

Approved:

Alisher Aldashev, NES Director

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Syllabus
New School of Economics
Introduction to Statistics, NSE 1022 (3 credit hours)
Spring semester, 2020

Instructor: Dr. Kairat Mynbaev, Professor

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Pre-requisite: Introduction to Statistics, NSE 1022, fall semester

Post-requisite: Econometrics

Course description

This course focuses on the theory and applications of statistical tools in business and economics. Its purpose is to give students a solid knowledge of the mathematical foundations of statistics and an introduction to the ideas used in econometrics. It is designed for 4 semesters and covers 16 chapters of the book Newbold et al. [1]. For a logical presentation, the theory needs to be studied following my book [4], from which chapters 6-9 are planned for the 2nd semester. Topics for this semester include continuous random variables, samples and sample distributions, estimation (one and two populations), and hypothesis testing. The theoretical part is mainly based on my book [3] (free first edition) and [4] (paid second edition). The practical part includes solving problems from Newbold et al. [1]. Some exercises will be done in Excel and Eviews. For an elementary approach, see [5].

Textbooks:

1. Newbold, P., W.L. Carlson and B. Thorne. Statistics for Business and Economics. London: Prentice-Hall, 2013. 8th edition.
2. Moser, C.A. and G. Kalton. Survey Methods in Social Investigation. Aldershot: Dartmouth, 1979
3. Mynbaev, K. T. Companion for “Statistics for Business and Economics” by Paul Newbold, William L. Carlson and Betty Thorne. 2010. <http://ideas.repec.org/p/pramprapa/23069.html>
4. Mynbaev, K.T. AP Stats and Business Stats. Lulu.com, 2015.
5. Rumsey, D.J. Statistics for Dummies, 2nd Edition. Wiley Publishing, Inc. 2011.

Planned Schedule:

Week	Classes			
	Topic	Lecture	Practice	Textbook
1	Continuous variables and distributions. Properties of integrals. Density	2	1	[4] Chapter 6
2	Mean value, covariance, variance and correlation of a continuous random variable.	2	1	[4], Chapter 6

3	Uniform distribution	2	1	[4], Chapter 6
4	Normal distribution. Normal approximation to binomial distribution	2	1	[4], Chapter 6
5	Exponential distribution and connection with Poisson			[4], Chapter 6
6	Sampling distribution. Distribution of sample variance	2	1	[4], Chapter 7
7	Midterm	2	1	[4], Chapter 7
8	Unbiasedness and efficiency. Consistency			
9	The average of one population. Confidence interval for the sample average. Case of known variance			
10	Confidence interval for the sample average. Case of unknown variance. Confidence interval for population proportion	2	1	[4], Chapter 8
11	Averages of two populations. Paired observations. Independent samples (populations), case of known variances	2	1	[4], Chapter 8
12	Independent samples (populations), case of unknown and equal variances	2	1	[4], Chapter 8
13	Hypothesis testing. Tradeoff between type I and type II errors. Confidence intervals and hypothesis testing.	2	1	[4], Chapter 8
14	p-values			[4], Chapter 9
15	Final exam			[4], Chapter 9

Evaluation criteria:

Attestation 1 (assignments and quizzes)	30%
Mid-term exam (Attestation 2)	30%
Final exam (Attestation 3)	40%
Total points	100.00%

Midterm exam is a comprehensive exam based on the material covered during first seven weeks of the semester. Duration of the exam – 2 hours.

Final exam is a comprehensive exam based on the material covered during the whole semester. Duration of the exam – 3 hours. The final exam cannot be resit.

**Grading policy**

Letter grade	Number based grade	Criterion
A	95 – 100	
A -	90 – 94	
B +	85 – 89	
B	80 – 84	
B -	75 – 79	
C +	70 – 74	
C	65 – 69	
C -	60 – 64	
D +	55 – 59	
D	50 – 54	
F	0 – 49	

Attendance policy: Students who missed more than 20% of classes without a valid reason will automatically fail the course.

Academic honesty:

No book or mobile phones may be taken into the room during the exam, but the use of calculators is permitted. The final exam covers the whole course. There are no retakes or make-up exams.

If you miss a written or oral assignment or an exam for a valid reason you should notify the teacher in advance.

Cheating is punished by an unconditional “F”.

Corruption in any form is inadmissible. An organizer of such actions (be it the teacher, students or third parties on their behalf) will bear full responsibility in accordance with the laws of the Republic of Kazakhstan.