DE LA SALLE UNIVERSITY
College of Science
Department of Mathematics

STATLIT – *Statistical Literacy*
Prerequisite: *Prerequisite to:*

Instructor: _____   **Contact details:** _____
Consultation Hours: _____   **Class Schedule and Room:** _____

Course Description

This course STATLIT (Statistical Literacy) focuses on conceptual understanding of everyday statistics, and basic statistical procedures. Topics include descriptive statistics, intuitive probabilities, point and interval estimation, and hypothesis testing, illustrated and applied to practical situations and various fields of interest. It also gives students competence in basic computer technology by generating descriptive statistics and performing statistical analysis using PHSTAT (an add-in of MS EXCEL).

Learning Outcomes

On completion of this course, the student is expected to present the following learning outcomes in line with the Expected Lasallian Graduate Attributes (ELGA)

ELGA	Learning Outcome
Critical and Creative Thinker Effective Communicator Lifelong Learner Service-Driven Citizen	At the end of the course, the student will apply appropriate statistical concepts and processes using different statistical software in solving various conceptual and real-world problems.

Final Course Output

As evidence of attaining the above learning outcomes, the student is required to submit the following during the indicated dates of the term.

Learning Outcome	Required Output	Due Date
At the end of the course, the students will be able to apply appropriate statistical concepts, methodologies and technologies in organizing, analyzing and interpreting various real-world situations and in coming up with relevant decisions.	Oral and written presentation of survey results	Week 13

Rubric for assessment

CRITERIA	EXEMPLARY 4	SATISFACTORY 3	DEVELOPING 2	BEGINNING 1
Formulation of the Research Problem and Objectives (10%)	Research problem and objectives are clearly defined and significant; Demonstrates evidence that the research problem was researched and designed well.	Research problem and objectives are clearly defined and significant.	Research problem is clearly defined but some objectives are insignificant.	Research problem and objectives are vague and insignificant.
Construction of Survey Questionnaire (15%)	Questions are well-stated and address the research objectives.	Questions are well-stated but some research objectives are not addressed.	Some questions are not well-stated and some research objectives are not addressed.	Questions are not well-stated and do not address the research objectives.
Appropriateness and Extensiveness of Descriptive Statistics (25%)	Data are presented accurately using all appropriate tables/graphs/numerical measures with proper labels/titles and correct interpretations.	Data are presented using appropriate tables/graphs/ numerical measures.	Some data are presented using inappropriate tables/graphs/ numerical measures.	Data are presented using inappropriate tables/graphs/n umerical measures.
Applications of Inferential Statistics (25%)	Statistical analyses are appropriate with correct interpretations and relevant conclusions.	Statistical analyses are appropriate with correct interpretations.	Some statistical analyses are inappropriate.	Statistical analyses are inappropriate

Clarity and Organization of Written Report (10%)	Written report is organized logically and presented clearly with effective transitions.	Written report is organized logically and presented clearly.	Written report is organized and some discussions are not clear.	Written report is not organized.
Oral Presentation (15%)	Overall presentation is creative and well organized with innovative ideas.	Overall presentation is creative and well organized.	Overall presentation is organized	Overall presentation is not organized

Additional Requirements

- Inquiry Plans \ Activities
- Skills Check
- Computer Output
- Portfolio
- Reflection \ Reaction Paper
- Mid Term Exam
- Final Exam

Grading System

Midterm Examination:	25%	**Scale:**		
Inquiry Plans/Activities/Skills Check/Computer Output/Portfolio/Reflection/Reaction Paper:	25%	95-100% 89-94%	4.0 3.5	
Final Course Output:	25%	83-88%	3.0	
Final Examination:	25%	78-82%	2.5	
TOTAL:	**100%**	72-77%	2.0	
Passing Grade: 60%		66-71%	1.5	
		60-65%	1.0	
		<60%	0.0	

