Introduction to Statistics

CREDIT	3	INSTRUCTOR	Seokjoo Andrew Chang
OFFICE		OFFICE HOURS	
TIME	09:00 ~ 10:40	CLASSROOM LOCATION	TBA
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[COURSE INFORMATION]

COURSE DESCRIPTION & GOALS	This course introduces the fundamental statistical concepts and techniques to make informed decision for a variety of real-world business and economic problems. The course objective includes collection, visualization, summarization, and analysis of statistical data to draw statistical inferences. We will discuss numerical summaries of qualitative and quantitative variables, random sampling theory, central limit theorem, the normal distribution, one/two sample hypothesis testing, confidence intervals and goodness-of-fit method. Applications of Software such as *MINITAB* and *R* will be demonstrated.
PREREQUISITE	
COURSE REQUIREMENTS	
GRADING POLICY	Your grade is based on the following components: Attendance & Assignments: 10% Midterm Exam: 40% Final Exam: 50%
TEXTS & NOTES	Fundamentals of Statistics, 4th or 5th Edition by Michael Sullivan, Pearson 4th edition ISBN-10: 032183870X ISBN-13: 9780321838704 5th edition ISBN-10: 0134508300 ISBN-13: 978-0134508306 **Note:** Due to limited availability of textbooks at Yonsei Bookstore, it is strongly encouraged to purchase/rent your textbook from online resources before you arrive at YISS.
INSTRUCTOR'S PROFILE	*Seokjoo Andrew Chang* is an Associate Professor of School of Business at State University of New York at Albany. He received his MS in Economic Systems and Operations Research from *Stanford University* and Ph.D. in Operations and Information Management from *University of Connecticut*. His teaching/research interests include Economics of Information Systems, Stochastic Decision Processes, Operations Research and Forensic Data Analysis. His research papers have been published in journals such as Management Information Systems Quarterly (MISQ), Decision Support Systems(DSS) and Information Systems Frontiers (ISF).

[WEEKLY SCHEDULE]

WEEK (PERIOD)	WEEKLY TOPIC & CONTENTS	COURSE MATERIAL & ASSIGNMENTS	NOTES
1	**Data Collection** 1.1 Introduction to the Practice of Statistics 1.2 Observational Studies versus Designed Experiments 1.3 Simple Random Sampling 1.4 Other Effective Sampling Methods 1.5 Bias in Sampling 1.6 The Design of Experiments **Organizing and Summarizing Data** 2.1 Organizing Qualitative Data 2.2 Organizing Quantitative Data: The Popular Displays 2.3 Graphical Misrepresentations of Data	Chapter 1. Chapter 2. Please refer to *Blackboard* for lecture notes and assignments	
2	**Numerically Summarizing Data** 3.1 Measures of Central Tendency 3.2 Measures of Dispersion 3.3 Measures of Central Tendency and Dispersion from Grouped Data 3.4 Measures of Position and Outliers **Describing the Relation between Two Variables** 4.1 Scatter Diagrams and Correlation 4.2 Least-Squares Regression 4.3 Testing the Significance of the Least-Squares Regression Model 4.4 Analysis of Variance 4.5 The Coefficient of Determination 4.6 Contingency Tables and Association	Chapter 3. Chapter 4. Please refer to *Blackboard* for lecture notes and assignments	
3	**Probability** 5.1 Probability Rules 5.2 The Addition Rule and Complements 5.3 Independence and the Multiplication Rule 5.4 Conditional Probability and the General Multiplication Rule 5.5 Counting Techniques **Discrete Probability Distributions** 6.1 Discrete Random Variables 6.2 The Binomial Probability Distribution **Midterm Exam**	Chapter 5. Chapter 6. Please refer to *Blackboard* for lecture notes and assignments	

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4	**The Normal Probability Distribution** 7.1 Properties of the Normal Distribution 7.2 Applications of the Normal Distribution 7.3 Assessing Normality 7.4 The Normal Approximation to the Binomial Probability Distribution **Sampling Distributions** 8.1 Distribution of the Sample Mean 8.2 Distribution of the Sample Proportion	Chapter 7. Chapter 8. Please refer to *Blackboard* for lecture notes and assignments	
5	**Estimating the Value of a Parameter** 9.1 Estimating a Population Proportion 9.2 Estimating a Population Mean 9.3 Estimating a Population Standard Deviation 9.4 Confidence and Prediction Intervals **Hypothesis Tests Regarding a Parameter** 10.1 The Language of Hypothesis Testing 10.2 Hypothesis Tests for a Population Proportion 10.3 Hypothesis Tests for a Population Mean 10.4 Hypothesis Tests for a Population Standard Deviation	Chapter 9. Chapter 10. Please refer to *Blackboard* for lecture notes and assignments	
6	**Inferences on Two Samples** 11.1 Inference about Two Population Proportions 11.2 Inference about Two Means: Dependent Samples 11.3 Inference about Two Means: Independent Samples **Inference on Categorical Data** 12.1 Goodness-of-Fit Test 12.2 Comparing Three or More Means (One-Way Analysis of Variance) **Multivariate Regression Model** - Least-Squares Regression - Testing the Significance of the Least-Squares Regression Model - Analysis of Variance **Final Exam**	Chapter 11. Chapter 12. Please refer to *Blackboard* for lecture notes and assignments	