**COURSE SYLLABUS**

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| Course Name | Elementary Statistics and Probability |
| Course Credits | 3 units |
| Course Description  | The course equips the students with the basic statistical tools to understand various phenomena. The topics on mean, variance, sampling, and estimation eventually allow the students to be able to perform hypothesis testing on real-life problems from different fields. The course includes applications and data analysis with computations carried out using SPSS. |
| Contact Hours/ week | 3 hours |
| Prerequisite  | None |
| Course Outcomes | 1. Demonstrate skills in solving different problems using the principles of counting and theories of probability
2. Identify probability distribution
3. Explain the basic concepts in statistics and integrate the role of statistics in the modern way of life
4. Recognize the value of preparing a frequency distribution table and its graphical representation
5. Understand the different measures of central tendency
6. Identify the measures of position
7. Demonstrate the concept of variability, skewness and kurtosis
8. Explain the normal curve and normal distribution
9. Explain, compute and analyze linear regression and correlation
10. Analyze the given set of data and accurately describe and interpret the data using statistical tools/instruments
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| COURSE OUTLNE AND TIMEFRAME |
|  | Course Content/ Subject Matter |
| Week 1 | Introduction to Probability and Counting Techniques |
| Week 2 | Permutations and Combinations |
| Week 3 | Sample Space, Events and Probability |
| Week 4 | Probability Distribution |
| Week 5 | Preliminary Examination |
| Week 6 | Nature of Statistics |
| Week 7 | Presentation of Data |
| Week 8 | Measures of Central Tendency |
| Week 9 | Midterm Examination  |
| Week 10 | Measures of Position |
| Week 11-12 | Measures of Variability, Skewness and Kurtosis |
| Week 13 | The Normal Distribution |
| Week 14 | Semifinal Examination |
| Week 15 | Simple Linear Regression and Correlation |
| Week 16-17 | Hypothesis Testing |
| Week 18 | Final Examination |

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| Course Objectives | Summative Assessment Task | Details  |
| 1. Demonstrate skills in solving different problems using the principles of counting and theories of probability
2. Identify probability distribution
3. Explain the basic concepts in statistics and integrate the role of statistics in the modern way of life
4. Recognize the value of preparing a frequency distribution table and its graphical representation
5. Understand the different measures of central tendency
6. Identify the measures of position
7. Demonstrate the concept of variability, skewness and kurtosis
8. Explain the normal curve and normal distribution
9. Explain, compute and analyze linear regression and correlation
10. Analyze the given set of data and accurately describe and interpret the data using statistical tools/instruments
 | Problem set is considered as project in this subject.Prelim ExaminationA Survey Integrating StatisticsMidterm ExaminationProblem set Semi-final ExaminationProblem set Final Examination | This task is given to the students to provide an opportunity to apply what they have learned during a unit of study. Test is given to evaluate the students’ learning of the concepts and principles of counting and probability. The students are expected to conduct a survey to integrate the concepts of sampling techniques, methods of data collection and presentation. The criteria in the rubrics shall focus on the integration of statistics.Test is given to evaluate the students’ learning of the basic concepts of statistics, frequency distribution, graphical representation and measure of central tendency.This task is given to the students to provide an opportunity to apply what they have learned during a unit of study. Test is given to evaluate the students’ learning on the measures of position, variability, skewness, kurtosis, normal curve and normal distribution.This task is given to the students to provide an opportunity to apply what they have learned during a unit of study. Test is given to evaluate the students’ learning on linear regression, correlation, and inferential statistics  |