Learning Plan

LEARNING OUTCOME	TOPIC	WEEK NO.	LEARNING ACTIVITIES
At the end of the course, the students will be able to apply appropriate statistical concepts, methodologies and technologies in organizing, analyzing and interpreting various real-world situations and in coming up with relevant decisions.	**Module 1 DESCRIPTIVE STATISTICS** **1. Overview of Statistics: Basic Concepts and Terms** 1.1 What is Statistics? 1.2 Applications: Everyday Statistics 1.3 Descriptive and Inferential Statistics 1.4 Population and Sample 1.5 Sampling and Randomization 1.6 Parameter and Statistics 1.7 Primary and Secondary Data 1.8 Methods of Data Collection 1.9 Variables and Types of Variables 1.10 Scales of Measurement of Dat	Week 1- 2	Eliciting Prior Knowledge: Spider Mapping Inquiry Approach: Variations in Real Life Newspaper /Journal Clippings on Applications of Statistics
	2. Sources of Data 2.1 Familiarization of Government/Non-government Surveys 2.2 Data Gathering and Sampling 2.3 Uses of Official Statistics	Week 3	Data Collection Sampling from Actual Data On-line Activity: Search on Government/Non-government Surveys and their Results
	3. Introduction to Statistical Software (PHSTAT2) 3.1 Data Entry 3.2 Data Manipulation		Computer Laboratory Activity: Working on Microsoft Excel and PhStat2
	4. Data Organization: Visual Displays of Data 4.1 Textual 4.2 Tabular 4.2.1 Characteristics of a good table 4.2.2 Generation of Tables Using Computers	Week 4	Computer Laboratory Activity: Generation of Tables and Graphs Critiques on Use and Misuse of Tables and Graphs Group Discussion /

		4.3 Graphical
		    4.3.1 Types of Graphs (Line, Bar, Pie, Pictograph, Stem plot, Scatter Plot)
		    4.3.2 Characteristics of a Good Graph
		    4.3.3 Generation of Graphs Using Computers
		    4.3.4 Use and Misuse of Tables and Graphs
				Critique	

		5. Describing Data with Numerical Measures 5.1 Measures of Central Tendency 5.2 Measures of Variability 5.3 Measures of Relative Standing 5.4 Measure of Skewness 5.5 Measure of Linear Relationship Between Two Variables 5.6 Boxplot 5.7 Generating Numerical Measures Using Computers (Using PHSTAT or STATISTICA)	Week 5-6	Exploratory comparison of two actual data sets Worksheets on Numerical Measures Computer Laboratory Activity: Generating and Interpreting Summary Measures Group Discussion / Reflection	
		MIDTERM EXAMINATION	Week 7		
		Module 2: **6. Probability** 6.1 Basic Concepts of Probability 6.2 Expectations 6.3 Applications in Popular Games	Week 8-9	Cooperative Learning: Statistical Experiments Using Coins, Dice, Cards, and Balls or On-line Activity: Probability Simulation Monty Hall Problem: To Switch or Not to Switch or Renaissance Dice Games: Which has a higher chance of winning? Game of Chance Exhibit Movie/Review Article/Book Review/Game Critique	
		7. Normal Probability Distributions 7.1 Characterization of the Normal Distribution 7.2 Standard Normal Distribution 7.3 Applications of Normal Probability Distribution 7.3 Sampling Distributions	Week 10	On-line active learning: Simulating normal distribution/sampling distribution of the mean Computer laboratory activity: Applications of normal distribution to real-life problems	
		8. Estimation: From Samples to Population 8.1 Estimation of Population Mean 8.2 Estimation of Population Proportion 8.3 Sample Size Determination	Week 11	Inquiry Approach: Which is a better estimate? Computer Laboratory Activity: Estimation of proportion and mean in real-life problems	
		9. Fundamentals of Hypothesis Testing: Drawing Inferences from Sample Data 9.1 Tests Concerning One Population Mean (z-test, t-test) 9.2 Tests Concerning One Population Proportion (z-test) 9.3 The p-value approach 9.4 Statistical Tests Using PHSTAT2 9.5 Applications	Week 12	Eliciting prior knowledge: Formulating Hypotheses Inquiry approach: 'Guilty' or 'not guilty'? Computer Laboratory Activity: Actual data analysis involving z-test and t-test	

