AUT

A FUTURE IN **FOOD SCIENCE**

WHAT IS FOOD SCIENCE?

Few things are more fundamental to human existence than food. It is a vital common denominator that sustains us physically and unites us socially. Across the globe, food is a key determinant of quality of life and a major contributor to economic success and social wellbeing.

Food science is the study of the physical, biological and chemical makeup of food and the concepts underlying food processing methods. **Food technology** is the application of food science to the preservation, processing and packaging of food and the development of new food products.

Food science plays a critical role in providing a nutritious, safe and abundant food supply for individuals, communities and nations. In a country like New Zealand, food production forms a very substantial part of our economy. Food science increases our ability to add value to our agricultural and horticultural industries and helps us understand the impact of food production on our economy.

If you love food, are a hands-on person, and want to use your scientific mind to create new food products or ensure the safety of the food we all consume, a career in food science should be on your menu.

OUTLOOK AND TRENDS

Reducing waste – With a focus on sustainable food production and eco-friendly practices, many food scientists are exploring and developing innovative approaches to reduce food waste and minimise the carbon footprint of the industry.

By integrating advancements in packaging technologies, efficient supply chain management, and the development of alternative ingredients and processing methods, food scientists are working towards a future where nutritious and safe food can be produced in a way that minimises harm to the planet.

Plant-based substitutes – The demand for plant-based and lab-grown substitutes is rising rapidly. Through the use of cellular agriculture and biotechnology, food scientists are creating meat and dairy alternatives that closely resemble their animal-based counterparts.

Sustainable and healthier food system – Processed foods play an essential role in meeting the dietary needs of a modern, fast-paced society. Food scientists are working to make them more nutritious and beneficial for consumers without compromising flavour and convenience. Processed food products are being reformulated to enhance their nutritional profiles, reduce additives and preservative levels, and incorporate healthier ingredients.

The goal is to meet consumer demand for convenient and affordable food options that can still contribute to a balanced diet. By staying informed and actively participating in these outlooks and trends, food scientists can contribute to a more sustainable and healthier food system.

WORK SETTINGS

Food scientists are employed in both public and private sector organisations. Some work in large food production companies (eg Fonterra, Heinz Wattie's and Nestlé), or in smaller companies. Others may work in service organisations that support the food industry.

Production industries:

- Dairy, meat, seafood and horticultural processors
- Brewers, winemakers and beverage manufacturers
- Bakeries, confectioners and other food manufacturers

Service industries:

- Packaging, ingredient and equipment suppliers
- Advertising agencies and market research companies
- Research establishments and universities
- Government departments

Depending on the nature of the work, a food scientist or technologist may be fully or partly based in a laboratory. Alternatively, they could work in factories, offices or on the road.

Major pathways for food science careers:

- Quality control, assurance, food safety, regulatory
- Research and development (R&D), food technologist, product development
- Flavourists, flavour chemists, food sensory scientists
- Technical sales and marketing
- Logistics and production planning
- Secondary or tertiary teaching

Further career information can be found at nzifst.org.nz/careers/advisers.asp

CAREER ROLE EXAMPLES

Food scientist
Investigates and analyses food, from harvest to processing, cooking, and consumption. Provides accurate nutritional information for food labels. Manages sensory research that finds out whether people like the taste, look and feel of new products. Checks the safety and quality of food. Researches consumers' perceptions of food.

Quality assurance technologist
Conducts routine tests of raw materials and finished products. Assists with the collection and analysis of laboratory data. Plans and evaluates alternate methods and new testing procedures. Designs, operates and maintains quality systems. Ensures raw materials and manufactured products conform to quality specifications.

Research/product development technologist
Collaborates closely with manufacturing, quality, sales and marketing teams to develop new products. Starts with a brief from the marketing team and creates ideas and preliminary costings. Develops laboratory samples and takes these on to trials/tasting. Ensures nutritional information panels on packaging are correct.

Sensory scientist
Ensures that food products taste as they should and are good and appealing to eat. Investigates consumer preferences. Determines whether consumers can detect ingredient changes in products. Contributes to new product development and improved testing programmes. Devises experimental plans for sensory testing and carries out food perception research.

Food safety co-ordinator
Manages food safety systems and programmes to ensure products meet food safety standards. Co-ordinates internal and external food safety auditing. Oversees and resolves issues with cleaning, sanitation and supplies. Champions awareness of food safety and ensures training is provided as required. Supports pest control activities.

After a number of years' experience, you can move into more senior roles, including research and development, quality control, operations, technical or general management.

SKILLS AND KNOWLEDGE

Skills

- Ability to analyse macro and micro components of food
- A practical understanding of food processing systems
- Good customer service – the ability to listen carefully to understand the customer's needs and desires while upholding a professional approach
- A high level of communication skills - both written and oral
- Ability to analyse problems, think laterally and creatively find solutions
- Project management skills and the ability to collaborate and work in teams
- Competent at managing tasks wisely and completing projects on time
- Strong planning and organisational skills

Knowledge

- In-depth knowledge in food chemistry, food microbiology and sensory science, and their applications in food product development
- Knowledge related to health, safety and hygiene of food, and relevant food safety legislation – eg HACCP (Hazard Analysis of Critical Control Points)

Personal qualities

- Innovative, creative, thinks outside the square
- Accurate with strong attention to detail, particularly for testing and lab work
- Hard-working, efficient, comfortable with time pressure
- Patient, persistent, always completes projects

SALARY GUIDE

Salaries vary across each the sector, depending on size and location of the employer. Regional salaries are not always lower than city salaries.

