Course Detail

Master of Science Program in Postharvest Technology and Innovation

1. Course Title:	Master of Science Program in Postharvest Technology and Innovation
2. Master Degree:	Master of Science (Postharvest Technology and Innovation)
3. Academic Institution:	School of Agro-Industry, Mae Fah Luang University
4. Duration:	Two (2) academic years (August 2025 to May 2027)

5. Background and Rational:

Postharvest losses refer to measurable quantity and quality loss of food crops at harvest, storage, transportation, processing, marketing and preparation before consumption. It occurs throughout the value chain, as a result of technical and managerial setbacks during harvest, handling, transportation, processing, packaging, marketing, and distribution. A minimum postharvest losses reduction can potentially reduce production costs. Postharvest losses impact on the environment and climate following unnecessary emissions of greenhouse gases produced during production, processing, and transportation of fruits and vegetables which ultimately end in loss.

The Postharvest Technology and Innovation programme at the School of Agro-industry, Mae Fah Luang University, is dedicated to educating and equipping students with the knowledge needed to preserve the quality and nutritional value of fresh horticultural products. This program covers key aspects such as plant physiology and the latest technologies and innovations in postharvest management, including smart packaging, quality preservation techniques, food safety, product tracking and traceability, transportation, cold chain management, and value-added products. Students also have opportunities to visit research centers and leading private companies in Thailand that specialize in fresh produce management, export, logistics, and cold chain operations. It is known that the application of postharvest technology and innovation on horticultural crops is an important effort for food quality and nutrition preservation which can raise income to all stakeholders in many countries. Our course features both theoretical and practical learning, which is divided into 3 groups: 1. Core courses, 2. Elective courses in three subgroups (2.1 Postharvest Technology and Innovation, 2.2 Food Technology and value-added product, and 2.3 Logistic management), and 3. Thesis.

Master of Science in Postharvest Technology and Innovation (M.Sc. in PTI) Programme is dedicated to curriculum design, with a specific focus on creating diverse courses aligned with the principles of Sustainable Development Goals (SDGs) and digital technology. The programme aims to foster the creation of high-value agricultural products from local resources. Additionally, the modular approach to studies will facilitate the development of short courses, to serve the needs of government and business organizations. This program is designed to prepare individuals as global citizens capable of working in a multicultural society. This Programme aims at developing human resources by integrating expertise in postharvest technology and innovation via digital technology, complemented by hands-on learning experiences (Learning by Doing). The programme promotes lifelong learning within a multicultural society and increases the students' potential for dissemination of national and international publications. The programme is driven by the vision of minimizing postharvest losses and adding value to agricultural products which contributes to the crucial goals of ensuring food security and promoting sustainability in agriculture.

6. Objectives:

6.1 To produce master's level graduates equipped with the knowledge and expertise to apply and innovate in the field of postharvest technology.

6.2 To produce graduates capable of problem-solving, integrating knowledge and conducting research in the field of postharvest technology and innovation, earning recognitions for national and international levels.

6.3 To produce global citizens committed to continuous self-development, understanding societal norms and ethics as well as demonstrating adaptability within a multicultural society.

7. Course Synopsis and Methodology:

7.1 Study plan

Plan 1.1 (Research only) (Non-credit course)

Year 1					
Semester 1			Semester 2		
1407705	Advanced Instruments for Postharvest	0(2-3-5)	1407748	Seminar 1	0(0-3-1)

	Quality Determination				
1407706	Research Methodology and Innovative Creation	0(3-0-6)	1407891	Thesis	12(0-36-12)
1407891	Thesis	6(0-18-6)			
Total (credits)		6	Total (credits)		12

Year 2					
Semester 1			Semester 2		
1407801	Farm and Industrial Visit	0(0-1-2)	1407891	Thesis	6(0-18-6)
1407891	Thesis	12(0-36-12)			
1407846	Seminar 2	0(0-3-1)			
Total (credits)		12	Total (credits)		6

<u>Plan 1.2 (Course works and research)</u>

Year 1					
Semester 1			Semester 2		
1407705	Advanced Instruments for Postharvest Quality Determination	3(2-3-5)	1407748	Seminar 1	0(0-3-1)
1407707	Research Methodology and Innovative Creation	3(3-0-6)	1407753	Postharvest Technology and Innovation	3(2-3-5)
1407708	Internet of Things and Data Analytics in Ago-Industry	3(3-0-6)	1407892	Thesis	3(0-9-3)
1407738	Postharvest Biology of Plant	3(2-3-5)	140xxxx	Major elective 1	3(x-x-x)
			140xxxx	Major elective 1	3(x-x-x)
Total (credits)		12	Total (credits)		12