			Critique of a journal article
	FINAL COURSE OUTPUT	Week 13	Oral and written presentation of survey results
	FINAL EXAMINATION	Week 14	

References

Arcilla, Co, Ocampo & Tresvalles (2012). *Statistical Literacy*. Manila: ABIVA Publishing House, Inc.

Albert *(2007),* Basics Statistics for the Tertiary Level

Berenson, Levine, & Krehbiel. (2006). *Basic Business Statistics: Concepts and Applications (10th ed.).* Upper Saddle River, NJ: Pearson/Prentice Hall.

Mann (2007). *Introductory Statistics (6th edition).* Hoboken, N.J.; Wiley

Mendenhall/Beaver/Beaver (2009), *Introduction to Probability and Statistics (13th edition)*

Ocampo (2006) *Transformative Learning Modules for Statistical Literacy*

Taylor. (2007). *Business Statistics for Non-mathematicians*. Basingstoke: Palgrave Macmillan.

Williams, Sweeney, & Anderson. (2009). *Contemporary Business Statistics (3rd ed.).* Cincinnati, OH: South-Western/Thomson Learning.

Online Resources

Math Goodies. Accessed October 15, 2012 from: http://www/mathgoodies.com
http://www.ruf.rice.edu~lane/statsim/samplingdist/
Big Data Analytics, Enterprise Analytics, Data Mining Software, Statistical Analysis, Predictive Analtyics. Accessed October 15, 2012 from: http://www/statsoft.com
Shodor: a National Resource for Computational Science Education. Accessed October 15, 2012 fom: http://www.shodor.org

Class Policies

1. The required minimum number of quizzes for a 3-unit course is 3, and 4 for 4-unit course. No part of the final exam may be considered as one quiz.
2. Cancellation of the lowest quiz is not allowed even if the number of quizzes exceeds the required minimum number of quizzes.
3. As a general policy, no special or make-up tests for missed exams other than the final examination will be given. However, a faculty member may give special exams for
   A. approved absences (where the student concerned officially represented the University at some function or activity).
   B. absences due to serious illness which require hospitalization, death in the family and other reasons which the faculty member deems meritorious.
4. If a student missed two (2) examinations, then he/she will be required to take a make up for the second missed examination.
5. If the student has no valid reason for missing an exam (for example, the student was not prepared to take the exam) then the student receives 0% for the missed quiz.
6. Students who get at least 89% in every quiz are exempted from taking the final examination. Their final grade will be based on the average of their quizzes and other prefinal course requirements. The final grade of exempted students who opt to take the final examination will be based on the prescribed computation of final grades inclusive of a final examination. Students who missed and/or took any special/make-up quiz will not be eligible for exemption.
7. Learning outputs are required and not optional to pass the course.
8. Mobile phones and other forms of communication devices should be on silent mode or turned off during class.
9. Students are expected to be attentive and exhibit the behavior of a mature and responsible individual during class. They are also expected to come to class on time and prepared.
10. Sleeping, bringing in food and drinks, and wearing a cap and sunglasses in class are not allowed.
11. Students who wish to go to the washroom must politely ask permission and, if given such, they should be back in class within 5 minutes. Only one student at a time may be allowed to leave the classroom for this purpose.
12. Students who are absent from the class for more than 5 meetings will get a final grade of 0.0 in the course.
13. Only students who are officially enrolled in the course are allowed to attend the class meetings.

Approved by:

DR. ARTURO Y. PACIFICADOR, JR.
Chair, Department of Mathematics
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