

Food Security and Future Food System

Introduction:

With the world's population projected to reach 9 billion in 2050, food security is becoming an increasingly important global issue. Apart from the increase in population, changing consumer taste, climate change as well as water scarcity makes meeting the potential 60% increase in demand for food even more challenging. Food security is generally defined as to provide population with readily available and safe food of appropriate nutrition level at an affordable price. Enhancing food security for Singapore is even more important considering the limited farming capacity and, as a result, heavy dependence on food import (more than 90%) for local consumption. Disruption of food supply and cost fluctuations in food import are real challenges to be addressed.

Course objectives:

This Course intends to provide participants with concepts of food security and the necessary skills to enhance it through technology innovations.

Course outline:

1. Introduction and food security

Food security concepts, historical background and goals. Main aspects of food security: primary production, processing technology, nutrition requirements. Impact of climate change and pandemic of infectious diseases. Effective future food system.

2. Traditional and urban agriculture

Traditional farming and limitations. Storage, transportation and carbon footprint. Limitations from environment. Impact of global warming. Urban farming: advantages and limitations

3. Processing technology and food waste reduction

Food loss and food waste. Processing technology and processed food. Zero waste food processing

4. Nutrition requirements

Quality food versus quantity food. Food, metabolism and nutrition. Nutrition for elderly
Social engineering, cyber bullying, social media and its impacts on the society.

5. Impact of climate change and pandemic of infectious diseases

Climate change and global warming. Infectious diseases and global pandemic. Food supply chain and food security.

6. Group Presentation

Duration

2.5 hours x 6 sessions

Teaching Methodology:

Live online class, with live demos, case studies, videos, interactive short quizzes.

Instructor



Biography of Instructor

Professor Chen received his university education (both B.Sc. and D.Sc.) from Université Catholique de Louvain in Belgium.

He joined Nanyang Technological University Singapore (NTU) in 2002, and is now the Michael Fam Chair Professor in Food Science & Technology. Professor Chen is also the Director of the University's Food Science & Technology (NTU FST), an integrated Education – Research - Innovation platform.

In addition to FST talent development in partnership with Wageningen University & Research (WUR) from the Netherlands, NTU FST has developed innovative technologies of relevance to Singapore food industry. These green processing tech innovations aim at reducing food waste to enhance food security, and have contributed to Food Circular Economy in Singapore. Innovations from NTU FST have attracted significant interest and investment from government agencies and food industry, including the F&N-NTU Innovation Lab which was opened by Singapore Minister for Education Mr. Ong Ye Kang in 2019.

Innovations from NTU FST and Professor Chen's views on food security have been featured in the mainstream media, both locally (The Straits Times, The Business Times, CNA among others) and internationally (Asahi Shimbun, BBC, Bloomberg News, CNBC, and CNN). The 'Going Green' programme produced by CNN in 2019 described Professor Chen as a Game-Changing Leader in the green revolution of the food system.

Professor Chen is an adviser to government agencies, NGOs and food industry on matters related to food security and future food technology.