LEARNING PLAN

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| **Desired Learning Outcomes (DLO)** | **Course Content/****Subject Matter** | **Textbooks/ References** | **Teaching and Learning Activities (TLAs)** | **Assessment of Tasks (ATs)** | **Resource Materials** | **Time Table** |
| 1. Demonstrate skills in solving different problems using the principles of counting and theories of probability
	1. Explain the counting techniques and its application to probability, illustrate a tree diagram, differentiate permutations to combinations, describe the sample, events and sample space and define probability, determine the characteristics of probability, compute the probability value
 | Unit 1- Principles of Counting and Theories of Probability1. Counting Rules
2. Permutation
3. Combination
4. Probability
5. Types of Probability
6. Sample Spaces and Events
7. Operations with Events
8. Some Rules of Probability
9. The Additive Rules
10. Conditional Probability
11. The Multiplication Rules
 | Altares, P. et al. (2012) Elementary Statistics with Computer Applications. Second ed. Quezon City: Rex Book Store Alferez, M. et al. (2006) Statistics and Probability. First ed. Quezon City: MSA Publishing House  | Modules for Asynchronous Online Class via LMSDirect Instruction via Synchronous Online ClassGroup Problem Solving: Students are paired with another student and will be given different tasks to work on. After some time, they will be asked to exchange answers thru email. They will be asked to compare and explain their solutions and answer to the problems.  | Performance Task: Problem Set via LMSWritten Work: Quiz via LMS | Web access at <http://stcbauan.edu.ph/stcflip>This site contains all course documents, PPTs, assignments, examinations and other materials. | Week 1-3 |
| 1. Identify probability distribution
	1. Explain the data behind mathematical expectation
	2. Identify some discrete probability distributions
	3. Describe the binomial and normal probability distribution
 | Unit 2 - Probability Distribution1. The Binomial Distribution
2. Characteristics
3. Mean, Variance, and Standard Deviation
4. Poisson Probability Distribution
5. Characteristics
6. Mean, Variance, and Standard Deviation
 | Altares, P. et al. (2012) Elementary Statistics with Computer Applications. Second ed. Quezon City: Rex Book StoreSirug, W. (2011). Basic Probability and Statistics. Makati City: Good Books for Readers Enterprise | Modules for Asynchronous Online Class via LMSDirect Instruction via Synchronous Online ClassThink-Pair and Share: In pairs, students will discuss about probability distribution and create problems related to probability distribution via Google meet. | Use a rating scale for the compilation of probability problems and solutions developed by the students.Written Work: Quiz via LMS | Web access at <http://stcbauan.edu.ph/stcflip>This site contains all course documents, PPTs, assignments, examinations and other materials. | Week 4 |
| Preliminary Examination |  |  |  |  |  | Week 5 |
| 1. Recognize the importance of statistics
	1. Familiarize themselves on the scope and division of statistics
	2. Identify the classification of variables
	3. Distinguish the different levels of measurement
	4. Identify different types of data collection and demonstrate sampling techniques using their own example
	5. Determine sample size from a given population
 | Unit 3 – Nature of Statistics1. Division of Statistics
2. Parametric and Statistics
3. Sources of Data
4. Constant and Variable
5. Types of Data
6. Classification of Variables
7. Levels of Measurement
8. Sampling Techniques
9. Methods of Collecting Data
10. Methods of Presenting Data
11. Summation Notation
 | Sirug, W. (2011). Basic Probability and Statistics. Makati City: Good Books for Readers EnterpriseBlay, B. (2013). Elementary Statistics. Revised ed. Mandaluyong City: Anvil Publishing, Inc.Altares, P. et al. (2012) Elementary Statistics with Computer Applications. Second ed. Quezon City: Rex Book Store  | Modules for Asynchronous Online Class via LMSDirect Instruction via Synchronous Online Class Categorizing Grid via Personal Response System: This allows students to place examples for different data types, classification of variables, levels of measurement, and sampling techniques.Cooperative Learning Structure via Online Interview: With another student or two from the class, the students are asked to make an online interview for thirty or more students at their college/school, get some information from them like name, course and year. The students are to decide to what data collection method to use and what sampling technique to employ.  | Performance Task: Problem Set via LMSUse a rating scale for the correctness of the students’ output.Written Work: Long Quiz via LMSRubrics assessing the output of the students | Web access at <http://stcbauan.edu.ph/stcflip>This site contains all course documents, PPTs, assignments, examinations and other materials. | Week 6 |
| 1. Recognize the value of preparing a frequency distribution table and its graphical representation
 | Unit 4 - Presentation of Data1. Textual and Tabular
2. The Frequency Distribution Table
3. The Contingency Table
4. Graphical Presentation of Data
 | Blay, B. (2013). Elementary Statistics. Revised ed. Mandaluyong City: Anvil Publishing, Inc. | Modules for Asynchronous Online Class via LMSDirect Instruction via Synchronous Online Class Multiple Visual Representation - using the information gathered from their activity on collection of data, the students are to present using the different forms of data presentation Integration of Available Digital Technology  | Written Works and digital technology application via LMSRubrics assessing the output of the students | Web access at <http://stcbauan.edu.ph/stcflip>This site contains all course documents, PPTs, assignments, examinations and other materials. | Week 7 |
| 5. Understand the different measures of central tendency | Unit 5 - Measures of Central Tendency1. Mean
2. Median
3. Mode
 | Bueno, D. (2016) Introduction to Statistics. First ed. Quezon City: Great Books Trading  | Modules for Asynchronous Online Class via LMSDirect Instruction via Synchronous Online Class Pass a Problem: The students will identify and solve a problem related to measures of central tendency. | Performance Task: Problem Set via LMSWritten Work: Quiz via LMS | Web access at <http://stcbauan.edu.ph/stcflip>This site contains all course documents, PPTs, assignments, examinations and other materials. | Week 8 |
| Midterm Examination |  |  |  |  |  | Week 9 |
| 1. Identify the measures of position
 | Unit 6 - Measures of Position1. Quartile
2. Decile
3. Percentile
 | Sirug, W. (2011). Basic Probability and Statistics. Makati City: Good Books for Readers Enterprise | Modules for Asynchronous Online Class via LMSDirect Instruction via Synchronous Online Class Think-Pair-Share via Online Class. The students will think about a question related to measures of position, pair off and discuss the question with a classmate, and then share their answers with the whole class via Google meet.  | Performance Task: Problem Set via LMSWritten Work: Quiz via LMS | Web access at <http://stcbauan.edu.ph/stcflip>This site contains all course documents, PPTs, assignments, examinations and other materials. | Week 10 |
| 1. Demonstrate the concept of variability, skewness and kutosis
	1. Compute the range, quartile deviation, mean absolute deviation, standard deviation, variance, skewness and kurtosis
 | Unit 7 - Measures of Variability, Skewness and Kurtosis1. Range
2. Mean Deviation
3. Quartile Deviation
4. Variance
5. Standard Deviation
6. Skewness and Kurtosis
7. Standard Scores of z-scores
8. Coefficient of Variation
 | Altares, P. et al. (2012) Elementary Statistics with Computer Applications. Second ed. Quezon City: Rex Book Store Bueno, D. (2016) Introduction to Statistics. First ed. Quezon City: Great Books Trading | Modules for Asynchronous Online Class via LMSDirect Instruction via Synchronous Online Class Pairs Check: This gives the students to review work with a peer and forces students to communicate thinking to another. The pairs may use their corporate email in sharing files and giving reviews. They will present their ideas during synchronous class or via LMS | Performance Task: Problem Set via LMSWritten Work: Quiz via LMSUse a rating scale for the output of the students | Web access at <http://stcbauan.edu.ph/stcflip>This site contains all course documents, PPTs, assignments, examinations and other materials. | Week 11-12 |
| 1. Explain the normal curve and normal distribution
	1. Discuss the characteristics of normal curve
 | Unit 8 - The Normal Distribution | Blay, B. (2013). Elementary Statistics. Revised ed. Mandaluyong City: Anvil Publishing, Inc. | Modules for Asynchronous Online Class via LMSDirect Instruction via Synchronous Online Class Present their own application of normal distribution via asynchronous or synchronous online class | Written Work: Quiz via LMSRubrics assessing the output of the students | Web access at <http://stcbauan.edu.ph/stcflip>This site contains all course documents, PPTs, assignments, examinations and other materials. | Week 13 |
| Semi-final Examination |  |  |  |  |  | Week 14 |
| 1. Explain, compute and analyze linear regression and correlation
 | Unit 9 - Simple Linear Regression and Correlation | Alferez, M. et al. (2006) Statistics and Probability. First ed. Quezon City: MSA Publishing House | Modules for Asynchronous Online Class via LMSVisualization Activity and Interpreting Graphs via Synchronous Online Class Hands-on Activity using digital technology. Students will propose solve linear regression and correlation problems related to real life situation. They will solve such problems using the available digital technology. | Product-based Task via LMS: • drawing of the scatter plot * Answers to problem sets
* Mathematical Models

