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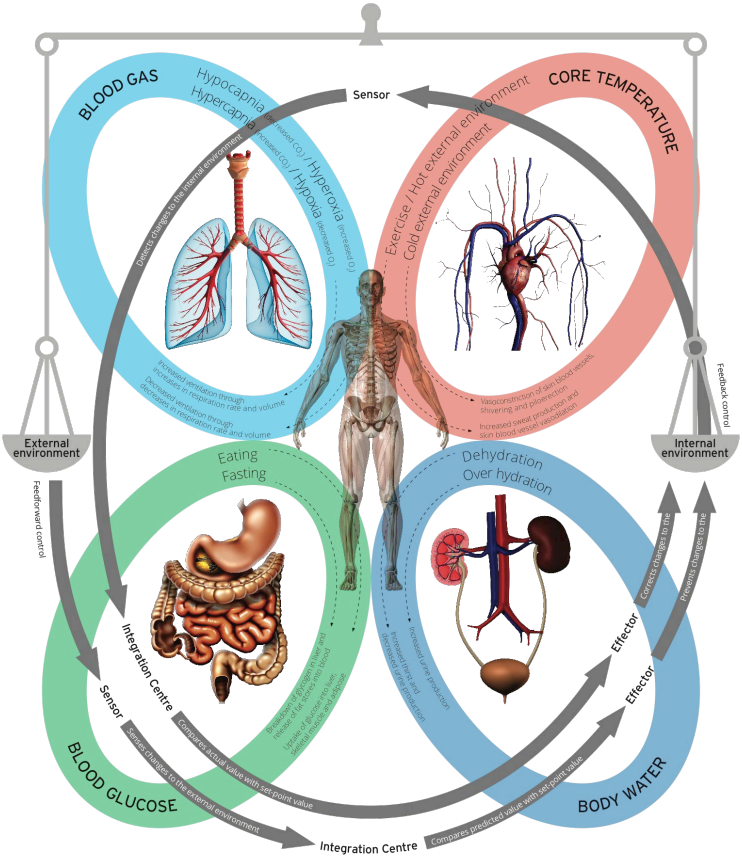
PHYSIOLOGY

HOMEOSTASIS: LIFE IN BALANCE



Department of Physiology
Otago School of Medical Sciences

What is Physiology?

Physiology is the study of how living things work. It examines the activities and functions of living organisms from the level of the whole organism down to parts of the living cell. Human physiology forms the basis of understanding the processes that support life, and is crucial to understanding the abnormalities in life processes that lead to disease. To understand asthma, we need to understand how lungs work; to understand diabetes, we need knowledge of blood sugar regulation; to understand heart disease the intricacies of heart muscle function have to be explored; and so on, through all the organ systems of the body. In addition to being a discipline in itself, physiology has a central role in connecting other biomedical sciences, so physiologists often work with specialists from other disciplines such as anatomy, biochemistry, genetics, microbiology and pharmacology, to learn more about normal life processes, about disease processes, and to develop treatments for diseases.

Welcome to Physiology at Otago

Your degree in Physiology involves a course of study that takes you on a voyage through the human body, learning about all the processes that together enable your existence.

You are not alone on this journey; every step of the way there is a lab demonstrator or teaching fellow, lecturer and course convener to facilitate your learning and handle questions you may have. Laboratories are organised into small groups, each with a personal tutor, and so no matter how large the class, we can offer a high level of personal attention.

Below is an overview of what each year of your BSc in Physiology degree will entail.

100-level: Physiology begins with the 100-level Human Body Systems papers (HUBS 191 & 192). These papers will give you an introduction to the structure and function of multiple body systems and provide you with a strong foundation to carry on with a degree in Physiology. These papers are jointly taught with Anatomy and HUBS 191 also contains a module of immunology. Four other supporting 100-level papers provide tools and concepts that are essential to get the most out of advanced physiology study. At least two of these additional papers are required for progression to 200-level physiology.