Year 1					
Semester 1			Semester 2		
1407801	Farm and Industrial Visit	0(0-1-2)	1407891	Thesis	3(0-9-3)
1407891	Thesis	6(0-18-6)			
1407846	Seminar 2	0(0-3-1)			
140xxxx	Major elective 1	3(x-x-x)			
Total (credits)		9	Total (credits)		12

7.2 Courses

1. Core courses

1.1 Plan 1.1 (Research only) (Non-credit course)

1407705	Advanced Instruments for Postharvest Quality Determination	0(2-3-5)
1407706	Research Methodology and Innovative Creation	0(3-0-6)
1407748	Seminar 1	0(0-3-1)
1407801	Farm and Industrial Visit	0(0-1-2)
1407846	Seminar 2	0(0-3-1)
1407891	Thesis	36(0-108-36)

1.2 Plan 1.2 (Course works and research)

1407705	Advanced Instruments for Postharvest Quality Determination	3(2-3-5)
1407707	Research Methodology and Innovative Creation	3(3-0-6)
1407708	Internet of Things and Data Analytics in Ago-Industry	3(3-0-6)
1407738	Postharvest Biology of Plant	3(2-3-5)
1407753	Postharvest Technology and Innovation	3(2-3-5)
1407748	Seminar 1	0(0-3-1)
1407846	Seminar 2	0(0-3-1)
1407801	Farm and Industrial Visit	0 (0-1-2)
1407892	Thesis	12(0-36-12)

2. Elective courses can be divided into 3 groups of subjects. Student can choose.

2.1 Postharvest Technology and Innovation

1407709	Postharvest Pest and Diseases Management	3(2-3-5)
1407711	Eco-friendly Technology and Innovation of Fresh Produce	3(2-3-5)
1407712	Innovations in Postharvest Management of Food Grains	3(2-3-5)
1407713	Postharvest Handling System and Innovation of Premium Fresh Produce	3(3-0-6)
1407714	Selected Topics in Postharvest Technology and Innovation	3(3-0-6)
1407715	Postharvest Technology and Innovation of Ornamental Crops	3(2-3-5)
1407732	Postharvest Engineering	3(2-3-5)
1407716	Internship	6(0-40-6)

2.2 Food Technology and value-added product

1405744	Quality and Food Safety Management	3(3-0-6)
1407717	Innovations in Food Manufacturing and Value Addition	3 (3-2-5)
1407718	Fresh Produce for Well-being	3(3-0-6)
1407719	Food Loss and Food Waste Reduction	3(3-0-6)
1407754	Non-destructive Evaluation for Agricultural Crops	3(2-3-5)
1406770	Consumer Trends and Technology	3(3-0-6)
1402814	Functional Foods and Nutraceuticals	3(3-0-6)
1403708	Coffee Technology	3(2-3-5)
1403707	Tea Science and Innovation	3(2-3-5)

2.3 Logistic management

1407720	Packaging for Transportation and Cold Chain of Fresh Produce	3(2-3-5)
1407721	Packaging Innovation for Fresh Produce	3(2-3-5)
1407722	Modeling for Agricultural Distribution Management	3(2-3-5)
1407723	Digital Technology for Agricultural Supply Chains Traceability	3(2-3-5)
1409701	Agricultural Logistics Management	3(3-0-6)
1407724	Data analytics in Agriculture	3(3-0-6)

3. Thesis

1407891	Thesis	36(0-108-36)
1407892	Thesis	12(0-36-12)

8. Graduation Conditions:

Students with a bachelor's degree in agriculture, Food Science, Biology, Chemistry, Biochemistry, Biotechnology, and related fields with cumulative undergraduate GPA≥2.50 are encouraged to join the program. The program admissions committee makes all admission consideration on case-by-case basis.

9. Applicant Qualifications

1. Application affixed with photographs.
2. A copy of transcript from attended institutions
3. Evidence of English proficiency
4. Statement of purpose
5. Letters of recommendation from referee
6. A copy of passport

10. Contact:

10.1 List of lecturers

1. Assoc. Prof. Dr. Saowapa Chaiwong (A chair of M.Sc. Programme)	E-mail: saowapa@mfu.ac.th
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For research interest and publication please visit http://agroindustry.mfu.ac.th/staff/faculty/

11.2 Contact person:

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