Course Syllabus

1	**Course title**	*Agricultural Statistics*
2	**Course number**	*605150*
3	**Credit hours**	3
	Contact hours (theory, practical)	**Theory**
4	**Prerequisites/corequisites**	*Mathematics101*
5	**Program title**	**Agricultural economics and agribusiness**
6	**Program code**	05
7	**Awarding institution**	
8	**School**	**Agriculture**
9	**Department**	**Agricultural economics and agribusiness**
10	**Course level**	Second
11	**Year of study and semester (s)**	First semester 2021/2022
12	**Other department (s) involved in teaching the course**	-
13	**Main teaching language**	Lectures
14	**Delivery method**	☐Face to face learning X Blended ☐Fully online
15	**Online platforms(s)**	☐Moodle X Microsoft Teams ☐Skype ☐Zoom ☐Others…………
16	**Issuing/Revision Date**	Oct 2021

17 Course Coordinator:

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18 Other instructors:

Name:
Office number: Phone number:
Email: Contact hours:

19 Course Description:

As stated in the approved study plan.
The course aims at developing an understanding of the basic ideas of statistical reasoning, i.e. what statistical analysis to be used, and how are the results of the statistical analysis to be interpreted? The course presents statistical concepts and introduces descriptive and inferential statistical methods of analyses and their applications in agribusiness. Students gain hands-on experience of statistical analysis by designing and applying how to analyze real survey data and agricultural case studies by themselves

20 Course aims and outcomes:

A- Aims:

1. The course aims at explaining the different methods of data analysis by using statistical and economical concept.
2. This course aims at providing the modern methods of analysing data used in economics, business and many other social sciences.
3. To develop a knowledge and understanding of analyzing the data and choosing and testing mathematical model to explain the relationships between different variables.

B- Students Learning Outcomes (SLOs):

Upon successful completion of this course, students will be able to:

A. Knowledge and Understanding: Student is expected to

A1– define what are statistics, population, and samples; use of proper sampling methods; and he can use descriptive and analytical statistics to analyze data based on the levels of measurement.

A2– Understands and be able to compute and use various descriptive measures such as the mean, median, standard deviation and variance.

A3– Understand sufficient probability to understand the principles that underlie statistics.

A4– Understand the binomial and the normal probability distributions and how to use them.

A5– Understand what the sampling distribution of a variable is and its relationship to the normal distribution.

A6– be able to estimate a population parameter with both a point estimate and an interval estimate and will understand what this information is saying about a population.

A7– be able to select a proper hypothesis test; to perform the test; and how to interpret the data, i.e. to draw conclusions and derive meaningful information from the data.

A8– Understand what a simple linear regression model is and how to estimate regression equation, and to use it for prediction.

B. Intellectual Analytical and Cognitive Skills: Student is expected to

B1– be able to conduct exploratory data analyses through graphical and numerical summaries.

B–2– compute and use various descriptive measures such as the mean, median, standard deviation and variance.

B–3 be able to estimate a population parameter with both a point estimate and an interval estimate and will understand what this information is saying about a population.

B4– perform the proper hypotheses test; and how to interpret the data, and how to estimate simple linear regression model, and to use it for prediction.

C. Subject– Specific Skills: Students is expected to

C1– be able to conduct exploratory data analyses through graphical and numerical summaries.

C2– able to choose appropriate analyses from a variety of statistical methods and implement those analyses with proficient use; and to draw conclusions and derive meaningful information from the data.

D. Transferable Key Skills: Students is expected to

D1– define what are statistics, population, and samples; use of proper sampling methods; and he can use descriptive and analytical statistics to analyze data based on the levels of measurement.

D2– select a proper hypothesis test; to perform the test; and how to interpret the data, i.e. to draw conclusions and derive meaningful information from the data.