200-level: At this level you will begin to specialise in physiology topics taught within the Department of Physiology (papers beginning with PHSL codes). The first semester paper *PHSL 231 Neurophysiology* explores the mechanisms by which the nervous system integrates sensory information from the environment and co-ordinates the body's responses. In the second semester there are two parallel papers *PHSL 232 Cardiovascular & Respiratory Physiology and PHSL 233 Cellular, Gastrointestinal & Renal Physiology,* which explore physiology in health and disease. Your 200-level learning is facilitated through a mixture of lectures, practicals, and computer-assisted and self-directed study. Regular tests and assessments help you monitor your progress, spread the assessment load across the

year, and ease the burden of end-of-semester exam preparation. At the end of 200-level year we award the **Sir John Eccles Prize** to the BSc or BBiomedSc student who gains the highest grades in PHSL 231, 232 and 233. Eccles won the Nobel Prize for Medicine in 1963 for his work on intracellular recordings from nerve cells that was begun at Otago while he was a staff member of the Department.

300-level: The 300-level BSc course consists of five papers (PHSL 341-5) from which you choose four in order to major in Physiology. Taking advantage of the broad knowledge platform provided by 200-level papers, these papers explore specific areas in greater depth, approaching the boundaries of current knowledge. The 300-level laboratories will take you through the scientific method by providing you with the opportunity to address a research question with your own experiments and analysis. The BSc that you will obtain at the end of 300-level will thus have provided solid grounding in basic and advanced physiology, in science, and in life-long learning strategies; qualities for which an Otago Physiology BSc is well recognised. At the end of the 300-level year we award the **James Robinson Prize** to the BSc student who gains the highest grades in four of the five PHSL 341-5 papers. Professor Robinson carried out internationally recognised research on the regulation of the distribution of water and mineral salts in health and disease as a member of the Department of Physiology from 1957-1979.

Honours and Other Postgraduate Options: It is at 300-level that those with good grades in 200-level should prepare for entry into the one-year postgraduate Honours programme in Physiology. At 300-level ensure you are enrolled in five 300-level papers (four of these must be from the PHSL300 code, and the other a science-related 300-level paper), and aim to maintain a B+ average or better in your 300-level physiology papers.

An Honours degree is, well, an honour, and carries extra prestige when it comes to competing on the job market. It is also an entry route to higher studies, such as PhD. The programme is particularly suited to those who

like to go beyond the basics, get to the heart of things, and to those curious about extending the boundaries of knowledge through research.

Some of us are "late bloomers" academically, or become interested in research options late in their 300-level year. No worries, there are routes into higher study for us too! You can enter post-graduate programmes such as the Post Graduate Diploma (PGDipSci) and MSc that can in turn lead to PhD study if desired.

See the Postgraduate Booklet for more details!

BBiomedSc: The Bachelor of Biomedical Sciences degree is designed to provide a more flexible biomedical science training programme than does the Bachelor of Science. Students can still base their degree around Physiological topics but have a greater freedom of choice to include papers from other disciplines. The Physiology-based major subject area within the BBiomedSc is called Functional Human Biology and is described in the booklet “BBiomedSc in Functional Human Biology”.

Whatever level of Physiology study suits you best, we hope you enjoy your experiences in exploring what is after all the most fascinating subject of study possible: yourself. The following pages provide details of the above-mentioned prerequisites and courses. Please note that while every effort is made to ensure accuracy, some details of paper descriptions, content, assessment procedures and structure may change.

100-level

Training in Physiology starts in the first year with Human Body Systems (HUBS 191 and 192) papers. Supporting subjects, Biochemistry (BIOC 192), Cell & Molecular Biology (CELS 191), Chemistry (CHEM 191) and Physics (PHSI 191), are all strongly recommended. Two of these must be passed before you can enter 200-level papers in Physiology. To do Honours in Physiology at least 54 points (three papers) from these supporting subjects are recommended.

HUBS 191: Human Body Systems I *(first semester) 18 pts*

An introduction to the structure and function of the musculoskeletal, nervous, endocrine and immune systems in the human body.

HUBS 192: Human Body Systems II *(second semester) 18 pts*

Prerequisite HUBS 191

An introduction to the structure and function of the human cardiovascular, respiratory, gastrointestinal, renal/urinary and reproductive systems including organ development.

CELS 191: Cell & Molecular Biology *(first semester) 18 pts*

An introduction to the biology of cells; fundamentals of molecular biology; organismal and molecular genetics; human genetic variation; diversity and biology of microorganisms; microbial virulence and disease processes.

CHEM 191: The Chemical Basis of Biology & Human Health *(first semester) 18 pts*

An introduction to the concepts of chemistry underlying important processes in biology and human health, including chemical bonding, energetics, kinetics, equilibria and solubility, properties of water and solutions, acids, bases, complexation and electron transfer, mechanisms of organic reactions and properties of amino acids and carbohydrates.

