



# AIT

Asian Institute of Technology

School of Environment, Resources  
and Development

# Food, Agriculture and Bioresources

# FAB



Food



Agriculture



Bioresources

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## DEPARTMENT OF FOOD, AGRICULTURE AND BIORESOURCES

The global food system today is beset by serious challenges and risks. Food demand is on rise due to population growth and changing consumption patterns; hunger and poverty levels remain high and unsustainable practices exacerbate environmental challenges. There is a fundamental need to boost productivity, especially of small to medium holders, increase access to markets, reduce risks, boost rural employment, and provide environmental services. However, management of agriculture, livestock and aquaculture practices is challenged by accelerating climate change, population growth, urbanization, increased market risk, resource constraints, a growing need for engagement of the private sector in delivering public goods, weak progress on improving nutrition and raising rural incomes. World food production needs to increase manifold in coming decades despite shrinking resources (land, water, farmers, energy). Similarly, food safety is receiving heightened attention worldwide as the important links between food and health.

### Mission

To produce newer generations for striving the solutions to sustainably feeding the hungry and rapidly changing world addressing the following key issues:

- Meeting the food and nutritional needs of growing urban and rural populations, with changing dietary preferences;
- Increasing sustainable production and productivity through balancing the ecosystems;
- Enhancing resilience to climate change;
- Finding sustainable solutions to the increasing competition for natural resources;
- Chemical residue-free food and food safety;
- Developing new technologies and processes for bioeconomy.



## AGRICULTURAL SYSTEMS AND ENGINEERING

**Focusing on** the utilization and management of biological and agricultural systems and natural resources with specialization in Agriculture Systems and Agriculture Engineering

### Research area

- Farm machinery and power management
- Systems analysis for sustainable agriculture
- Precision farming and controlled-environment agriculture
- Design development
- Automation of agricultural machinery
- Traction mechanics of off-road vehicle
- Sustainable agriculture production
- Integrated crop management
- Crop water management
- Climate-smart agriculture
- Climate change adaptation and food security
- Crop tolerance to soil and environmental stresses
- Ecological agriculture and organic farming





## AGRIBUSINESS MANAGEMENT

**Focusing on** sustainable processes to enhance the performances in small, medium and large scale enterprises in the globally competitive agricultural-based industries. Agribusiness Management also aims at enhancing entrepreneurship among primary producers of agri-food products, and traders and other market intermediaries in the value chain.

### Research area

- Sustainability assessment of agro-industries
- Risk in food marketing channels
- Future contracts as risk management instruments
- Contract farming systems
- Enhancing productivity and market linkages
- Food waste and loss
- Value chain analysis for food supply chains
- New product development in food supply chains
- Traceability and food safety
- Governance mechanisms in food supply chains
- Agribusiness development
- Innovations to combat climate change and food security challenges





## AQUACULTURE AND AQUATIC RESOURCES MANAGEMENT

**Focusing on** intensive aquaculture systems for sustainable production with enhanced benefits with specialization in Aquatic Resources Ecosystem Management, Sustainable Aquaculture Production, Integrated Coastal Management and Aqua Business Management.

### Research area

- Biofloc technology in finfish and shellfish aquaculture
- Recirculating Aquaculture Systems
- Integrated multitrophic aquaculture systems
- Aquaponic production systems
- Biosecure systems for healthy aquaculture
- Design and formulation of cost-effective feeding systems in aquaculture
- Selective breeding for genetic stock improvement
- Smart aquaculture, and application of renewable energy in aquaculture production systems
- Rational utilization and management of aquatic resources and ecosystems





## FOOD ENGINEERING AND BIOPROCESS TECHNOLOGY

**Focusing on** understanding of food and biological materials, their processing, conversion and utilizations in sustainable, safer and healthy products, with specialization in Food Process Engineering and Bioprocess Technology.

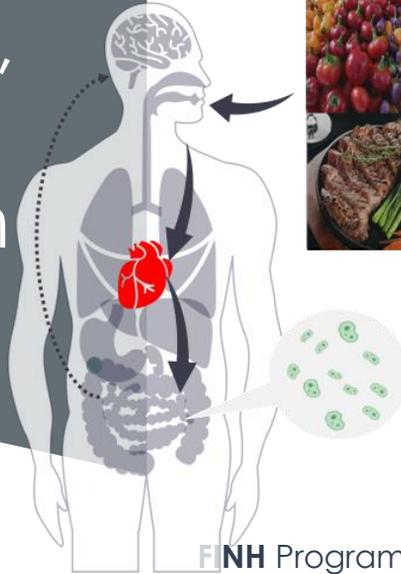
### Research area

- Novel food processing technologies
- Mathematical modeling of food and food processes
- Chemical sensors and biosensors for food safety applications
- Probiotics, functional foods and nutraceuticals
- Safety, risk assessment and value-chain analysis in food and natural products
- Value added products from food waste and agro-residues to address food and nutrition security
- Food and pharmaceutical biotechnology
- Nanotechnology in food and pharmaceutical applications
- Delivery and controlled release of bioactives and live cells in food and nutraceuticals





# Food Innovation, Nutrition, and Health (FINH)



## Overview

Food Innovation, Nutrition and Health (FINH) from AIT School of Environment, Resources and Development (SERD) is structured and tailored for creative learning and design thinking in the areas pertaining to utilization of resources and smart food processing using innovation which ensures nutritious food for better health. Graduates can find opportunities in the food processing industries and international organizations.

