MSc Sustainable Food

Speaker: Prof. Dr. Michael Rychlik Technical University of Munich School of Life Sciences Chair of Analytical Food Chemistry

More about



Disclaimer: The Master of Science in Sustainable Food is subject to the proviso that the Bavarian State Ministry of Science and the Arts has no objections

https://tum-asia.edu.sg/admissions/graduate/msc-sustainable-food

Concept: M.Sc. Sustainable Food

- Addressing Circular Bioeconomy, Zero Waste, Climate Change, SDG 2030,
- In line with Singapore's 30-by-30 Strategy:

in 2030 30 % food production for Singapore in Singapore

- Focuses on fundamental knowledge, research and applications of Food Science/Sustainability/Technology/Safety
- Target applicants:
 - Bachelor's Degree in:



Food Science/Technology/Engineering/Nutrition/Safety/Sustainability or its equivalent in Science/Technology/Engineering





Programme Structure

- 2 year (4 semesters): Total = 120 ECTS Total of 12 modules during 1st to 3rd semester, including 8 core and 4 elective modules (out of a list of technical and non-technical electives)
- 10 ECTS Laboratory Course
- Core Modules
 - TUM Core Modules (5 ECTS per module)
 - Electives: Total of 4 modules (5
 ECTS per module)
- Internship (4 months)
- Master's Thesis (6 months)



Focusing on food safety, food science and food technology, the MSc in Sustainable Food is designed with a holistic approach to equip individuals with specialised scientific knowledge and skill sets in food science and food safety to institute systemic change across the major pillars of today's global food system to achieve food sustainability.

Pioneering the next generation of food champions

Course Curriculum

Food Technology (5 credits each)

- o Technofunctionality of Food Components
- \circ $\,$ Food Structure Design and Texture Engineering (Food Design)
- Molecular Sensory Science (Food Quality)
- o Sustainability in Food Systems



Food Safety (5 credits each)

- o Energy Metabolism and Regulation
- \circ $\:$ Nutrition and Microbiome in Health and Disease
- Food Toxins and Toxicants (Food Toxicology)
- o Microbial Food Safety from Farm to Fork



Laboratory Module (10 credits)

o Mandatory Laboratory Refresher Module



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Course Curriculum

Technical Electives Choose 2 out of 3 (5 credits each)

- Economic and Environmental Life Cycle Assessment
- Cellular Agriculture
- Molecularbiological methods to assess authenticity, GMO and veterinary drugs in food

Non-Technical Electives Choose 2 out of 4 (5 credits each)

- o Business Administration
- o Innovation and Technology Management
- Project Management Principles
- Production Planning in Industry

Others

- Internship (20 credits)
- Master's Thesis (30 credits)







Programme Schedule

Semester 2 (Jan – July)

- Food Structure and Texture Engineering (Food Design)
- Molecular Sensory Science
- Sustainability in Food Systems
- Food Toxins and Toxicants (Food Toxicology)
- Advanced Food Microbiological
- Analysis and Food Safety
- Molecularbiological Methods to Assess Authenticity, GMO and Veterinary Drugs in Food (elective)

Semester 4 (Jan – July)
Master's Thesis

Semester 3 (July – Jan)

- Research Internship
- Food Tissue Engineering / Cellular Agriculture (elective)

Semester 1 (July – Jan)

- Technofunctionality of Food Components
- Energy Metabolism and Regulation
- Nutrition and Microbiome in Health and Disease
- Laboratory Module
- Economic and Environmental Life Cycle Assessment (elective)

*This outline is a general reference to the duration of study and is subject to



Master's Thesis & Internship

Required:

- o Submission of master's thesis
- o Submission of internship report
- University supervisor

Other Information:

- Internship/thesis can be undertaken in Singapore or overseas
- Possibility of combining internship and master's thesis (10 months)
- Students are *in charge of* searching for internship and thesis position



To Graduate

Required:

- A minimum CAP score of 4.0 or below:
 - o Core Modules
 - Elective Modules
 - o Master's Thesis
- Completion of Internship with submission of report

Risk of candidature termination:

- Failure of any modules
- Cheating in examinations
- Copying of others' work

Meet the **Faculty**

Teaching Professors

Modules of our Master of Science in Sustainable Food programme will be delivered in person by TUM professors from Germany.



Univ.-Prof. Dr. Michael Rychlik

Head of Analytical Food Chemistry

TUM



Prof. Dr. Martin Klingenspor

Chair of Molecular Nutritional Medicine

TUM



Prof. Dr. Corinna Dawid

Chair of Food Chemistry and Molecular Sensory Science



Prof. Dr. rer. nat. Ute Weisz

Head of Plant Proteins and Nutrition

TUM



Prof. Dr. rer. nat. Dirk Haller

Chair of Nutrition and Immunology

TUM

TUM

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PD. Dr. Klaus Neuhaus

ZIEL – Institute for Food & Health

TUM



Prof. Dr. Mario Jekle

Head of the Department Plant-based Foods

University of Hohenheim



Prof. Dr. h.c. Vera Bitsch

Chair of Economics of Horticulture and Landscaping

TUM



Apl. Prof. Dr. Michael Pfaffl

Division of Animal Physiology and Immunology

TUM



Prof. Dr. Johannes Sauer

Chair of Agricultural Production and Resource Economics

TUM

Alternative Protein Food Application

101510/000

Novel Food Biotechnologist s\$ 10.8 TRILLION

Projected food spending in Asia by 2030

of the 27 occupations

listed in Singapore's Shortage of Occupation List (SOLs)

31%

Global food technology market share dominated by Asia Pacific

180

Projected number of highly skilled workforce required in the alternative proteins and novel food sector in Singapore

Industry Outlook



Taking a judicious approach in supporting our students' long-term growth, our master of science programmes are continually refreshed to ensure our robust curriculum is competitively aligned with industry needs.

Engaging in a multifaceted role



Career Prospects

Admission Period: 1 October – 31 March

To Apply: https://tum-asia.edu.sg/adm