BIOC 192: Foundations of Biochemistry *(second semester) 18 pts*

Prerequisite CHEM 191

An introduction to the structure and function of proteins as essential elements of life processes; principles of enzymology; introductory bioenergetics; conservation of the energy of food for body processes; digestion and catabolism of fats, proteins and carbohydrates; terminal pathways of oxidation, anaerobic and aerobic metabolism, mitochondrial metabolism; energy storage and utilisation; the molecular basis of disease; illustrative topics in metabolism.

PHSI 191: Biological Physics *(first semester) 18 pts*

Foundations of physics for the health sciences including mechanics, properties of fluids and solids, thermodynamics, optics, electrostatics and DC circuits, and radiation and health.

200-level

For a BSc in Physiology the 200-level course comprises three papers (PHSL 231, 232 and 233). For entry into PHSL 231 you must have passed HUBS 191 and at least three of BIOC 192, CELS 191, CHEM 191, HUBS 192 and PHSI 191 (all are recommended). For entry into PHSL 232 or 233 a pass in PHSL 231 is recommended and HUBS 192 and two of BIOC 192, CELS 191, CHEM 191 and PHSI 191 must have been passed.

If you want to take 300-level papers in Physiology, note that PHSL 231 is the prerequisite for PHSL 341 and 342; PHSL 232 is the prerequisite for PHSL 344; PHSL 233 is the prerequisite for PHSL 343; and both PHSL 232 and 233 are the prerequisites for PHSL 345.

PHSL 231: Neurophysiology

(first semester) 18 pts

This paper explores the mechanisms by which the nervous system integrates sensory information from the environment and coordinates the body's responses at whole organism, cellular and molecular levels.

Timetable:	Lectures: Mon, Tues, 9 a.m. & fortnightly Thurs 9 a.m.
	Laboratories: Mon, Thurs or Fri, 2-5 p.m. (fortnightly)
	Tutorials: Optional, usually available during scheduled lab sessions.
Textbook:	Koeppen & Stanton, Berne & Levy Physiology, 6th edition Updated, Elsevier Mosby, 2010.
Outline of Paper:	Introduction (2 lectures, 1 lab); Cellular Neurophysiology (4 lectures, 1 lab); Cell Communication (2 lectures); Skeletal Muscle (4 lectures, 1 lab); Systems Neurophysiology (6 lectures, 1 lab); Special Senses (7 lectures, 2 labs); Neuroendocrinology (6 or 7 lectures).
Laboratories:	All labs involve experimental work designed to highlight and reinforce essential principles and develop basic technical skills. Labs include group discussions of the results obtained and links made to the lecture material; labs will also provide opportunity to clarify and revise lecture material.
Outline of Assessment Procedures:	Two evening 1-hour tests on material from lectures and labs (in weeks 7 & 13 of semester 1, each contributing 15% to the final grade). Final exam is of 3 hours duration, contributing 70% to final grade.
Terms Requirements:	Satisfactory attendance at both terms tests, and satisfactory attendance and active participation in all laboratory classes is required for the award of terms.

Note: Minor modifications to paper outlines and assessment procedures may occur from year to year.

PHSL 232: Cardiovascular & Respiratory Physiology

(second semester) 18 pts

This paper explores cardiovascular and respiratory function and integration. Examples are taken from health (e.g., exercise) and disease states (e.g., cardiovascular or lung disease, sleep apnea) to illustrate the principles of function and integration.

Timetable:	Lectures: Mon, Tues, 9 a.m. & fortnightly Wed 9 a.m.
	Laboratories: Mon, Thurs or Fri, 2-5 p.m. (fortnightly)
	Tutorials: Optional, usually available during scheduled lab sessions.
Textbook:	Koeppen & Stanton, Berne & Levy Physiology, 6th edition Updated, Elsevier Mosby, 2010. Supplementary text: Vander's Human Physiology, 12th edition, McGraw Hill, 2010; Lecture Notes on Human Physiology, 5th edition, Blackwell Scientific, 2007.
Outline of Paper:	Introduction (1 lecture); Cardiovascular System (11 lectures, 3 labs); Respiratory System (10 lectures, 2 labs); CVS & Respiratory Pathophysiology (5 lectures); Integration of the Cardio & Respiratory System (5 lectures, 1 lab).
Laboratories:	All labs involve experimental work designed to highlight and reinforce essential principles and develop basic technical skills. Labs include group discussions of the results obtained and links made to the lecture material; labs will also provide opportunity to clarify and revise lecture material.
Assessment & Terms requirements as for PHSL 231, with tests in weeks 7 & 12 of semester 2.	