## FINH Program Highlights

- A unique blend that combines food innovation and nutrition with health. This concept helps to address the way our consumption of food has changed.
- The learnings in FINHs, is a scientific and application-oriented program that challenges traditional concepts of Food Science and gastronomy.
- The program has been extensively studied and



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## Innovation

Food Innovation is key to:

- Make food safe, quality and secured
- Reduce food waste (1.3 billion metric tonne/yr)
- Remain competitive in the market
- Reduce long term food processing costs, increase brand value, productivity and profit
- Achieving SDGs set by the UN, especially the following:



## Food

- Increasing food demand with an increasing population (>9 billion by 2030)
- Food processing and new product development as a business
- Urgent need for safe food that is highly nutritious, promoting public health through innovative approaches
- Food should always be safe and secured as 1 in 10 people fall ill due to contaminated foods

## Nutrition

Food availability  
 ↓  
 Access to food  
 ↓  
 Food Utilization

Nutritional security

Functional Food      Health

## ELIGIBILITY FOR APPLICATION

- Degree in engineering, aquaculture, biology, life science, social science, fisheries science, agricultural sciences and/or other related disciplines
- Degree from an institution of recognized standing

## SCHOLARSHIPS AND FELLOWSHIPS

- HM The King's Scholarships (Doctoral Program)
- HM The Queen's Scholarships
- GMS Scholarships
- ADB-Japan Scholarships
- President Robert B. Banks Scholarship
- Royal Thai Government Fellowships
- AIT Scholarships, and
- Many other scholarships from private and public sectors

Website: <https://www.ait.ac.th/admissions/scholarships/>

## CAREER OPPORTUNITIES

Our graduates find placements in several sectors, including industries, government agencies, non-governmental organizations, academia, and entrepreneurship.



## FACULTY MEMBERS

### **Dr. Avishek Datta (Ph.D. University of New England, Australia)**

Associate Professor of Agricultural Systems, Head of the Department

**Research Area:** Integrated crop management, Crop water management, Climate-smart agriculture, Climate change adaptation, Food security, Crop tolerance to soil and environmental stresses, Ecological agriculture and organic farming

### **Dr. Farhad Zulfiqar (Ph.D. Asian Institute of Technology, Thailand)**

Assistant Professor of Agribusiness Management

**Research Area:** Sustainability in value chains, Innovations for sustainable development, Agricultural sustainability, Agriculture policy analysis, Community-based resource management, Agricultural marketing and trade, Agricultural development, Climate change, Food security, Agribusiness management

### **Dr. Amararatne Yakupitiyage (Ph.D. University of Stirling, Scotland)**

Associate Professor of Aquaculture and Aquatic Resources Management

**Research Area:** Aquaculture development, Aqua nutrition and energetics, System approach for aquatic and coastal management, Small-scale fish processing

### **Dr. Krishna R. Salin (Ph.D. Central Institute of Fisheries Education, India)**

Associate Professor of Aquaculture and Aquatic Resources Management

**Research Area:** Applied genetics for improved aquatic stocks, Breeding and hatchery management, Sustainable intensification of aquaculture

### **Dr. Ram C. Bhujel (Ph.D. Asian Institute of Technology, Thailand)**

Research Associate Professor of Aquaculture and Aquatic Resources Management and Director of Aqua Center (Center for Aquaculture Development)

**Research Area:** Aquaculture business management, Aquafeed production and management, Gender in aquaculture/fisheries, Biostatistics, Tilapia farming, Training and capacity development

### **Prof. Anil K. Anal (Ph.D. Asian Institute of Technology, Thailand)**

Professor of Food Engineering and Bioprocess Technology

**Research Area:** Functional Food, Nanotechnology application in food, Antimicrobial resistance and mitigation

### **Dr. Loc Thai Nguyen (Ph.D. Ohio State University, USA)**

Associate Professor of Food Engineering and Bioprocess Technology

**Research Area:** Non-thermal food processing technologies, Mathematical modeling of foods and food processes, Chemical sensors and biosensors for food safety application, Food waste recycling and utilization

## Contact

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<https://serd.ait.ac.th/department-of-food-agriculture-and-bioresources-new/>