

Course Outline

Annual International Training Course

1. Course Title: Value-added and Quality Improvement of Agricultural Products by Fermentation Technology

2. Duration: 3 weeks (1-21 May 2023)

3. Background:

Thailand International Cooperation Agency (TICA)

TICA is a national focal point for Thailand's international development cooperation. It was established in 2004 to realize Thailand's aspiration to be a contributor to international development cooperation. Believing that global challenges are best addressed through international cooperation and global partnership, TICA continues to work closely together with its development partners to realize the global development agenda through various capacity-building and human resources development programmes. In response to the recent changes in the global landscape of development cooperation, TICA has strengthened its partnerships to harness the synergy of South-South and Triangular Cooperation to tackle global development challenges, including expediting the implementation of Sustainable Development Goals (SDGs). It also continues to realign our focuses in order to deliver Thailand's commitments as a global reliable partner.

Since 1991, TICA, in collaboration with educational institutions in Thailand, has offered short-term training courses under its Annual International Training Course (AITC) programme. The number of courses offered each year varies between 25 to 35 courses for 20-35 participants per course. AITC not only fosters good and friendly relations which Thailand has already enjoyed with recipient countries across regions, but also helps Thailand to reach out to those countries with which we desire to engage more closely. The courses offered by TICA in 2023-2025 are categorized into 5 themes: Sufficiency Economy Philosophy (SEP), food security, climate change and environmental issues, public health, BCG Model related.

Organization/Institution

Maharakham University (MSU) started out as the College of Education, Maharakham. It became a regional campus of Srinakharinwirot University in 1974, with four faculties: education, humanities, social sciences and science. In 1994, the university gained independent status to become Thailand's 22nd public university. MSU offers undergraduate and post-graduate degree programmes in three academic areas - social sciences; pure and applied science; and health science. Student enrolment now stands at over 40,000 across 177 undergraduate and postgraduate programmes including 87 bachelor's, 57 master's and 33 PhD

programmes. There are 17 faculties in total: music; politics and governance; cultural science; education; fine and applied arts; humanities and social sciences; law; faculty of tourism and hotel management; Mahasarakham Business School; medicine; nursing; pharmacy, public health; veterinary medicine and animal science; architecture; urban design, and creative arts; engineering; environment and resource studies; informatics, and science and technology. There are also a number of research centres including the first natural medicinal mushroom museum and learning centre in Asia. MSU has enrolled international students from many countries such as Cambodia, China, India, Indonesia, Japan, Laos, Pakistan, South Korea, Sudan, Taiwan, UAE, UK, USA, and Vietnam.

The Faculty of Technology currently comprises three departments: Food Technology and Nutrition, Biotechnology and Agriculture. The mission is to develop the technology and its application for agriculture and related fields. The faculty aims at producing graduates and leaders with expertise in food technology and nutrition, biotechnology and agricultural technology in addition to promoting agro-industry and environmental enhancement projects.

4. Objectives:

The program is designed to:

1. Share knowledge and experience about value-added and quality improvement of agricultural products by fermentation technology.
2. Reskill and upskill participants in Sciences, Technology or related areas.
3. Apply Bio-Circular-Green Economic Model (BCG Model) in agro-industries.

5. Course Contents:

The course will be organized as lecture, demonstration laboratory and workshop covered the following topics; BCG Model and Agro-industries, Sufficiency Economy Philosophy (SEP) and Value-added of Agricultural Products, Industrial Microbiology, Starter Culture Technology, Culture Collection, Bio-refinery, Acetic Acid Bacteria and Fermented Food, Lactic Acid Bacteria and Fermented Food, Production of Biomass in Bio-reactor, Thai Traditional Fermented Food, Fermentation Technology for Cereal Products, Fermentation Technology for Fish Products, Fermentation Technology for Meat Products, Fermentation Technology for Vegetable Products, Fermentation Technology for Fruit Products, Alcoholic Beverage, Quality Control for Fermented Food Products. Food Safety Standard for Fermented Food Production (GMP, GHP, HACCP).

6. Participants Criteria:

Applicants must fulfill the following requirements:

- Be nominated by their respective governments;
- Education: Bachelor Degree in Science, Technology or related areas.

- Language: proficiency in English (speaking, reading and writing)

7. Attendance and Evaluation

Participants who complete the training will receive a certificate based on:

- Real-time class attendance (not less than 80%)
- Interactive class participation
- Presentation and report
- Evaluation

8. Venue:

Maharakham University, Maharakham, THAILAND

(Online)

9. Expected Results:

- Participants have better understanding in training topics.
- Participants can apply knowledge and experience gained from the training to develop their countries.
- Participants know and learn Thai culture.