D3– be able to interpret results correctly and make inferences consistent with the study design and communicate results effectively

SLOs SLOs of the course	SLO (1) Apply economic principles and research methods in solving economic problems and for agricultural production management.	SLO (10) Apply critical thinking and problem-solving skills, and pursue continuous education in aspects of agricultural economics and agribusiness management.
1 compute and use various descriptive measures such as the mean, median, standard deviation and variance.	√	√
2 perform the proper hypotheses test; and how to interpret the data, and how to estimate simple linear regression model, and to use it for prediction.	√	√
3 be able to conduct exploratory data analyses through graphical and numerical summaries.	√	√
4 able to choose appropriate analyses from a variety of statistical methods and implement those analyses with proficient use; and to draw conclusions and derive meaningful information from the data.		√
5 define what are statistics, population, and samples; use of proper sampling methods; and he can use descriptive and analytical statistics to analyze data based on the levels of measurement.	√	√
6 be able to interpret results correctly and make inferences consistent with the study design and communicate results effectively	√	√

21. Topic Outline and Schedule:

week	Lecture	Topic	SLO's	Learning Methods (Face to Face	Plat-form	Synchronous / Asynchronous Lecturing	Evaluation Methods	Resources
1	1.1	1) **INTRODUCTION**: Definitions, population, sample, variables, observations,	A1.D1	Blended	MsT	Synchronous lecturing,	Exam, Quizzes	Spiegel,ch1 Salvatore, ch1
	1.2	qualitative and quantitative variables, continuous and discrete variables, finite and infinite populations.		Blended	MsT	Synchronous lecturing,	Exam, Quizzes	Spiegel,ch1 Salvatore, ch1
2-5	2.1	2) **DESCRIPTIVE TECHNIQUES** Tabular and graphical description, grouped and ungrouped data, frequency distribution, relative frequency histogram and normal graph-skewed.	A1,B1,C1	Blended	MsT	Synchronous lecturing,	Exam, Quizzes	Spiegel,ch2 Weiss, ch 2
	2.2	Measures of Central Tendency: Mean, weighted, median, mode, cumulative frequency, lower quartile, upper quartile.	A2,B2,C1,D1	Blended	MsT	Synchronous lecturing,	Exam, Quizzes	Spiegel,ch3 Salvatore, ch2
	2.3	Measures for Dispersion: Range, variance, standard deviation for (grouped and ungrouped data) and (sample and population), and coefficient of variation Class work	A2,B2,C1,D1	Blended	MsT	Synchronous lecturing,	Exam, Quizzes	Spiegel,ch2 Weiss, ch 2
6	3.1	*(3) PROBABILITY THEORY:* Introduction, laws of probabilities and mathematical expectations	A3,C1	Blended	MsT	Synchronous lecturing,	Exam, Quizzes	Salvatore, ch3 Weiss, ch 4
	3.2	Introduction, laws of probabilities and mathematical expectations	A3,C1	Blended	MsT	Synchronous lecturing,	Exam, Quizzes	Salvatore, ch3 Weiss, ch 4
7-8	4.1	*4) THE NORMAL CURVE AND NORMAL AREA TABLE* Relationship between frequency distribution and probability concepts for Continuous and discrete distributions	A4,C1	Blended	MsT	Synchronous lecturing,	Exam, Quizzes	Spiegel,ch7 Salvatore, ch3
	4.2	Normal distribution, standard normal distribution curve,	A5	Blended	MsT	Synchronous lecturing,	Exam, Quizzes	Spiegel,ch7 Salvatore, ch3

