

## Course Title

### Master Degree of Science in Postharvest Technology

**Master Degree:** Master Degree of Science in Postharvest Technology

**Academic Institution:** School of Bioresources and Technology, King Monkut's University of Technology Thonburi

**Duration:** 2 years

#### Objectives:

In less-developed tropical countries, both quantitative and qualitative losses of agricultural products extremely variable magnitude occur at all stage in the postharvest system from harvesting, through handling, storage, processing and marketing to final deliver to the consumer. Postharvest losses are not only of perishable crops but also grains, livestock and fish. It is estimated that as much as 25% of fruits, 40% vegetables and 15-20% grains are wasted after harvest. Hence the elimination of postharvest losses of agricultural products is important to augment food availability in these countries.

In Thailand, there are plenty of raw agricultural products, which are produced for local market. The quality of such products is seldom adequate for export markets. At present, the export potential of the tropics to temperate zone is more quantity but the serious limitations are the failure to maintain the quality of produce and lack of appropriate handling techniques to reduce losses after harvest.

Therefore, King Mongkut's University of Technology Thonburi, feeling it had a key role to play, established the Postharvest Technology Program in 1993 to be response for graduate programs, research and development with the application of adequate technologies to solve the problem of losses and to control the quality of raw agricultural products after harvest.

In line with the government policy to improve the relationship between Thailand and its neighbors. KMUTT is willing to assist Thai's neighbors to develop human capabilities including training and technical exchanges. In doing this, the postharvest technology program is being conducted in English and accepted students from the Indochina, ASEAN and other regional countries. Students will be encouraged to do work in which research directions are motivated by problems in their countries to satisfy the country needs.

## **Course Synopsis & Methodology:**

Postharvest losses of agricultural commodities have been recognized since the Sixth National Economic and Social Development Plan of Thailand. Losses of durable and perishable commodities are estimated to be 10 and 20-40%, respectively, worth over 20 billion baths annually. In order to reduce losses and maintain quality of the commodities, qualified manpower in the field of Postharvest Technology, which is the integrated knowledge among Engineering, Agriculture and Biology is urgently needed. Thus, Postharvest Technology program was established at KMUTT since 1993.

Academic team effort is the key issue to address the above challenges. At present, division of postharvest technology, KMUTT has 9 academic staffs and all of them graduated in doctoral degree from foreign countries (List of academic staff shows in Table 1). All of staffs have experience in research and extension work for more than 10 years in both regional and international level. In each year, all staffs published a research paper in average of 2 articles per person. The knowledge from our research was delivered to students through lecture and practical classes.

Postharvest Technology program at KMUTT has a strong linkage with the consortium university under the Postharvest Technology Innovation Center (PHTIC), Commission of Higher Education and also foreign partner universities. With supporting from PHTIC, a lot of modern instruments were purchased thus the students can do a basic research up to advance research. As we have very strong collaboration with foreign universities thus the professors from partner universities involved to develop the international curriculum in postharvest technology which may benefit to the student from all region of the world. We deliver the knowledge to students by using English as a tool. Until now, more than 15 foreign students awarded the degree from our program including the students who have supported by TICA (Appendix). Postharvest technology program (International program) at KMUTT is the first institution in Thailand that awarded the master and doctoral degree in this field.

### Course methodology

The course is geared towards participatory approaches as much as possible. A variety of methodologies will be used, including lecture/presentation, discussions, debates, group work, question and answers, demonstrations and practical sessions (hands-on practice). Students will be given teaching material after the class, and will be required to complete 45 hours of lecture and practical in each subject. The mid-term and final examination will be arranged in order to understand level of knowledge and understanding in key areas of each student. Thai higher

education uses a letter grading system in both undergraduate and graduate programs. However, other grading methods can be employed such as points or percentage depending on individual instructors throughout the courses. Those grading systems are converted as grade points as follows:

<i>Grade</i>	<i>Meaning Grade</i>	<i>Point</i>
A	Excellent	4.00
B+	Very good	3.50
B	Good	3.00
C+	Fairly good	2.50
C	Fair	2.00
D+	Poor	1.50
D	Very poor	1.00
F	Failure	0.00

### **Course Content/Study Topics:**

The division of postharvest technology offers graduate work leading to Master of Science in Postharvest Technology with majors in postharvest technology of perishable crops, postharvest technology of cereals and grain legumes. With a major, the main areas of specialization are postharvest physiology, postharvest entomology, postharvest pathology and postharvest engineering. The facilities available for graduate training include laboratory of postharvest physiology, laboratory of postharvest enzymes and molecular biology, packinghouse unit and others. Graduate work in this division is designed to develop a high order of independent thought, broad knowledge and technical skills. The emphasis in graduate work is placed on research, supplemented by courses and seminars.

### Course Requirement

#### 1. Compulsory Courses

14 credits

PHT 601 Research Techniques in Postharvest Technology	3 (2 3 7)
PHT 621 Postharvest Handling System of Perishable Crops	3 (2 3 7)
PHT 622 Postharvest Physiology and Technology of Perishable Crops	3 (2 3 7)
PHT 691 Seminar in Postharvest Technology I	1 (0 2 7)
PHT 692 Seminar in Postharvest Technology II	1 (0 2 7)
PHT 698 Special Problem	3 (0 3 9)

2. <u>Electives in Postharvest Technology Courses</u>	12 credits
PHT 602 Statistics for Agricultural Research	3 (2-3-9)
PHT 611 Postharvest Losses of Agricultural Products	3 (3 0 9)
PHT 623 Postharvest Handling System of Ornamental Plants	3 (2 3 7)
PHT 631 Postharvest Handling System of Cereals and Grain Legumes	3 (3 0 9)
PHT 632 Postharvest Technology of Seeds	3 (2 3 7)
PHT 651 Engineering Application for Postharvest Technology	3 (3 0 9)
PHT 652 System Designs of Postharvest Equipment and Storage Structures	3 (3 0 9)
PHT 653 Produce Packaging System	3 (2 3 7)
PHT 661 Postharvest Insect Pest of Agricultural Products	3 (2 3 7)
PHT 662 Postharvest Pathology of Agricultural Products	3 (2 3 7)
PHT 697 Selected Topics in Postharvest Technology	3 (3 0 9)

### 3. Thesis

PHT 699 Thesis	12 credits
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### **Qualification:**

Applicants must hold a Bachelor's Degree in Engineering or Science (agriculture, relevant biological or environmental science) average (GPA) of 2.5 or must has an experience in professional work at least 1 year.

### Admission Procedures

The application form will be evaluated applicants must take an entrance examinations includes written and/or interview organized by graduate studies committee, School of Bioresources and Technology. Because teaching system is all in English, prospective students must be proficient in this language. Graduate students are required to provide documentary evidence in the form of good results from the Test of English as a Foreign Language (TOEFL) or other equivalent test. Students who do not pass TOEFL examination with a minimum score of 500 are assigned to take LNG 550 and/or LNG 600. English courses are designed especially for them at the Department of Languages and Social Studies. Students must pass the test within 3 semesters.

**Document Required:**

- Application form
- Complete transcript record
- Curriculum vitae
- Health examination certificate (not over than 6 months)
- Statement of academic background in bachelor degree including brief of research experience
- Statement of study plan in Thailand

**Closing Date for Nominations:** May, 2018

**Late or incomplete applications/document will not be considered.**