SYLLABUS

SUBJECT   PRINCIPLES OF STATISTICS

TEACHER   MSC JERZY KULASA

COURSE DESCRIPTION
This course is designed to acquaint students with statistical methods used in gathering and analyzing data. The course includes: sampling methods and data classification, descriptive statistics; percentiles and z-scores; basic concepts in probability; binomial and normal probability distributions; the Central Limit Theorem; estimating population parameters; hypothesis testing; and linear correlation and regression.

ECTS
2

LEARNING OUTCOMES
By the completion of the course students will be able to:
- Know the role of sampling in a statistical study, know what is meant by a simple random sample, distinguish between a sample and a population.
- Be aware of the pivotal role the Central Limit Theorem has in statistics. You should be able to state it and discuss its meaning.
- Show the ability to manually compute the following from a small set of data: mean, standard deviation, median, mode, and range.
- Demonstrate the ability to summarize a sample using an appropriate statistical plot. Possible plots are: histogram, box plot, pie chart. Appropriate use of technology is allowed.
- Demonstrate the ability to compute the probability of an event given a probabilistic experiment. You may need to enumerate a collection of outcomes, make use of a specific formula (as for the binomial distribution), or make use of a table (as for the normal distribution).
- Identify appropriate independent and dependent variables and compute the equation of a linear regression line.
- Plot the linear regression line and use it in prediction. Appropriate use of technology is allowed.
- Construct a confidence interval for a prescribed level of confidence.
- Distinguish between confidence intervals for small versus large sample sizes.

GRADING POLICY
Each of our class sessions will be devoted to a combination of lectures, case discussions, class exercises, and group work. Every student is expected to come to class prepared and to actively participate in our learning environment. Written test (60% of final grade); Class participation (40% of final grade); Attendance will be taken every laboratory meeting. There are no excused absences.

TIMETABLE
Lecture Timetable

	Theme	Lecture hours
	Lecture 1 – Getting Started, Organizing Data;	2
	Lecture 2 – Averages & Variation,	2
	Lecture 3 – Regression & Correlation	2
	Lecture 4 – Binomial Probability Distribution; Normal Distributions	2
	Lecture 5 – Sampling Distributions	2
	Lecture 6 – Estimation	2
	Lecture 7 – Hypothesis Testing	2
	Lecture 8 – Final Exam	1

Class Timetable

	Theme	Lecture hours
	Organizing Data; Review Questions & Problems	2
	Averages & Variation, Review Questions & Problems	2
	Regression & Correlation, Review Questions & Problems	2
	Binomial Probability Distribution; Normal Distributions, Review Questions & Problems	2
	Sampling Distributions, Review Questions & Problems	2
	Estimation, Review Questions & Problems	2
	Hypothesis Testing, Review Questions & Problems	2
	Final Exam	1

TEXTBOOK AND REQUIRED MATERIALS
UNDERSTANDING BASIC STATISTICS, 4TH EDITION BY BRASE & BRASE (HOUGHTON MIFFLIN, 2007)

PREREQUISITES:
Secondary school course in mathematics