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		normal area table and how to use normal area table.					
9	5.1	(5)STATISTICAL INFERENCE : ESTIMATION All possible samples with and without replacement, regard and disregard the order of sample space	A6,B3 ,C2, D2	Blended		Exam, Quizzes	Spiegel,ch8 Salvatore, ch4
	5.2	Sampling distribution of means and sampling distribution of proportions	A6,B3 ,C2, D2	Blended	MsT	Synchronou s lecturing,	Exam, Quizzes	Spiegel,ch9 Salvatore, ch4
10-12	6.1	(6) STATISTICAL INFERENCE :TESTING HYPOTHESES: Assumptions, hypothesis test statistic, attend significance level & conclusion	A6,A7 ,B3,C 2,D2, D3	Blended	MsT	Synchronou s lecturing,	Exam, Quizzes	Spiegel,ch9
	6.2	large sample, Standardized value (Z- table)	A6,A7 ,B3,C 2,D2, D3	Blended	MsT	Synchronou s lecturing,	Exam, Quizzes	Salvatore, ch5
	6.3	small sample, t- table, test for mean, test for proportion, binomial test and confidence level	A6,A7 ,B3,C 2,D2, D3	Blended	MsT	Synchronou s lecturing,	Exam, Quizzes	Salvatore, ch5
13-14	7.1	Chi- square Test (χ^2), test of goodness and independence.	A6,A7 ,B3,C 2,D2, D3	Blended	MsT	Synchronou s lecturing,	Exam, Quizzes	Spiegel,ch11
	7.3	Analysis of Variance: One - way classification	A6,A7 ,B3,C 2,D2, D3	Blended	MsT	Synchronou s lecturing,	Exam, Quizzes	Salvatore, ch2
15	8.1	(7) REGRESSION ANALYSIS Linear regression model for one independent variable. - Goodness of fit, R^2 coefficient	A8,B4 ,C2,D 2,D3	Blended	MsT	Synchronou s lecturing,	Exam, Quizzes	Spiegel,ch12
	8.2	Simple Correlation	A8,B4	Blended	MsT	Synchronou s lecturing,	Exam, Quizzes	Spiegel,ch12
	8.3	Revision		Blended	MsT	Synchronou s lecturing,		

22 Evaluation Methods:

Opportunities to demonstrate achievement of the SLOs are provided through the following assessment methods and requirements:

Evaluation Activity	Mark	Topic(s)	SLOs	Period (Week)	Platform
First Exam	25	Ch1-ch4/part1	A1.D1, B1,C1, A2,B2,C1,D1, A3,C1, A4,C1	**16/11/2021**	In class
Second Exam	25	ch4/part2- ch6 part1	A5,A6,B3,C2, D2,,A7,,D2,D3,	**19/12/2021**	In class
Final Exam	50	All material	A6,A7,B3,C2,D 2,D3,A8,B4,C2, D2,D3		

23 Course Requirements

(e.g: students should have a computer, internet connection, webcam, account on the Microsoft team, and frequent access to Moodle platform.

24 Course Policies:

A- Attendance policies: **Students should attend all classes on time**.

B- Absences from exams and submitting assignments on time: **No makeup exams will be made. Only medical excuses from the JU hospital.**

C- Health and safety procedures: **Please consider the safety procedures as announced.**

D- Honesty policy regarding cheating, plagiarism, misbehavior: **cheating, plagiarism, misbehavior will be handled according to JU regulations.**

E- Grading policy: **according to JU regulations**

F- Available university services that support achievement in the course:

25 References:

A- Required book(s), assigned reading and audio-visuals:

- Salvatore, D. "Theory and Problems of Statistics and Econometrics" , Schaum's Outline. Series in Economics, McGraw-Hill Book Company, New York, 1982.
- Spiegel, M , Statistics, Schaum's Outline Series, McGraw - Hill Book Company, New York, USA.

B- Recommended books, materials, and media:

- Weiss, Neil , 2002, Introductory Statistics, Addison-Wesley Publishing Company, Reading, Massachusetts, USA.

26 Additional information:

Name of Course Coordinator: ----------------------------------Signature: ---------------------- Date: -------------------

Head of Curriculum Committee/Department: --------------------------- Signature: ----------------------------------

Head of Department: -- Signature: ---------------------------

Head of Curriculum Committee/Faculty: -------------------------------------- Signature: ------------------------

Dean: -- Signature: --