organ. Modern research techniques have contributed much to our understanding of disease mechanisms.

In the second year of the degree, students look at the differences between normal and abnormal cells, tissues and organs as well as the processes of inflammation, infection, wound healing and cancer.

In the third year, the molecular basis of disorders such as auto-immune disease, cancer and musculoskeletal disease are examined in greater depth, together with opportunities to learn about cutting edge research methods in Pathology and to develop research skills. Specific topics include HIV/AIDS, heart disease, asthma, various types of cancer and neurodegenerative disease.

Physiology

Physiology is the study of how body systems function normally in humans. Physiologists examine life processes and their consequences, from the molecular level through to the whole organism. The discipline is a major foundation in medicine and biomedical science, and discoveries in physiology have a broad impact on aspects of everyday life including health, industry, education, agriculture and the environment.

Study in Physiology commences in Year 2, with subjects which provide students with a basic understanding of the fundamental processes and mechanisms which serve to control the various functions of the human body.

In Year 3, you can specialise in four different areas – neurophysiology; membrane and cellular physiology; cardiorespiratory physiology; endocrine, reproductive and developmental physiology.

Pharmacology

Pharmacology is the study of drugs and their actions on living tissue.

Pharmacologists examine how drugs affect body function and how they help to maintain health and counteract illness and disease. Drug design and development is an exciting area in research and industry. The refinement of drugs and the development of new biologically active chemicals have transformed the maintenance of health and the treatment of disease.

Pharmacology is available from Year 2 with an introductory subject which covers the principles of pharmacology and toxicology and the mechanisms by which drugs act. In Year 3 you can choose from a range of more specialised courses including Molecular Pharmacology, Clinical and Experimental Pharmacology, Neuropharmacology and Rational Drug Design. These provide cutting edge information about how drugs are currently used to improve health, and the challenge of improving drug treatments.
How can I study in the School of Medical Sciences

As a student within the Faculty of Science, there are several avenues for you to study within the School. You can choose to undertake a Bachelor of Medical Science degree, or you may elect to do some of our courses as your Major while studying for a Bachelor of Science or Advanced Science degree.

How can I get my Bachelor Degree within the School of Medical Sciences

<table>
<thead>
<tr>
<th>Degree</th>
<th>UNSW Code</th>
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<tbody>
<tr>
<td>Bachelor of Medical Science</td>
<td>3991</td>
</tr>
<tr>
<td>Bachelor of Science (Advanced Science)</td>
<td>3972</td>
</tr>
<tr>
<td>Bachelor of Science</td>
<td>3970</td>
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What subjects should I study in the HSC

Entry is based on academic merit. It is assumed that students entering the BMedSc degree have completed HSC Mathematics and 2 units of Chemistry (or equivalent). Students without this background will be considered for entry but are advised to undertake the necessary bridging course.
**Postgraduate degrees in Medical Science**

There are two ways in which students are able to undertake higher degree studies in the School of Medical Sciences:

**Research or Coursework.**

**By Research**

Doctor of Philosophy – 3 years full-time / 6 years part-time

Master of Science – 2 years full-time / 4 years part-time

**By Coursework**

Master of Medical Science in Drug Development

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**Career Opportunities**

Career opportunities for our graduates are many, exciting and rewarding. Some careers are directly accessible with a Science, Medicine or Medical Science degree, whereas others may require additional study. Examples include:

- Health promotion and education
- Drug development
- Biomedical research
- Graduate medical programs, chiropractic
- Hospital based research
- Clinical laboratory work
- Medical testing and diagnosis
- Biotechnical product marketing
- Scientific journalism
- Health administration
- Pharmaceutical industry
- Teaching – tertiary/secondary (Dip Ed)
- Biomedical Engineering (MBiomedEng)
A Student’s perspective

Peter Zarzour,
Bachelor of Medical Science
(PhD candidate)

Choosing to undertake a Bachelor of Medical Science at UNSW was one of the best decisions I have made. I enjoyed my science subjects throughout high school and I’ve always been interested in the science of how the body works, both normally and in disease.

I found the staff to be engaging and friendly, always willing to help me understand the subject matter. Having the opportunities to take part in medical research throughout my undergraduate degree has been a highlight. I highly recommend the experience offered by studying here.