Studying Food and Nutrition at The University of Auckland

The University of Auckland has study pathways in food and nutrition for those seeking professional or research careers in food production and development, food and nutritional science, or the health care industries. There are also options for those already working in these areas to develop their skills, or to gain a new specialisation.

Courses can cover a range of topics including:

• the study of human physiology and biochemistry which relates to food, nutrition and health

• the impact of food and nutrition on metabolism, health and wellbeing

• what “food” is and how its nature and structure determines its attractiveness and value

• how to design and implement processes and equipment that ensure our food is safe to eat

• the role food science and technologies play in shaping our diet, and

• the impact these aspects have on community health and dietary behaviours.

Where can I study Food and Nutrition?

In recognition of the fundamental importance of food and nutrition to our lives, teaching and research in these areas draw on expertise from across the University. This brochure provides an overview of study options so that you know where to seek further information. Use it to help answer:

• What aspect do I want to study?

• Where can I find teaching or research in that area?

You must then refer to other publications such as the relevant handbook, prospectus, website or The University of Auckland Calendar for more information about degree regulations, eligibility and prerequisites.
### Programme abbreviations

<table>
<thead>
<tr>
<th>Program</th>
<th>Abbreviation</th>
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<tbody>
<tr>
<td>Bachelor of Health Sciences</td>
<td>BHSc</td>
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<tr>
<td>Bachelor of Science</td>
<td>BSc</td>
</tr>
<tr>
<td>Bachelor of Technology</td>
<td>BTech</td>
</tr>
<tr>
<td>Bachelor of Engineering</td>
<td>BE</td>
</tr>
<tr>
<td>Bachelor of Health Sciences with Honours</td>
<td>BHSc (Hons)</td>
</tr>
<tr>
<td>Postgraduate Diploma in Health Sciences</td>
<td>PGDipHSc</td>
</tr>
<tr>
<td>Postgraduate Certificate in Health Sciences</td>
<td>PGCertHSc</td>
</tr>
<tr>
<td>Postgraduate Diploma in Public Health</td>
<td>PGDipPH</td>
</tr>
<tr>
<td>Master of Health Sciences (with Honours)</td>
<td>MHSc (Hons)</td>
</tr>
<tr>
<td>Master of Public Health</td>
<td>MPH</td>
</tr>
<tr>
<td>Master of Science</td>
<td>MSc</td>
</tr>
<tr>
<td>Master of Engineering</td>
<td>ME</td>
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<tr>
<td>Doctor of Philosophy</td>
<td>PhD</td>
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</table>

### I’m interested in the area of . . .

<table>
<thead>
<tr>
<th>I can study in these courses</th>
<th>or programmes</th>
</tr>
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<tbody>
<tr>
<td>The courses listed below specifically cover food and nutrition topics. They build on prerequisite study that you must cover either in other courses earlier in your programme, or through previous qualifications.</td>
<td>Some courses in each area may not be available in all the programmes listed and some postgraduate programmes are research only, so they don’t include any of the courses.</td>
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### Nutrition

Nutrition is the process by which an organism absorbs nutrients from food and uses them for growth and the maintenance of good health. This affects our cells, and how our are genes are expressed. Nutrition plays a role in preventing diseases, and it is increasingly clear that inappropriate diet may be responsible for almost half of the global burden of non-communicable diseases (such as diabetes, cardiovascular disease, certain cancers, osteoporosis, arthritis, and inflammatory disease), as well as significantly enhancing susceptibility to communicable diseases.

Research can be undertaken in the Faculty of Science, Faculty of Medical and Health Sciences, the Human Nutrition Unit, and the Liggins Institute.

Accredited practising dietitians (with a postgraduate diploma) who wish to undertake a research project, can apply for the research masters pathway of the MPH. Successful completion may be followed by a PhD.

Students with a relevant background in science or health who develop an interest in nutrition late in their undergraduate studies can use a PGDipHSc, or PGDipSci in Biomedical Science, to take more 700 level nutrition-related courses. MEDSCI 709-712 (available in either programme), can be combined with BIOSCI, MEDSCI, POPHLHLTH or other courses. Those who wish to test their aptitude for research should choose MEDSCI 701 or MEDSCI 702 (in a PGDipHSc), or BIOSCI 761 (in a PGDipSci), with the possibility of going on to a year-long research project in the MHSc or MSc, respectively, and possibly a PhD.

