UNIVERSITI TEKNOLOGI MARA
AGR543: QUANTITATIVE METHODS IN AGRIBUSINESS

Course Name (English)	QUANTITATIVE METHODS IN AGRIBUSINESS APPROVED
Course Code	AGR543

MQF Credit	3

Course Description	This course deals with mathematical principles and statistical techniques used in analysis and problems in agribusiness. Attention is given to data collection, prediction of agricultural economic variables, sound sampling methods, estimation of means, standard deviation, variance, indices, graphics, regression analysis, testing hypotheses, and the use of mathematical software to do statistical procedures. Topics studied include descriptive & inferential statistics, basic and discrete probability distributions, normal and sampling distributions, confidence interval estimation, mathematical concepts, linear regression, correlation analysis, and multiple regressions. The major emphasis of the course will be on understanding and absorbing mathematical and statistical techniques which assist agribusiness managers with decision making.

Transferable Skills	Able to know the techniques of quantitative research method in agriculture and engagement in life-long learning through presentations and class dialogues.

Teaching Methodologies	Lectures, Discussion

CLO		
	CLO1	State the techniques of quantitative research method and proficient in techniques of analyzing real-world operational situations using spreadsheet software.
	CLO2	Analyze consultant reports, economic and business relationships in solving and comprehending current problems in agricultural and business economics.
	CLO3	Apply the terminology, basic tools and concepts of management in statistical decision making, as well as the current software in the area

Pre-Requisite Courses	No course recommendations

Topics
1. 1. Introduction to Statistics   1.1) N/A
2. 2. The Normal Distribution and Sampling Distributions   2.1) 2.1. The Normal Distribution   2.2) 2.2. Assessing the Normality assumption   2.3) 2.3. Generating Normal Probability Plots   2.4) 2.4. The Exponential Distribution   2.5) 2.5. Sampling Distribution of the Mean   2.6) 2.6. Generating Random Samples   2.7) 2.7. Sampling Distribution of the Proportion & Sampling from Finite Populations
3. 3. Confidence Interval Estimation   3.1) 3.1. Confidence Interval Estimation of the Mean (? known)   3.2) 3.2. Confidence Interval Estimation of the Mean (? unknown)   3.3) 3.3. Confidence Interval Estimation of the Mean   3.4) 3.4. Determining Sample Size   3.5) 3.5 Estimation and Sample Size Determination for Finite   3.6) Populations
4. 4. Fundamentals of Hypothesis Testing: One-Sample Tests   4.1) 4.1. Hypothesis-Testing Methodology   4.2) 4.2. Z Test of Hypothesis for the Mean (known)   4.3) 4.3. The p-Value Approach to Hypothesis Testing   4.4) 4.4. One-Tailed Tests

5. 5. Two-Sample Tests with Numerical Data
5.1) 5.1. Comparing Two Independent Samples: t Tests for Differences in Two Means
5.2) 5.2. Performing the Pooled-Variance t Test for Differences in Two Means
5.3) 5.3. F Test for Differences in Two Variances

6. 6. ANOVA and Other c-Sample Tests with Numerical Data
6.1) 6.1. The Completely Randomized Model: One-Factor Analysis of Variance
6.2) 6.2. Performing the Tukey-Kramer Procedure

7. 7. Two-Sample and c-Sample Tests with Categorical Data
7.1) 7.1. Z Test for the Difference in Two Proportions
7.2) 7.2. x2 Test for the Difference in Two Proportions
7.3) 7.3. x2 Test for Differences in c Proportions
7.4) 7.4. x2 Test of Independence

8. 8. Simple Linear Regression and Correlation
8.1) 8.1. Types of Regression Models
8.2) 8.2. Determining the Simple Linear Regression Equation
8.3) 8.3. Calculating the Simple Linear Regression Coefficients
8.4) 8.4. Measure of Variations and Residual Analysis
8.5) 8.5. Measuring Autocorrelation: the Durbin-Watson Statistic
8.6) 8.6. Calculating the Durbin-Watson Statistic

9. 9. Multiple Regression Models
9.1) 9.1. Developing the Multiple Regression Model
9.2) 9.2. Residual analysis for the Multiple Regression Model
9.3) 9.3. Testing for the Significance of the Multiple Regression Model
9.4) 9.4. Dummy Variables
9.5) 9.5. Using Transformations in Regression Models

Assessment Breakdown	%
Continuous Assessment	60.00%
Final Assessment	40.00%

Details of Continuous Assessment	Assessment Type	Assessment Description	% of Total Mark	CLO
	Assignment	Assignment	20%	CLO1
	Case Study	Case study	20%	CLO2
	Test	Online Test	20%	CLO1

Reading List	Reference Book Resources	• **Levine M. D., Berenson L. M., and Stephan D 2010, *Statistics for Managers Using Microsoft Excel*, 6th Edition Ed., Prentice-Hall**
Article/Paper List	This Course does not have any article/paper resources	
Other References	This Course does not have any other resources	