Note: Minor modifications to paper outlines and assessment procedures may occur from year to year

PHSL 233: Cellular, Gastrointestinal and Renal Physiology

(second semester) 18 pts

In this paper the epithelial and integrative functions of the gastrointestinal and renal systems of the human body will be examined at the cellular and molecular levels. Examples of pathophysiological conditions will be highlighted.

Timetable:	Lectures: Thurs, Fri, 9 a.m. & fortnightly Wed 9 a.m.
	Laboratories: Mon, Thurs or Fri, 2-5 p.m. (fortnightly)
	Tutorials: Optional, usually available during scheduled lab sessions.
Textbook:	Koeppen & Stanton, Berne & Levy Physiology, 6th edition Updated, Elsevier Mosby, 2010. Supplementary text: Boron & Boulpaep, Medical Physiology, 2nd edition, Elsevier Saunders, 2009.
Outline of Paper:	Introduction (1 lecture, 1 lab); Cell Physiology (5 lectures); Epithelia (2 lectures, 2 labs); Cell Trafficking (5 lectures, 1 lab); Cell Signalling (2 lectures); Renal Physiology (8 lectures, 1 lab); Gastrointestinal Physiology (9 lectures, 1 lab).
Laboratories:	All labs involve experimental work designed to highlight and reinforce essential principles and develop basic technical skills. Labs include group discussions of the results obtained and links made to the lecture material; labs will also provide opportunity to clarify and revise lecture material.
Assessment & Terms requirements as for PHSL 231, with tests in weeks 6 & 11 of semester 2.	

Note: Minor modifications to paper outlines and assessment procedures may occur from year to year

300-level

PHSL 231 is the prerequisite for PHSL 341 and 342; PHSL 232 is the prerequisite for PHSL 344; PHSL 233 is the prerequisite for PHSL 343; and both PHSL 232 and 233 are the prerequisites for PHSL 345.

To major in Physiology: 72 points of 300-level Physiology (four of PHSL 341, 342, 343, 344, 345) are required.

To complete your BSc you must have passed:

- Papers worth 360 points (usually 20 papers) and,
- 72 points from four of PHSL341-5 and,
- 180 points (usually 10 papers) above 100-level.

For enrolling in a BSc Honours degree, after completing your BSc, you need to take five 300-level papers in your third year, and maintain a B+ average in your four PHSL 300-level papers. You do not need to take all five 300-level PHSL papers, the fifth paper can be in a related science subject.

PHSL 341: Molecular Cellular & Integrative Neurophysiology I

(first semester) 18 pts

Current research in neurophysiology at the molecular, cellular and systems levels. Themes may vary from year to year and are distinct from those in PHSL342. See http://phsl.otago.ac.nz/undergraduates.php for current topics.

Timetable:	Lectures: Mon, Tues, 9 a.m. Laboratories: Tues & Wed, 2-5.50 p.m. (alternate weeks with PHSL 342)
Textbook:	There is no textbook for the course. Individual lecturers will prescribe reading material from a variety of sources.
Outline of Paper:	25 lectures and 12 laboratory sessions covering the cellular and molecular underpinnings of neuronal development, signalling, and communication.
Assessment:	The final grade is determined by the student's performance in internal assessment exercises (40%) and a final written examination (60%). To pass the paper as a whole, a mark of at least 45% must be attained in the final examination. (i) Internal assessment (40% of the overall final grade): three tasks, 1) written research proposal worth 5% of the final grade, 2) written research report (25%), 3) oral or poster research presentation (10%). (ii) Final examination: 3 hours to write 3 essays contributing a total of 60% of the final grade on topics covering the entire course, with some choice.
Terms Requirements:	Full attendance and participation in all laboratory sessions. Satisfactory completion of all laboratory work and a minimum total of at least 45% on internal assessment tasks.

Note: Minor modifications to paper outlines and assessment procedures may occur from year to year.

PHSL 342: Molecular Cellular & Integrative Neurophysiology II

(first semester) 18 pts

Current research in neurophysiology at the molecular, cellular and systems levels. Themes may vary from year to year and are distinct from those in PHSL341. See http://phsl.otago.ac.nz/undergraduates.php for current topics.