As a focus:
- **Undergraduate**: BSc in Biomedical Science (nutrition pathway)
- BSc in Biological Science
- **Postgraduate**: BSc(Hons) in Biomedical Science
- PGDipSci in Biomedical Science
- MSc in Biomedical Science
- PGCertHSc
- PGDipHSc
- MHSc
- PhD

To complement other studies:
- **Undergraduate**: BSc in Food Science
- **Postgraduate**: BSc(Hons) in Food Science
- PGDipSci in Food Science
- PGCertPH
- PGDipPH
- MPH

### Exercise Nutrition

Nutrition can also be used to improve performance, not only of elite athletes, but in daily life. Exercise Nutrition is an integrative discipline that allows us to apply a fundamental understanding of physiology, metabolism and nutrition to enhance human performance and health.

Research can be undertaken in the Faculty of Science.

Undergraduate
- SPORTSCI 206 Exercise Nutrition

Science students who study SPORTSCI 206 find it gives them an exciting insight into the human application of their previous theoretical and laboratory studies in metabolism.

SPORTSCI 309 Practicum in Sport and Exercise Science

The Exercise Nutrition Internship programme (SPORTSCI 309) provides an opportunity for high-achieving students to apply their knowledge by working with elite athletes. Interns implement dietary interventions that improve performance outcomes for athletes, and undertake projects that introduce them to applied nutrition research.

As a focus:
- **Undergraduate**: BHSc
- **Postgraduate**: BHSc(Hons)
- PGCertPH
- PGDipPH
- MPH

To complement other studies:
- **Undergraduate**: BSc
- **Postgraduate**: PGCertHSc
- PGDipHSc
- MHSc

### Population Health

The aim of Population Health is to improve the health of all New Zealanders, by focusing on factors that affect the wellbeing of populations. With regard to health, this carries significant consideration of the environmental, social, economic and cultural determinants of eating behaviours and how they impact on the health of the population. Skills such as how to measure dietary intake, interpret nutritional research, and to design, implement and evaluate nutrition interventions are emphasised.

Research can be undertaken in the School of Population Health and the Clinical Trials Research Unit.

Undergraduate
- POPHLHLTH 206 Life Cycle Nutrition
- POPHLHLTH 305 Community Nutrition

Undergraduate and Postgraduate
- Nutrition is taught as an integrated subject in other POPHLHLTH courses within the context of the policy environment, the health system, ethical issues and cultural considerations.
- Accredited practising dietitians (with a postgraduate diploma) who wish to undertake a research project, can apply for the research masters pathway of the MPH. Successful completion may be followed by a PhD.
Food Science

Food Science is the study of the physical, chemical, and biological properties of foods, and their effects on sensory, nutritional and storage properties as well as safety. Therefore it interfaces with and draws upon many scientific disciplines. Recent advances in science and technology have opened new frontiers for the production of food and prolonging of shelf life with less impact on food sensory properties (e.g. flavour, aroma, and colour), providing convenience and health benefits for consumers.

Food Science programmes were developed with input from industry. In addition to theoretical study, undergraduate students gain experience in the scientific analysis of food through the laboratory components of the courses.

Research can be undertaken in the Faculty of Science.

Undergraduate
FOODSCI 201 Foundations of Food Science
FOODSCI 301 Food Quality Attributes
FOODSCI 302 Food Preservation
FOODSCI 303 Sensory Science
FOODSCI 304 Food Product Development

Postgraduate
FOODSCI 788 Dissertation in Food Science
FOODSCI 704 Food Biotechnology
FOODSCI 706 Food Safety
FOODSCI 707 Food Science
FOODSCI 708 Advanced Food Science
FOODSCI 709 Selected Topics in Food Science and Technology
FOODSCI 710 Industrial Internship

As a focus:
Undergraduate
BSc in Food Science
Postgraduate
BSc(Hons) in Food Science
PGDipSci in Food Science
MSc in Food Science
PhD