	Salary (per year)
Graduate salary	$50,000-$75,000
Senior roles (with 5 or more years' experience)	$100,000-$140,000

This information was indicative of the NZ job market at the time of publication (January 2024) and should only be used as a guideline.

Keep up to date with salary data by visiting websites or signing up to salary guides, including:

Prosple Graduate Salary Guide
nz.prosple.com/on-the-job/whats-the-average-graduate-salary-in-new-zealand

Payscale.com
payscale.com/research/NZ/Job=Food_Scientist/Salary

SEEK NZ
seek.co.nz/career-advice/role/food-technologist/salary

The NZ Institute of Food Science and Technology (NZIFST)
nzifst.org.nz/Careers

PROFESSIONAL REGISTRATION

Professional registration is not compulsory, however affiliation with The NZ Institute of Food Science and Technology (NZIFST) is recommended for professional and career development.

THE AUT ADVANTAGE

Food science students gain valuable practical laboratory experiences in food analysis, including microbiological, chemical, and sensory analysis of foods. Students also have the opportunity to develop food products in collaboration with food industries and research institutes, applying classroom knowledge and skills to real-world projects. This provides insights into challenges and considerations involved in food product development and commercialisation. It also strengthens their understanding of market demands, customer preferences, and the practical aspects of food production processes.

FURTHER STUDY OPTIONS

Further study in food science is available at postgraduate level, including postgraduate diploma, master's and PhD options.

Research areas include food microbiology, food product development, food safety, industrial problem solving and sensory evaluation.

Roselle Samaratunga

Application Technologist, Zymus International

Bachelor of Science in Food Science

"As an application technologist I really enjoy being creative and trialling new ingredients and techniques to develop new products. At Zymus International I work on alcoholic and non-alcoholic beverages such as ginger beer, alcoholic RTDs and energy drinks.

No day is the same so coming to work is exciting. My role is to formulate new products for customers based off their market requirements and needs. I am also involved in quality assurance of key ingredients supplied to our customers.

I work with the sales team to identify new product ideas, then channel my creative side and formulate a finished product prototype based on their requirements. It's an extensive development process of researching and trialling the right ingredients as well as sensory analysis to produce a consumer-acceptable end product that can be manufactured. I also check products against food regulation codes to ensure they are safe and legally acceptable. Zymus also manufactures their own unique flavour range, so I also do quality and sensory analysis to meet specifications to ensure our flavours are up to standard.

After graduating I worked as a quality control technician at Mr. Chips Ltd assessing the quality of inwards and outwards goods to meet strict product specifications, food standard regulations and good manufacturing practices. I then worked as a sales representative for NIG Nutritionals maintaining and managing customer accounts and identifying sales growth opportunities within the dairy industry. I moved to my current position because I realised I wanted a hands-on product development role.

Skills I use from my degree include analytical and laboratory skills, communication skills, and applying mathematical and physiochemical knowledge to real life applications such as developing beverages.

I advise graduates to trust the process. Everyone has to start somewhere and then you work your way up. Take risks and try things outside of your comfort zone."

EMPLOYER COMMENT

"Passion, enthusiasm, soft skills and willingness to learn are top of the list when I'm looking for graduates. These qualities mean graduates will take ownership of their tasks, proactively seek solutions and show a great work ethic. As a graduate, it's crucial to be open-minded and absorb as much information as you can.

Roselle excels as a communicator and team player. Every day is different which brings unique challenges and she is performing exceptionally well. We are really thrilled to have her on our team.

I recommend graduates show initiative and apply for roles as soon as possible. Forming relationships and getting known to potential employers during your studies can be a great start."

Sarah Dagger
Zymus International Technical Sales Manager

USEFUL WEBSITES

The New Zealand Institute of Food Science and Technology (NZIFST)
nzifst.org.nz/careers/advisers.asp

Fonterra Careers
fonterra.com/careers

Plant & Food Research
plantandfood.com/en-nz/people-and-careers

FURTHER INFORMATION

For the most up-to-date information on food science study, visit aut.ac.nz/food-science

To find other career sheets visit aut.ac.nz/careersheets

EMPLOYABILITY & CAREERS

For employability and career support, AUT students can book an appointment through elab.aut.ac.nz/
@AUTEmployabilityandCareers

FUTURE STUDENTS

Contact the Future Student Advisory team for more information:
aut.ac.nz/enquire
futurestudents@aut.ac.nz
@FutureStudentsofAUT

CURRENT AUT STUDENTS

Contact the Student Hub Advisors team for more information:
0800 AUT UNI (0800 288 864)
aut.ac.nz/enquire
studenthub@aut.ac.nz

CITY CAMPUS

55 Wellesley Street East, Auckland Central

Connect with us now:

The information contained in this career sheet is correct at time of printing, early 2024.