Timetable:	Lectures: Wed, Thurs, 9 a.m. Laboratories: Tues & Wed, 2-5.50 p.m. (alternate weeks with PHSL 341)
Textbook:	There is no textbook for the course. Individual lecturers will prescribe reading material from a variety of sources.
Outline of Paper:	26 lectures and 12 laboratory sessions explore the physiology of the mammalian central nervous system, integrating across levels from the molecular to the behavioural.
Assessment:	The final grade is determined by the student's performance in internal assessment exercises (40%) and a final written examination (60%). To pass the paper as a whole, a mark of at least 45% must be attained in the final examination. (i) Internal assessment (40% of the overall final grade): three tasks, 1) written research proposal worth 5% of the final grade, 2) written research report (25%) 3) oral or poster research presentation (10%). (ii) Final examination: 3 hours to write 3 essays contributing a total of 60% of the final grade on topics covering the entire course, with some choice.
Terms Requirements:	Full attendance and participation in all laboratory sessions. Satisfactory completion of all laboratory work and a minimum total of at least 45% on internal assessment tasks.

Note: Minor modifications to paper outlines and assessment procedures may occur from year to year

PHSL 345: Physiological Aspects of Health and Disease

(first semester) 18 pts

The application of knowledge about human molecular, cellular and systems physiology in understanding the physiology and pathophysiology of the human body.

Timetable:	Lectures: Mon, Thurs, 10 a.m. Laboratories: Mon **or** Fri, 2-5.50 p.m.
Textbook:	Lists of chapters from various textbooks, selected monographs and articles will be provided.
Outline of Paper:	This paper will be taught in 4 modules of 6 lectures and 3 laboratory/problem-based sessions per module. In 2017 the modules will be (1) Potassium Channelopathies (2) Heart Failure, (3) Atherosclerosis and (4) Epithelial ion channels in the lung.
Assessment:	The final grade is determined by the student's performance in internal assessment exercises and a final examination. To pass the paper as a whole, a mark of at least 45% must be attained in the final examination. (i) Internal assessment: Each of the four modules requires a mix of individual lab reports, group poster presentations and problem-based assignments (each assessment being worth 10-15% to a total of 40%). (ii) Final examination: This contributes 60% of the final mark, is 3 hours in duration and requires essay-style answers based on lecture, laboratory and problem-based material.
Terms Requirements:	Full attendance at all laboratory sessions and satisfactory completion of all laboratory work, presentations and reports.

Note: Minor modifications to paper outlines and assessment procedures may occur from year to year.

PHSL 343: Cellular & Epithelial Physiology

(second semester) 18 pts

This paper focuses on the cellular and molecular basis of the mechanisms and regulation of epithelial transport and the effect of representative diseases on these processes.

Timetable:	Lectures: Wed, Thurs, 9 a.m. Laboratories: Tues & Wed, 2-5.50 p.m. (alternate weeks with PHSL 344)
Textbook:	There is no textbook for the course. Individual lecturers will prescribe reading material from a variety of sources.
Outline of Paper:	26 lectures and 12 laboratory sessions covering the following: • Recent advances in our understanding of the cellular and molecular basis of absorption and secretion of fluid and electrolytes by epithelia; • Protein trafficking in epithelial cells; • Cell biology and physiology of diseases such as cystic fibrosis, Liddle's Syndrome, Nephrogenic Diabetes Insipidus and gout. The laboratories provide time for an introduction to the research activity of the staff and to utilise a range of experimental and theoretical exercises to support the lecture course.
Assessment:	The final grade is determined by the student's performance in internal assessment exercises and a final examination. To pass the paper as a whole, a mark of at least 45% must be attained in the final examination. (i) Internal assessment: Laboratory work contributes 40% of the final mark and includes an individual oral presentation (5%), and completion of four short in-lab tests (5%), and a research proposal (15%) based upon experiments carried out in the four experimental laboratory sessions. (ii) Final examination: This contributes 60% of the final mark, is 3 hours in duration and requires essay-style answers based on both lecture and laboratory material.
Terms Requirements:	Full attendance at all laboratory sessions and satisfactory completion of all laboratory work, oral presentations and tests.

Note: Minor modifications to paper outlines and assessment procedures may occur from year to year.

PHSL 344: Cardiovascular Physiology

(second semester) 18 pts

This paper focuses on the cardiovascular system during health and disease at molecular, cellular and system levels. Themes are based on research areas of teaching staff. See http://phsl.otago.ac.nz/undergraduates.php for current topics.

