SYLLABUS:

Date / Revision 23 May 2015 / 02 May 2017 / PP
Faculty Life Sciences (LS)
Study Program Food Technology (FTE)

SUBJECT: Food Processing Technology 2

1 Basic Information

1.01	**Subject Name**	**Food Processing Technology 2**
1.02	**Semester**	5
1.03	**Level**	*2*
1.04	**SKS**	3
1.05	**Mandatory / Curriculum**	*D-02*
1.06	**Subject Code**	FPT2
1.07	**Subject Code**	FTE-CHE-D-LS-117
1.08	**Year**	2017 (7)
1.09	**Quality Control**	Final Test, OFSE, see evaluation
1.10	**Limitations**	Min 12 and Max 32 students in one class
1.11	**Combined with**	None
1.12	**Pre-requisite**	Chemistry and lab, Organic Chemistry and Lab, Microbiology, Physical Chemistry, Analytical Chemistry
1.13	**Responsible**	Dr. Tutun Nugraha
1.14	**Revision**	15-05-2017/pp

2 Description of Subject

The major objective for this course is to learn about the principles and methods for processing of food, with deeper understanding of how different processing conditions and methods can affect the safety and quality of the resulting food products. The course covers some processing techniques such as dehydration, blanching, pasteurization, sterilization, size reduction, mixing, forming, irradiation, baking, and roasting. Some typical local wisdom based processing techniques are also discussed especially in the 2nd part of the course.

PO Box 150, BSD CPA 15330
Tel. +62 85212318000
info@iuli.ac.id
www.iuli.ac.id
IULI – Eco Campus, The Breeze
Jl. BSD Grand Boulevard
BSD City 15345
Island of Java

3 Objectives

This course is one of the specialized subjects given as mandatory to students in Food Technology Department. It comprises of part 1 and part 2 and covers diverse mode of processing currently empoloyed in the industry, including Indonesian traditional industries (local wisdom/tradition). Along the way students also learn that the processes are geared towards a certain set of quality of products which need to be attained to ensure quality of the final products. The course is also made available as an elective for students in the Chemical Engineering Deaprtment.

4 Competency

Through this subject students will understand various concepts relevant processing of raw materials in the industry in achieving the industrial targets of products with a cretain quality:

- The techniuqes and function of different processings
- The application of each type of processing to achieve a set of quality objectives
- Control parameters of processing to ensure the above targets are achieved
- Calculation in thermal processing
- Food safety and quality tassurancet through technology

5 Learning Approach / Methodology

- Lectures/ Class contact (time-tabled) supplemented with interactive questions and answers to build the projects;
- Tutorial/Laboratory/Practice Classes: preview of materials, revision and/or reports writing;
- Student Study Effort: homework/assignment; preparation for test/quizzes/ examination.
- Writing assignments/preseantations

6 Evaluation

5.1	**Absence maximum**	25%
5.2	**Participation in Discussion**	5 Points
5.3	**Homework / Classwork**	5 Points
5.4	**Presentation /Simulation**	10 Points
5.5	**Daily Quiz**	20 Points
5.6	**Final Examination**	60 Points
	Total	100 Points

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7 Text Book and Reference

1	**Main Text Book:** • Food Processing Principles and Applications, Stephanie Clark, Stepahnie Jung, Buddhi Lamsal, Wiley, 2nd Ed. Wiley-Blackwell • Fellows P. 2000. Food Processing Technology, Principles and Practice 2nd Ditition. CRC Press.
2	**Supplement Textbooks:** • Brennan JG. 2006. Food Processing Handbook. Wiley-VCH • Hui YH. 2007. Handbook of Food Products Manufacturing. John Wiley & Sons, Inc • Garcia M, Tamara F, Eric G. 2010. Potential Applications of Nanotechnology in the Agro-food Sector. Ciênc. Tecnol. Aliment. Campinas, 30(3): 573-581 • Hariyadi P. 2008. The food-canning Industry in Indonesia: Need for Safety Assurance Regulation and Quality Optimization. Food Manufacturing Efficiency. 2(1): 45-48 • Zubaidah IK, Carmen MS, Bona S , Asti N, Indra MP , Deudeu L, Cecep MN. 2016. Potential Use of Gamma-Irradiated Ethnic Ready-to-Eat Foods to Improve the Nutritional Status of Landslide Victims. http://www.mdpi.com/journal/foods • Asep N, Hendrix T. 2016. Traditional Food for Small and Medium Enterprises (SMEs). Advances in Economics, Business and Management Research, volume 15. Atlantis Press • [Kemendag] Kementerian Perdagangan.2009. Indonesian Herbal: The Traditional Therapy. Trade Research & Development Agency. Jakarta

8 Content / Topics of Lecture

Week	Content/ Topics of Lecturing	Text Book Chapter	Remark
1	**Baking & Roasting** • Theory, direct & indirect heating, • oven operations (batch, semi-continuous, continuous) • application, effect on foods		1 x 3 x 50 minutes
2	**Minimal Processing Method** • Introduction, • process development, • application, • benefits, methods		1 x 3 x 50 minutes
3	**High Pressure Processing (HPP)** • Definition, • process development, • pulsed HPP systems, • combination HPP and others, • microorganism inactivation, • packaging, application		1 x 3 x 50 minutes

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4	**Processing Using Hot Oils** • Frying, frying oil, • oil absorption, • oil filtration, • equipment, • control of fryer operation & oil, • effect on food		1 x 3 x 50 minutes
5	**Processing by Removal of Heat** • Refrigeration, • chilling, • freezing, • thawing, • cryogenic, • high pressure freezing, • application, • effect on food		1 x 3 x 50 minutes
6	**Freeze Drying** • Rate of heat & mass transfer, • conduction, • radiant freeze dryers, • application, • effect on food		1 x 3 x 50 minutes
7	**Nanotechnology** • Definition, • application, • effect on food, • regulation, • food safety aspect		1 x 3 x 50 minutes
8	**MIDTERM SEMESTER BREAK**		
9	**Traditional processing 1** • Processing and utilization of Indonesian local carbohydrate source food • Fermented food (*tape*, palm/ rice- based), tapioca starch, rice, glutenous rice		1 x 3 x 50 minutes
10	**Traditional processing 2** • Processing and utilization of Indonesian local animal-origin protein source food • Indonesian traditional meat/ fish/ milk product (*rendang*, salted fish, *dadih*, etc)		1 x 3 x 50 Minutes
11	**Traditional processing 3** • Processing and utilization of legume (tofu, tempe, *oncom*,*dage*, soya sauce, etc) • Processing and utilization of Indonesian local plant origin food • Indonesian traditional meat/ fish/ milk product (*rendang*, salted fish, *dadih*, etc)		1 x 3 x 50 Minutes

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12	**Traditional processing 4** • Processing and utilization of Indonesian local fruit and vegetable • Fermented (*tempoyak, sayur asin*), dried, canned, frozen, juice etc.		1 x 3 x 50 minutes
13	**Traditional processing 5** • Processing and utilization of Indonesian local oil, fat and their derivatives • Crude palm oil, peanut oil, margarine, ice cream, coconut milk, etc		1 x 3 x 50 minutes
14	**Traditional processing 6** • Processing and utilization of Indonesian local sugar, sugar derivatives and other sweetener • Processing and utilization of sugars (arenga palm sugar, coconut palm sugar, nipa palm sugar, etc)		1 x 3 x 50 minutes
15	**Traditional processing 7** • Processing and utilization of Indonesian local beverage and other refresment • Alcoholic beverage, mineral water, coffee, tea, herbal drink		1 x 3 x 50 minutes
16	**Final Examination**		

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