

ECO 104 (SEC - 8)
STATISTICS FOR BUSINESS AND ECONOMICS - I
EAST WEST UNIVERSITY
Fall 2023

Instructor: Shaikh Tanvir Hossain		Schedule: Tuesday	Room: FUB-304	10:10 - 11:40 AM
Email: tanvir.hossain@ewubd.edu		Thursday	Room: 533, C.Lab	10:10 - 11:40 AM

§. Office Hours:

Thursdays 12.00 - 1.30 PM (Room - 345). Please try to come during this time!

§. Course Description:

This is the first course in the sequence of two Statistics courses offered for the Economics and Business students at EWU (the next one is ECO 204). The course will cover*

1. Basic ideas about Statistics and Data Sets.
2. Some Descriptive Statistics (graphical and numerical methods).
3. Introduction to Probability Theory (i.e., defining Probability, Random Variables and Distributions).
4. Ideas about Sampling Distributions.
5. Index numbers.

The approach of the class includes both learning the concepts and also how to apply them in real-life situations. Students will also be introduced to Microsoft Excel for applications related to business and economic data.

§. Prerequisite Courses:

MAT100 or at least equivalent Math courses.

§. Textbooks / Notes:

There will be lecture notes (typed), and you should definitely read that first. In addition, I recommend to use any of the following books for exercises and practice problems.

1. [Anderson, Sweeney, Williams, Camm, Cochran, Fry and Ohlmann \(2020\)](#)
2. [Newbold, Carlson and Thorne \(2020\)](#)

Following books are a bit advanced at this level, but nevertheless these are also excellent references.

- [DeGroot and Schervish \(2012\)](#)
- [Casella and Berger \(2002\)](#)

§. Marks Distribution

Problem Sets	5%
Quizzes	15%
Lab Project	10%
Midterm - 1	20%
Midterm - 2	20%
Final	30%

- **Problem Sets:** Usually there will be a problem set in every two weeks, and it has to be turned in with your attempted solutions by the following week. Please form groups of maximum 3 and submit in groups. DO the problem set seriously!
- **Quizzes:** In total there will be 6 *random* quizzes (i.e., they can happen any day during the whole semester!) I will take the average of best 3.
- **Lab Project:** Lastly, there will be a Lab Project. We will talk about the details later in class.

*Please see at the end for a detailed list of topics

§. Grading Scheme:

Numerical Scores	Letter Grade	Grade Point
80% and above	A+	4.00
75% to less than 80%	A	3.75
70% to less than 75%	A–	3.50
65% to less than 70%	B+	3.25
60% to less than 65%	B	3.00
55% to less than 60%	B–	2.75
50% to less than 55%	C+	2.50
45% to less than 50%	C	2.25
40% to less than 45%	D	2.00
Less than 40%	F	0.00

§. What I expect:

Please try to be punctual at class. Regular attendance is important. If your attendance $< 75\%$, you won't be allowed to sit for the final. You are expected to maintain academic honesty. "*Academic Honesty*" means you should *perform all academic activities without any form cheating, lying, stealing, plagiarism, receiving unauthorized assistance or using any source of information that is prohibited to use.*

§. References:

- Anderson, D. R., Sweeney, D. J., Williams, T. A., Camm, J. D., Cochran, J. J., Fry, M. J. and Ohlmann, J. W. (2020), *Statistics for Business and Economics*, 14th edn, Cengage, Boston, MA.
- Blitzstein, J. K. and Hwang, J. (2015), *Introduction to Probability*.
- Casella, G. and Berger, R. L. (2002), *Statistical Inference*, 2nd edn, Thomson Learning, Australia ; Pacific Grove, CA.
- DeGroot, M. H. and Schervish, M. J. (2012), *Probability and Statistics*, 4th edn, Addison-Wesley, Boston.
- Newbold, P., Carlson, W. L. and Thorne, B. M. (2020), *Statistics for Business and Economics*, 9th edn, Pearson, Harlow, England.

§. Topics in detail:

Here is the list of topics in detail -

- **Descriptive Statistics and Summary measures:** Summarizing data for discrete and continuous random variables using table and graph, introduction to some basic numerical measures of location and dispersion (e.g., sample mean, sample median and sample variance), using box-plots and histograms to get a basic idea about the distribution of the sample points.
- **Probability Theory**
 - **Experiments, Events and Probability:** Random Experiments, Events, Definition and Interpretation of Probability, Calculating Probabilities for finite sample space using different counting techniques, Conditional Probability, Independence and Bayes Theorem.
 - **Random Variable and Distributions (Univariate)** Random Variables (Discrete and Continuous), Distribution of a Random Variable, PMFs and PDFs, CDFs, Quantiles, Summary measures of a distribution (in particular Expectation and Variance), Function of a random variable, examples of some theoretical distributions (Bernoulli, Poisson, Uniform and Normal).
 - **Random Variable and Distributions (Multivariate)** Joint, Marginal and Conditional Distributions, Covariance and Correlation.
 - **Limit Theorems:** Idea of a sequence of iid random variables, Law of Large Numbers (LLN) and Central Limit Theorem (CLT) for the simple iid case.
- **Sampling and Sampling distributions** Basic concepts about sample and population, simple random sampling, idea of a parameter and point estimator, sampling distribution of the sample mean (exact and large sample).
- **Discussion of some index numbers** Price Relatives, Price Index, Computing an Aggregate Price Index, Some Important Price Indexes, e.g., CPI and PPI.