To complement other studies:
Undergraduate
BSc in Biomedical Science (nutrition pathway)
BSc in Biological Sciences
Postgraduate
PGDipSci in Wine Science

Food Process Engineering

Food Process Engineering is the study of food preservation technologies and how they affect food safety and food stability. Emerging food preservation ‘cold’ technologies such as High Pressure Processing (HPP) and Pulsed Electric Fields (PEF) can be used to extend food shelf life. Food Process Engineers take knowledge learned in the laboratory and up-scale it for industrial applications. They develop, control and optimise processes, and design food packaging systems to meet the individual requirements of each food. Distribution and storage of foods, including the use of refrigeration or freezing systems, are challenges addressed by Food Process Engineers.

Research can be undertaken in the Faculty of Engineering and also jointly with Science.

Undergraduate
CHEMMAT 463 Food Process Engineering
CHEMMAT 464 Engineering Biotechnology

Postgraduate
WINESCI 701 Winemaking in a New Zealand Setting
WINESCI 702 The Science Behind Grape Production
WINESCI 703 The Science Behind Winemaking
WINESCI 704 Sensory Evaluation and Statistical Methods
WINESCI 705 Project in Wine Science
WINESCI 706 The Business of Wine Production
WINESCI 707 Topics in Wine Science

As a focus:
Undergraduate
BSc in Food Science
BSc in Biotechnology
Postgraduate
PGDipSci in Wine Science

Wine Science

Wine Science is a particular specialisation of Food Science (available at postgraduate level only), with demand for Wine Science programmes also driven by industry. The science behind grape production such as the interaction between grape chemistry and its environment, and the microbiological techniques surrounding fermentation and optimising yeast strains, are studied to improve wine production, aroma and flavour.

Undergraduate
FOODSCI 304 Food Product Development
FOODSCI 302 Food Preservation
FOODSCI 301 Food Quality Attributes
FOODSCI 303 Sensory Science
FOODSCI 304 Food Product Development

Postgraduate
WINESCI 701 Winemaking in a New Zealand Setting
WINESCI 702 The Science Behind Grape Production
WINESCI 703 The Science Behind Winemaking
WINESCI 704 Sensory Evaluation and Statistical Methods
WINESCI 705 Project in Wine Science
WINESCI 706 The Business of Wine Production
WINESCI 707 Topics in Wine Science

Postgraduate
PGDipSci in Wine Science

Biotechnology

Biotechnology is concerned with the commercial use of living organisms or their components. Many industrial microbiology applications are concerned with food, for example the production of beer, vinegar, yoghurt and cheese. Biotechnology also embraces the new technologies of recombinant DNA technology, monoclonal antibodies, plant and animal cell culture and new methods of plant and animal breeding (transgenics). Graduates can undertake further study in Food Science, Wine Science or Biological Sciences.

This programme is run in conjunction with the Faculty of Engineering and has good links to companies active in the field.

Undergraduate
BIOSCI 348 Food and Beverage Microbiology
CHEMMAT 464 Engineering Biotechnology

Postgraduate
BIOSCI 752 Plant Genomics and Biotechnology
BIOSCI 741 Applied Microbiology and Biotechnology
FOODSCI 704 Food Biotechnology

Specific courses in Biotechnology have relevance to Food Science, Science and Engineering programmes.

As a focus:
Undergraduate
BSc in Food Science

Disclaimer: Although every reasonable effort is made to ensure accuracy, the information in this document is provided as a general guide only for students and is subject to alteration. All students enroilling at The University of Auckland must consult its official document, the Calendar of The University of Auckland, to ensure that they are aware of and comply with all regulations, requirements and policies.
Undergraduate Courses and Programmes at a glance