Written Work: Quiz via LMSRubrics assessing the output of the students | Web access at <http://stcbauan.edu.ph/stcflip>This site contains all course documents, PPTs, assignments, examinations and other materials. | Week 15 |
| 1. Analyze the given set of data and accurately describe and interpret the data using statistical tools/instruments
	1. Formulate the null and alternative hypothesis
	2. Identify the steps involved in hypothesis testing and describe critical region and critical value
	3. distinguish between Type I and Type II errors
	4. Explain the steps in testing hypothesis
	5. Apply the Z-test and the t-test for testing hypothesis
 | Unit 10 - Hypothesis Testing1. Tests of Significance
2. Hypothesis: Null and Alternative
3. Hypothesis Testing
4. Level of Significance, Errors and Rejection Region
5. Z-test
6. T-test
 | Blay, B. (2013). Elementary Statistics. Revised ed. Mandaluyong City: Anvil Publishing, Inc.Sirug, W. (2011). Basic Probability and Statistics. Makati City: Good Books for Readers Enterprise  | Modules for Asynchronous Online Class via LMSDirect Instruction via Synchronous Online Class Problem Solving Activities via LMS: Students are given different situations/problems and ask them to use the correct statistical test in hypothesis testing.  | Written Works: Hypothesis Formulation and decision making Outputs in digital form via LMSRubrics assessing the output of the studentsWritten Work: Quiz via LMS | Web access at <http://stcbauan.edu.ph/stcflip>This site contains all course documents, PPTs, assignments, examinations and other materials. | Week 16-17 |
| Final Examination |  |  |  |  |  | Week 18 |

Prepared by:

**JULIE ANN D. MENDOZA, MS**

Instructor