



INTSTA1 – Introduction to Statistics 1
 Prerequisite: MATH111

Prerequisite to: INTSTA2

Instructor: _____
Consultation Hours: _____

Contact details: _____
Class Schedule and Room: _____

Course Description

INTSTA1 (Introduction to Statistics) is a course covering descriptive statistics, basics rules of probability, discrete and continuous probability distributions, and introduction to inferential statistics.

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 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.

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.	Exploratory data analysis using probability sampling techniques.	Week 13

Rubric for assessment

CRITERIA	EXEMPLARY 4	SATISFACTOR Y 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.
Sampling Design and Data Gathering (25%)	Appropriate probability sampling technique was used. Data gathering procedures were discussed extensively.	Appropriate probability sampling technique was used.	Inappropriate probability sampling technique was used.	Non- probability sampling technique was used.
Construction of Survey Questionnaire (20%)	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 (30%)	Data are presented accurately using all appropriate tables/graphs/numerical measures with	Data are presented using appropriate tables/graphs/numerical	Some data are presented using inappropriate tables/graphs/numerical	Data are presented using inappropriate tables/graphs/numerical

	proper labels/titles and correct interpretations.	measures.	measures.	measures.
Clarity and Organization of Report (15%)	Report is organized logically and presented clearly with effective transitions.	Report is organized logically and presented clearly.	Report is organized and some discussions are not clear.	Report is not organized.

Additional Requirements	
<ul style="list-style-type: none"> ✚ Inquiry Plans \ Activities ✚ Skills Check ✚ Computer Output ✚ Portfolio ✚ Reflection \ Reaction Paper ✚ Mid Term Exam ✚ Final Exam 	

Grading System				
				S Scale: 95-100% 4.0 89-94% 3.5 83-88% 3.0 78-82% 2.5 72-77% 2.0 66-71% 1.5 60-65% 1.0 <60% 0.0
	FOR EXEMPTED STUDENTS (w/out Final Exam)	FOR STUDENTS with FINAL EXAM		
		<i>with no missed quiz</i>	<i>with one missed quiz</i>	
Average of quizzes (at least 3)	85%	55%	45%	
Class Activities and Computer Outputs	5%	5%	5%	
Learning Output	10%	10%	10%	
Final Examination	--	30%	40%	

Learning Plan			
Learning Outcome	Culminating Topics	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.	I. INTRODUCTION Importance of Statistics Descriptive and Inferential Statistics Population and Sample Scales of Measurements Sources of Data	Week 1	Eliciting Prior Knowledge \ Variations in Real Life Critiques on Use and Misuse of Statistics On-line Activity: Search on Government/Nongovernment Surveys and their Results
	II. DESCRIPTIVE STATISTICS Descriptive Numerical Measures <ul style="list-style-type: none"> • Measures of Central Tendency • Measures of Variability • Measures of Position • Measure of Skewness Describing Data with Tables and Graphs	Week 2	Worksheets on Numerical Measures Exploratory Comparison of Two Actual Data Sets Computer Laboratory Activity: Generating and Interpreting Summary Measures Computer Laboratory Activity: Working on Microsoft Excel and PhStat2 in