<table>
<thead>
<tr>
<th>Bachelor of</th>
<th>Engineering</th>
<th>Technology</th>
<th>Science</th>
<th>Health Sciences</th>
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<tbody>
<tr>
<td></td>
<td>Chemical and Materials Engineering</td>
<td>Biotechnology</td>
<td>Sport and Exercise Science</td>
<td>Food Science</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Biomedical Science</td>
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<td></td>
<td></td>
<td>(nutrition pathway)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Biological Sciences</td>
</tr>
<tr>
<td>MEDSCI 315</td>
<td>Nutrition, Diet and Gene Interactions</td>
<td>E</td>
<td>R</td>
<td>R</td>
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<tr>
<td>BIOSCI 358</td>
<td>Nutritional Science</td>
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<tr>
<td>BIOSCI 348</td>
<td>Food and Beverage Microbiology</td>
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</tr>
<tr>
<td>CHEMMAT 463</td>
<td>Food Process Engineering</td>
<td>E</td>
<td>C</td>
<td>R</td>
</tr>
<tr>
<td>CHEMMAT 464</td>
<td>Engineering Biotechnology</td>
<td>E</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>FOODSCI 201</td>
<td>Foundations of Food Science</td>
<td>C</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>FOODSCI 301</td>
<td>Food Quality Attributes</td>
<td>C</td>
<td>R</td>
<td>E</td>
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<tr>
<td>POPHLHITH 206</td>
<td>Life Cycle Nutrition</td>
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<td>POPHLHITH 305</td>
<td>Community Nutrition</td>
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<td>E</td>
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<tr>
<td>SPORTSCI 206</td>
<td>Exercise Nutrition</td>
<td>E</td>
<td>E</td>
<td>E</td>
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<tr>
<td>SPORTSCI 309</td>
<td>Practicum in Sport and Exercise Science</td>
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Please note that courses can only be taken if you have satisfied prerequisites, even if they are required for your programme.

- This is a core course and is required to be studied.
- This course may be taken as an elective, subject to satisfying prerequisites, and if there is room left in your programme.
- This course may be picked from a selection of courses required to be studied.
- This a recommended course for the nutrition pathway in BSc Biomedical specialisation; this is a recommended course for focusing on nutrition in the BSc Biological Sciences major.

Postgraduate study

Postgraduate options include study at Honours, Postgraduate Diploma, Masters and PhD levels, as outlined on the previous pages. Although Honours and Postgraduate Diplomas will include coursework, it is usual (with some exceptions) for Masters and PhD programmes to be focussed on research. For further information on both research and coursework options, please contact the postgraduate advisor for your area of interest. Departments engaged in food and nutrition research are listed below (or enter keywords into the main university search engine at www.auckland.ac.nz).

Faculty of Engineering
www.engineering.auckland.ac.nz
- Department of Chemical and Materials Engineering

Faculty of Science
www.science.auckland.ac.nz
- School of Biological Sciences
- Department of Chemistry (Food Science)
- Department of Sport and Exercise Science

Faculty of Medical and Health Sciences
www.fmhs.auckland.ac.nz
- School of Medical Sciences (Nutrition)
- School of Medicine (Medicine, Surgery, Paediatrics)
- School of Pharmacy
- School of Population Health

Clinical Trials Research Unit
www.ctru.auckland.ac.nz

Human Nutrition Unit
www.humannutritionunit.auckland.ac.nz

Liggins Institute
www.liggins.auckland.ac.nz

Further information (all programmes)
Download a faculty prospectus or programme handbook:
Undergraduate
www.auckland.ac.nz/uo/home/for/future-undergraduates/fu-download-a-prospectus

Postgraduate
www.auckland.ac.nz/uo/home/for/future-postgraduates/fp-download-a-prospectus

For course descriptions:
www.calendar.auckland.ac.nz/courses/index.html

For admission and programme regulations for all degrees and courses:
www.calendar.auckland.ac.nz

Contact an advisor
(via the faculty that provides the programme of course of interest):

Faculty of Engineering
UG email: chemmat-enquiries@auckland.ac.nz
PG email: postgrad-chemmats@auckland.ac.nz

Faculty of Medical and Health Sciences
UG email: fmhs@auckland.ac.nz
PG email: pghealth@auckland.ac.nz

Faculty of Science
UG or PG email: scifac@auckland.ac.nz

Clinical Trials Research Unit
UG or PG email: ctru@ctru.auckland.ac.nz

Human Nutrition Unit
UG email: hnu.info@auckland.ac.nz

Liggins Institute
PG email: ligginsstudentenquiries@auckland.ac.nz