Timetable:	Lectures: Mon, Tues, 9 a.m. Laboratories: Tues & Wed, 2-5.50 p.m. (alternative weeks with PHSL 343)
Textbook:	There is no textbook for the course. Individual lecturers will prescribe reading material from a variety of sources.
Outline of Paper:	26 lectures, 10 laboratory and a seminar session explore the physiological, cellular and molecular regulation of cardiovascular function, with specific focus on (i) autonomic control and diabetes; (ii) signalling in the cardiovascular system; (iii) reperfusion injury and role of microRNAs in the cardiovascular system and (iv) vascular control and dysfunction in skeletal muscle.
Assessment:	The final grade is determined by the student's performance in internal assessment exercises and a final examination. To pass the paper as a whole, a mark of at least 45% must be attained in the final examination. (i) Internal assessment (40%): Laboratory work will be evaluated via different types of assessments, e.g. full report, abstract, worksheet, end-of-lab test, or presentations. (ii) Final examination (60%): This contributes 60% of the final mark, is 3 hours in duration and requires 4 essay-style answers based on lecture, laboratory and problem-based material.
Terms Requirements:	Full attendance at all laboratory and seminar sessions and satisfactory completion of all laboratory work, in-lab worksheets, oral presentations and reports.

Note: Minor modifications to paper outlines and assessment procedures may occur from year to year.

Postgraduate Opportunities

After graduation with a BSc in Physiology, there are exciting opportunities for advanced studies, including the one-year postgraduate Honours, one-year PGDipSci, two-year MSc and, after BSc (Hons) or MSc, the three-year PhD.

The prerequisites to keep in mind during your undergraduate planning are below. For more information see the Postgraduate Booklet.

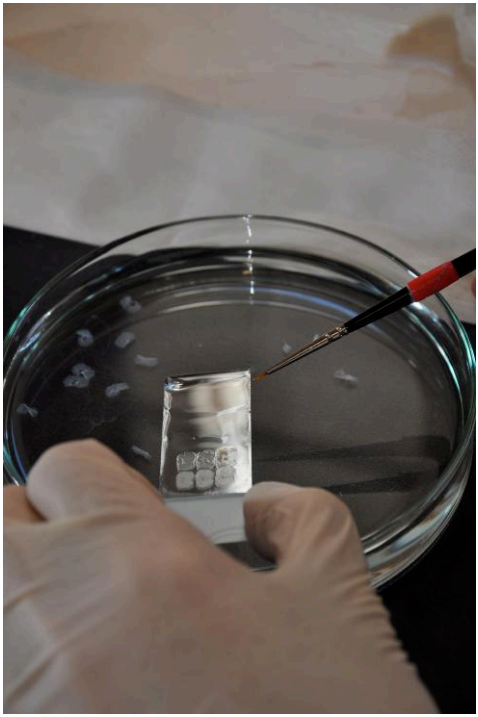
Postgraduate BSc Hons: If you have a BSc in Physiology in which you successfully complete five papers at 300-level (four in PHSL 300 and the fifth an approved 300-level paper) achieving at least a B+ average in the four PHSL 300-level papers, you have gained the entry requirements for the one-year postgraduate BSc Honours. Alongside these five 300-level papers, it is strongly recommended that you take a further two papers at 200-level or above.

Postgraduate Diploma in Science (PGDipSci): If you have a BSc in Physiology with at least a B average (B+ average strongly recommended) in four PHSL 300-level papers, then a PGDipSci (or MSc) is the route for you.

First year MSc: If you have a BSc in Physiology with at least a B average (B+ average strongly recommended) in four PHSL 300-level papers, then a MSc is a possibility. However we usually advise the PGDipSci followed by a one-year Masters thesis.

Second year MSc (Masters thesis year): Progression from first year MSc or alternatively entry from PGDipSci or BSc (Hons) requires a B+ average in 400-level physiology.

PhD: With a first class BSc Honours degree, you may enrol for a PhD. This is a full-time research degree lasting at least three years, involving full-time research into a chosen topic. By the time your thesis is completed, you will be an expert in this field and will have contributed significantly to our understanding of this topic. If you have a BSc Honours (2nd class B+ average) degree you would need to complete a one-year Masters thesis with distinction before enrolling for a PhD.



What sort of jobs do Physiology graduates get?