10. Organization/Institution:

- Implementing Agency: Department of Biotechnology, Faculty of Technology, Maharakham University, Maharakham 44150, THAILAND
- Contact Person: Asst. Prof. Dr. Pariyaporn Itsaranuwat
Department of Biotechnology, Faculty of Technology,
Maharakham University, Maharakham 44150, THAILAND
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E-mail: pariyaporn.i@msu.ac.th

11. Expenditure/Funding:

Thailand International Cooperation Agency (TICA)

Government Complex, Building B (South Zone), 8th Floor,

Chaengwattana Rd. Laksi District, Bangkok 10210 THAILAND

Website: <https://tica-thaigov.mfa.go.th/en/in>

E-mail: aitic@mfa.go.th

Schedule for the Training Programme:

Course Title: Value-added and Quality Improvement of Agricultural Products by Fermentation Technology

Date/Period/Topic	Time (Thailand time)	Content	Speaker	Note
WEEK 1				
Day 1	09.00-12.00	Opening Ceremony Lecture: - BCG Model	The President of MSU Dr.Artite Pattanapongchai	
	13.00-17.00	Lecture: - BCG Model - Case Study	Dr.Artite Pattanapongchai	
Day 2	09.00-12.00	Lecture: - Sufficiency Economy Philosophy (SEP) and Value-added of Agricultural Products	Dr.Pariyaporn Itsaranuwat	
	13.00-17.00	Lecture: - An Overview of Industrial Microbiology	Dr.Pariyaporn Itsaranuwat	
Day 3	09.00-12.00	Lecture: Starter Culture Technology	Dr.Sumonwan Chumchuere	
	13.00-17.00	Lecture: Culture Collection	Dr.Pariyaporn Itsaranuwat	
Day 4	09.00-12.00	Demonstration Laboratory: - Study on Character and Morphology of Bacteria	Dr. Kannika Chookietwattana Mr.Suriya Klangseang	
	13.00-17.00	Demonstration Laboratory: - Study on Character and Morphology of Yeast and Mould	Dr.Pariyaporn Itsaranuwat Dr.Pa-nga Yeunyaw	
Day 5	09.00-12.00	Lecture: - Bio-refinery	Dr. Isarawut Prasertsung	
	13.00-17.00	Lecture: - Analysis of Food Products and Beverage (Physical, Chemical, Microbiological Analysis)	Dr.Pariyaporn Itsaranuwat	

WEEK 2				
Day 1	09.00-12.00	Lecture: Sensory Evaluation of Food & Beverage Products	Dr.Pariyaporn Itsaranuwat	
	13.00-17.00	Lecture: - Production of Biomass in Bio-reactor	Dr. Thitiwut Vongkampang	
Day 2	09.00-12.00	Lecture: Acetic Acid Bacteria and Fermented Food	Mrs. Busaba Tharasena	
	13.00-17.00	Lecture: Lactic Acid Bacteria and Fermented Food	Dr.Pariyaporn Itsaranuwat	
Day 3	09.00-12.00	Lecture: Thai Traditional Fermented Food	Dr.Sumonwan Chumchuere	
	13.00-17.00	Lecture: Fermentation Technology for Cereal Products	Dr.Pariyaporn Itsaranuwat	
Day 4	09.00-12.00	Lecture: Fermentation Technology for Fish Products	Dr.Pariyaporn Itsaranuwat	
	13.00-17.00	Lecture: Fermentation Technology for Meat Products	Dr.Pariyaporn Itsaranuwat	
Day 5	09.00-12.00	Demonstration Laboratory: Fermentation Technology for Meat Products	Dr.Kedsukon Maneewan Dr.Pariyaporn Itsaranuwat	
	13.00-17.00	Demonstration Laboratory: Nata de coco/Vinegar Production	Dr.Pariyaporn Itsaranuwat Dr.Pa-nga Yeunyaw	
WEEK 3				
Day 1	09.00-12.00	Lecture: Fermentation Technology for Vegetable&Fruit Products	Dr.Sirirat Deeseenthum	
	13.00-17.00	Lecture: Alcoholic Beverage	Dr. Luchai Butkhup	

Day 2	09.00-12.00	Demonstration Laboratory: Preparation of Yeast Starter Culture for Traditional Thai Alcoholic Beverage (Sato)	Dr.Kedsukon Maneewan Dr. Issaraporn Somboonwattanakul	
	13.00-17.00	Demonstration Laboratory: Wine Production/Sato Production	Dr. Luchai Butkhup Dr.Sirirat Deeseenthum	
Day 3	09.00-12.00	Lecture: - Quality Control for Fermented Food Products	Dr.Vijitra Luang-In	
	13.00-17.00	Lecture: - Food Plant Sanitation	Dr. Kannika Chookietwattana	
Day 4	09.00-12.00	Lecture: Food Safety Standard for Fermented Food Production (GMP, GHP).	Dr.Pariyaporn Itsaranuwat	
	13.00-17.00	Lecture: Food Safety Standard for Fermented Food Production (HACCP).	Dr.Pariyaporn Itsaranuwat	
Day 5	09.00-12.00	Workshop and Presentation: Joint Research Proposal	Dr.Pariyaporn Itsaranuwat Dr.Vijitra Luang-In Dr. Prapassorn Bussaman	
	13.00-17.00	Workshop and Presentation: Joint Research Proposal Closing Ceremony	Dr.Pariyaporn Itsaranuwat Dr.Vijitra Luang-In Dr. Prapassorn Bussaman Dean of Faculty of Technology	