SYLLABUS:

Date / Revision	23 May 2015 / 02 May 2017 / PP
Faculty	All Faculty
Study Program	All Study Program

SUBJECT: Applied Statistics

1	Basic Information

1.01	Subject Name	**Applied Statistics**
1.02	Semester	2
1.03	Level	*1*
1.04	SKS	2
1.05	Mandatory / Curriculum	*D-02*
1.06	Subject Code	MATH
1.07	Subject Code	CHE- FTE-BME-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	Food Technology, Chemical Engineering, Biomedical Engineering
1.12	Pre-requisite	None
1.13	Responsible	Dr. Tutun Nugraha
1.14	Revision	15-05-2017/pp

2	Description of Subject

This course is intended for 1st year university students (2nd semester) within the faculty of Life Sciences as well as other Faculty within the University. The course is an introductory course in statistics that assumes no prior knowledge of statistics but does assume some knowledge of high school algebra. Basic statistical concepts and methods are presented in a manner that emphasizes understanding the principles of data collection and analysis rather than theory. Much of the course will be devoted to discussions of how statistics is commonly used in the real world.

3	Objectives

There are two major parts to this course: The students are expected to be able to process and analyze the data to deduce some conclusion in terms of trends through the use of statistical clacluations. The delivering of this course consists of 3 parts in series. One of the parts is a prerequisite to another. First, we learn about descriptive statistics which include the introduction of statistics, mean, medium, modus, variance, standard deviation, quartile, etc. Second, we learn about the theory of probability and probability distribution, hypothesis formulation, and several statistic tests. Third, we learn about the nonparametric test for analyzing the data in the research.

4	Competency

Through this subject students will understand various concepts relevant to applied statistics currently used in the food industries, which includes
- The definition of basic terms in statistics
- The concept of descriptive statistics
- The concept of probability
- The discrete probability distributions
- The normal probability distributions
- The concept of confidence intervals
- The hypothesis testing with one and/or two samples
- Correlation and regression
- The Chi-square test and the F-Distribution
- The concept of nonparametric tests.

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	15 Points
5.4	Presentation /Simulation	-
5.5	Daily Quiz	20 Points
5.6	Final Examination	60 Points
	Total	100 Points

7	Text Book and Reference

| 1 | **Main Text Book:**
• Probability and Statistics for Engineers and Scientists – Walpole and Myers – 9th Edition – Prentice Hall
• Applied Statistics and Probability for Engineers – Douglas Montgomery – 3rd Edition – John Wiley and Sons
• Probability and Statistics for Engineering and The Sciences – Jay Devore – 8th Edition |
| 2 | **Supplement Textbooks:** |

8	Content / Topics of Lecture

Week	Content/ Topics of Lecturing	Text Book	Remark
1	**Introduction to Statistics** • An Overview of Statistics • Data Classification • Experimental Design		1 x 2 x 50 minutes
2	**Descriptive Statistics** • Frequency Distribution and Their Graphs • More Graphs and Displays • Measures of Central Tendency • Measures of Variation • Measures of Position		1 x 2 x 50 minutes
3	**Probability** • Basic Concept of Probability • Conditional Probability and The Multiplication Rule • The Addition Rule • Counting Principles		1 x 2 x 50 minutes
4	**Discrete Probability Distributions** • Probability Distributions • Binomial Distributions • More Discrete Probability Distributions		1 x 2 x 50 minutes
5	**Normal Probability Distributions** • Introduction to Normal Distributions • The Standard Normal Distribution • Application of Normal Distributions		1 x 2 x 50 minutes
6	**Normal Probability Distributions** • The Central Limit Theorem • Normal Approximation to Binomial Distributions		1 x 2 x 50 minutes

7	**Confidence Intervals** • Confidence Intervals for the Mean (Large and Small Samples) • Confidence Intervals for Population Proportions		1 x 2 x 50 minutes
8	**MIDTERM SEMESTER BREAK**		
9	**Confidence Intervals** • Confidence Intervals for Variance and Standard Deviation		1 x 2 x 50 minutes
10	**Hypothesis Testing with One Sample** • Introduction to Hypothesis Testing • Hypothesis Testing for the Mean • Hypothesis Testing for Proportions		1 x 2 x 50 minutes
11	**Hypothesis Testing with One Sample** • Hypothesis Testing for The Variance and Standard Deviation		1 x 2 x 50 Minutes
12	**Hypothesis Testing with Two Samples** • Testing the Difference Between Two Means • Testing the Difference Between Two Proportions		1 x 2 x 50 Minutes
13	**Correlation and Regression** • Correlation • Linear Regression • Measures of Regression and Prediction Intervals • Multiple Regression		1 x 2 x 50 Minutes
14	**Chi-Square Tests and The F-Distribution** • Goodness of Fit • Independence • Comparing Two Variances • Analysis of Variance		1 x 2 x 50 minutes
15	**Nonparametric Tests** • The Sign Test • The Wilcoxon Tests • The Kruskal-Wallis Test • Rank Correlation		1 x 2 x 50 minutes
16, 17	**Final Examination**		