	<ul style="list-style-type: none"> • Frequency Distribution Table, Histograms and Ogives • Stem and Leaf Plot • Box and Whiskers Plot 		Generating Tables and Graphs
	<p>III. PROBABILITY</p> <p>Experiments, Sample Spaces and Events Counting Techniques Fundamental Principle of Counting Permutations and Combinations Probability of an Event Laws of Probability Union of Events Complement of an Event Conditional Events Intersection of Events Bayes' Theorem</p>	Weeks 3-4	<p>Cooperative Learning: Statistical Experiments Using Coins, Dice, Cards, and/or Balls</p> <p>Monty Hall Problem/Dice Problems/Birthday Problem/Recreational Probability Problems</p>
	<p>IV. PROBABILITY DISTRIBUTIONS</p> <p>Concept of a Random Variable Concept of a Probability Distribution Types of Probability Distributions Mean of a Discrete Random Variable Variance of a Discrete Random Variable Properties of the Mean and Variance</p>	Week 5	Newspaper /Journal Clippings on Real Life Applications of Probability Distributions
	<p>V. DISCRETE PROBABILITY DISTRIBUTIONS</p> <p>Uniform Distribution Bernoulli and Binomial Distributions Hypergeometric Distribution Negative Binomial and Geometric Distributions Poisson Distribution</p>	Weeks 6-7	Activity: Applications of discrete probability distributions to real-life problems
	<p>VI. CONTINUOUS PROBABILITY DISTRIBUTIONS</p> <p>Uniform Distribution Normal Distribution</p> <ul style="list-style-type: none"> • Areas under the Normal Curve • Normal Approximation to the Binomial 	Weeks 8-9	<p>On-line active learning: Simulating normal distribution</p> <p>Computer Laboratory Activity: Applications of normal distribution to real-life problems</p>

	<p>VII. SAMPLING TECHNIQUES</p> <p>Probability Sampling Techniques</p> <ul style="list-style-type: none"> • Simple Random Sampling • Systematic Sampling • Stratified Sampling • Cluster Sampling <p>Non-Probability Sampling Techniques</p>	Week 10	Application of sampling techniques to real life situations. Critiques of sampling Techniques used in research
	<p>VIII. SAMPLING DISTRIBUTIONS</p> <p>Sampling Distributions of the Mean</p> <p>The Central Limit Theorem</p> <p>Distributions Related to the Normal Distribution</p> <p>t-distribution</p> <p>χ^2-distribution</p>	Week 11	On-line active learning: Simulating sampling distribution of the mean
	<p>IX. ESTIMATION OF PARAMETERS</p> <p>Estimating the Mean for One Population</p> <ul style="list-style-type: none"> • Point and Interval Estimation • Error of Estimation • Sample Size Determination <p>Estimating the Proportion for One Population</p> <ul style="list-style-type: none"> • Point and Interval Estimation • Error of Estimation • Sample Size Determination 	Week 12	<p>Inquiry Approach: Which is a better estimate?</p> <p>Computer Laboratory Activity: Estimation of proportion and mean in real-life situations.</p>
	Learning Outcome	Week 13	Exploratory data analysis using probability sampling techniques. and t-test
	FINAL EXAMINATION		

References

- Albert (2007). *Basics Statistics for the Tertiary level*. Manila: Rex Publishing Company.
- Arcilla, R., Co, F., Ocampo, S. & Trevalles, R. (2011). *Statistical Literacy for Lifelong Learning*. Manila: ABIVA Publishing House, Inc
- Downie and Heath (1984). *Basic Statistical Methods (5th Edition)*. Manila: National Bookstore.
- Hayter, A. (2002). *Probability and Statistics for Engineers and Scientists (2nd edition)*. CA: Duxbury. McGraw Hill International.
- Levine, Berenson & Stephan (2002). *Statistics for Managers Using Microsoft Excel (3rd edition)*. Upper Saddle River, NJ: Prentice Hall
- Mann. (2011). *Introductory Statistics (7th edition)*. Hoboken, NJ: Wiley.
- Mendenhall, Beaver & Beaver (2009). *Introduction to Probability and Statistics (13th edition)*. Belmont, CA: Thomson/Brooke/Cole.
- Walpole, Myers, Myers & Ye (2005). *Probability and Statistics for Engineers and Scientists (7th edition)*. Singapore: Pearson Education (Asia).

Online Resources

National Statistics Office Accessed October 22, 2012 from: <http://census.gov.ph>

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 Analytics.

Accessed October 15, 2012 from: <http://www.statsoft.com>

Shodor: A National Resource for Computational Science Education. Accessed October 24, 2012 from:

<http://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

