



## COURSE SYLLABUS

First Semester Academic Year 2019

**1. Faculty of Economics Department of Economics**

- 2. Course Code** 01111445  
**Course name** Quantitative Analysis in Logistics  
**Total Credits** 3 credits  
**Prerequisite** - 0111121 Mathematics for Economics  
- 01111223 Fundamental Economics  
**Section** 1  
**Day and Time** Sunday 9.00 AM - 12.00 PM  
**Room** EC 5617
- 3. Lecturer** Col. Prawat Sahakij, Ph.D.
- 4. Office hours for consultation with students** By appointment  
**Email address** prawat\_sah@rta.mi.th

**5. Course Objectives**

- 5.1) To understand the logistics principles and to view logistics as more than an operation function, but as a strategic function that can create value and competitive advantage
- 5.2) To understand an intermediate knowledge in quantitative logistics, with emphasis on analysis of basis decision problems in individual parts of the value chain and quantitative solution methods and models
- 5.3) To be able to define and formulate various decision problems on strategic, tactical, and operational levels in transportation planning, distribution, and inventory management
- 5.4) To apply appropriate quantitative methods and tools for solution and analysis of logistical problems for the aforementioned areas

**6. Course Description**

Quantitative analysis in logistics provides basic principles and approaches in determining/ selecting the most economical choice in the following logistics areas: transportation management, inventory and warehouse management, location selection, and distribution management while serving the customer requirement and satisfaction. Several real-world business problems will be discussed while analyzing several aspects of the logistics system of such case will be promoted. Key performance indicators are emphasised in comparing the efficiency of each logistics alternatives.

**7. Course Outline**

- 7.1) Introduction to logistics and the value chain
- 7.2) Fundamental on quantitative analysis
- 7.3) Fundamental on transportation management
- 7.4) Fundamental on inventory management

7.5) Fundamental on distribution management

8. **Teaching Methodology**

Lecture, co-operative learning, discussion, homework and project are designed to help better understanding for this class.

Class Participation

Students are expected to attend class and to be in class on time. Class participation is a matter of making relevant questions that lead to a deeper understanding.

Homework

Students are expected to have homework completed before the class period. Homework assignment may be done within the group.

Class Project

The purpose of the class project is to demonstrate that you can apply principles or logistics analysis approaches to determine the real-life issues

9. **Teaching aids/materials**

Powerpoint slides, documents, real and simulated samples

10. **Measures of Achievement**

	Percent
10.1) Class participation	10
10.2) Homework/Cases	10
10.3) Class Project	25
10.4) Midterm Exam	25
10.5) Final Exam	30
Total	<u>100</u>

11. **Grading**

A criterion combines with statistical method. The lecturer remains his right to grade basing on his criteria and discrete judgement.

12. **Textbook**

There are several textbooks for the class as course notes will be provided. References include

1. Ronal H.Ballou (2004). Business Logistics/Supply Chain Management (Fifth Edition). Prentice Hall International Editions. ISBN 0-13-107659-0 (main material)
2. Wayne L. Winston (1994). Operation Research: Applications and Algorithms (Third Edition). Duxbury Press. ISBN 0-534-20971-8 (recommended material)

13. **Tentative Class Schedule**

Class	Topic	Class Activity
1	Introduction to logistics and the value chain <ul style="list-style-type: none"> <li>• What is logistics?</li> <li>• Strategic/Tactical/Operational planning</li> <li>• Logistics cost components</li> <li>• Logistics performance indicators</li> </ul>	Lecture, co-operative learning
2	Fundamental on logistics quantitative analysis <ul style="list-style-type: none"> <li>• Linear programming</li> <li>• Nonlinear programming</li> </ul>	Lecture, co-operative learning

3	Fundamental on logistics quantitative analysis <ul style="list-style-type: none"> <li>• Linear programming</li> <li>• Simulation model</li> </ul>	Lecture, co-operative learning
4	Fundamental on transportation decisions <ul style="list-style-type: none"> <li>• Transportation market &amp; carriers</li> <li>• Mode choice selection</li> <li>• Transportation decision-routing</li> </ul>	Lecture, co-operative learning
5	Fundamental on transportation decisions <ul style="list-style-type: none"> <li>• Transportation pricing</li> <li>• Intermodal transportation</li> <li>• Transportation decision-scheduling</li> </ul>	Lecture, co-operative learning
6	Fundamental on transportation decisions <ul style="list-style-type: none"> <li>• Transportation assignment</li> </ul>	Lecture, co-operative learning
	<b>Midterm exam</b>	
7	Fundamental on inventory decisions <ul style="list-style-type: none"> <li>• Storage-system costs and rate</li> <li>• Storage alternatives</li> <li>• The storage and handling decisions</li> <li>• Warehouse layout</li> </ul>	Lecture, co-operative learning
8	Field Trip	
9	Fundamental on inventory decisions <ul style="list-style-type: none"> <li>• Forecasting logistics requirement</li> <li>• Forecasting methods</li> </ul>	Lecture, co-operative learning
10	Fundamental on inventory decisions <ul style="list-style-type: none"> <li>• Type of inventory</li> <li>• Different principles for dealing with inventory management</li> <li>• Push-pull inventory control</li> </ul>	Lecture, co-operative learning
11	Fundamental on inventory decisions <ul style="list-style-type: none"> <li>• Decision rules for lot sizing</li> <li>• To be decided</li> </ul> <b>Class project progress presentation</b>	Lecture, co-operative learning  <b>Presentation</b>
12	Fundamental on distribution decisions <ul style="list-style-type: none"> <li>• Role of consolidation and transshipment</li> <li>• Location decision concepts</li> </ul>	Lecture, co-operative learning
13	Fundamental on distribution decisions <ul style="list-style-type: none"> <li>• Single facility location</li> <li>• Multiple facility location</li> </ul>	Lecture, co-operative learning
14	Fundamental on distribution decisions <ul style="list-style-type: none"> <li>• Distribution network problems</li> <li>• Minimum/maximum network problems</li> <li>• To be decided</li> </ul>	
15	<b>Class project presentation</b>	<b>Presentation</b>
	<b>Final Exam</b>	

\*Schedule may be adjusted during the semester. Changes will be announced in class. Students are responsible for being aware of any adjustments.