A Physiology degree is not, in itself, a vocational training course. That is, we don't train students solely to meet the requirements of any one specific health profession, such as Dentistry or Pharmacy. Instead, we offer all our students an understanding of how the body works and why it sometimes fails. As well as providing access to today's knowledge we also provide detailed guidance and training opportunities in modern research, including experiment design, lab techniques, scientific writing, critical thinking, and data analysis and presentation. Our graduates therefore emerge not only with a good understanding of human physiology, but also the ability to recognise and fill gaps in their knowledge, an awareness of how much more there is to know, and marketable skills in today's methods for finding, evaluating, using, and presenting scientific data. It is this knowledge, and these skills and attitudes that leave our graduates well placed to compete effectively in today's rapidly changing job market.

Many students are interested to know what sorts of specific jobs Physiology graduates are best suited for, so here is a partial list of the careers now being successfully pursued by some of our recent graduates:

- University/polytechnic academic
- Research scientist in industry, Government & universities
- Medicine
- Dentistry
- Pharmacy
- Physiotherapy
- Veterinary science
- Teacher
- Audiology
- Government (Pharmac)
- Healthcare equipment research
- Radiation therapy
- Healthcare equipment marketing
- Scientific instrument development/hardware
- Scientific instrument development/software
- Scientific instrument marketing
- Pharmaceutical industry management
- Ophthalmology
- Nursing
- Pharmaceutical industry marketing
- Information technology
- Exercise consultant
- Hospital laboratory manager
- Hospital laboratory technician

If you are interested in any of these careers, if you have an enquiring mind and are keen to understand how your body works, and if you wish to gain some valuable cross-discipline scientific training, a degree in Physiology could be just what you need.

Physiology Graduates

Emily Robinson

"After 10 years of competitive swimming I knew I wanted to go into sport science as well as moving away from Auckland. Otago seemed the best place to go.

I first enrolled in a Bachelor of Physical Education, however I kept leaving each physiology class wanting to know more. In my second year I decided to add a Bachelor of Science in Physiology to my BPhEd.

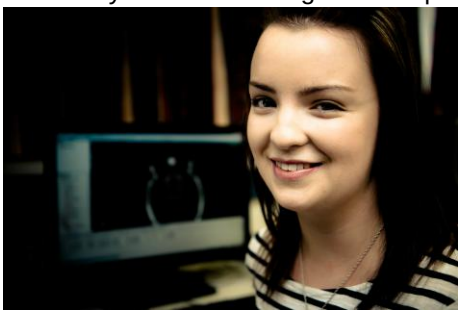
The Physiology Department was great to work with. I was still able to do my exchange to Scotland in my third year and cross-credited papers from there. In my fourth year, I did a summer studentship within the Physiology Department. Working more closely with the lecturers and other students inspired me to continue in this area.

After graduating I immediately got a job at Starship Hospital in the Respiratory and Sleep Physiology Lab. It is great to be applying the theory I learnt through my physiology degree to real clinical situations. The lab deals with a wide variety of patients throughout NZ and we work closely with doctors and other specialists. I even have had the opportunity to conduct research within the hospital, and the research experience I gained at Otago has been invaluable.

In this job we are considered half scientist and half personal trainer, as can often be heard down the corridor encouraging the kids to get their best results. Having my double degree in Physical Education and Physiology is the perfect mix for the job."

Ellen Martin

“I was always interested in sciences in school and felt a Bachelor of Science at Otago was a good move for me. When I learnt about physiology and anatomy during Health Science First Year, these really interested me so naturally a degree based on these was a great next step. After finishing my degree, I was emailed information about an information session about the Bachelor of Radiation Therapy degree programme offered by Otago University at the Wellington Campus. Immediately I was intrigued and interested as I enjoyed my science and really want to help people so it was the perfect mix.



I really enjoyed the mix of papers offered in the physiology degree, in particular the one with a focus on cellular and epithelial physiology. The support of the staff was always excellent and the course had a good mix of both theory and practical laboratories. The labs in third year were a highlight, especially having the opportunity to mount rat hearts onto a special apparatus to measure cardiovascular activity. It was also great to have a course where the labs weren’t all based on computer work but hands-on tasks as well.

Due to the competitive nature of the Bachelor of Radiation Therapy degree programme, it was great to have such a strong background in physiology as it helped me to gain a place in the programme and is continuously helping me throughout my study.

Overall a Bachelor of Science majoring in physiology gives you a great base to work with, whether it is in research, technology development or health professions.”