



COURSE: PROBABILITY AND STATISTICS

FACULTY: Electrical Engineering and Computer Science	CLASS TYPE: lecture and discussion
NUMBER OF HOURS: 30	ECTS: 5
SEMESTER: winter or summer	CLASS LEVEL: I

LANGUAGE OF INSTRUCTION: English
PRELIMINARY REQUIREMENTS: Good knowledge of Calculus and Set Theory
CONTENTS: Sample spaces and events. Definitions of probability. Axioms and theorems. Conditional probability. Bayes Theorem. Independence. Discrete and continuous single random variables. Probability mass function. Probability density function. Expectation, variance and other moments. Functions of random variable. Families of discrete distributions. Families of continuous distributions. Discrete and continuous multiple random variables. Joint probability distributions. Regression. Sequences of Random variables. Central limit theorem. Population and sample, parameters and statistics. Simple descriptive statistics. Graphical statistics. Parameter estimation. Confidence intervals. Hypothesis testing. Bayesian estimation and hypothesis testing.
EFFECTS OF EDUCATION PROCESS: This course is designed to introduce students to various topics in probability and uncertainty that they will encounter in engineering. Exercises are designed to encourage the student to begin thinking about probability and uncertainty within engineering and computer science problems.
LITERATURE: S. M. Ross, <i>Introduction to probability and statistics for engineers and scientists</i> , Elsevier Academic Press, 2004 R. Durrett, <i>Elementary probability for applications</i> , Cambridge University Press, 2009
TEACHING METHODS: lecture, class discussion
ASSESSMENT METHODS: weekly homework assignments, a final exam.
TEACHER (NAME, EMAIL CONTACT): Ph.D. Małgorzata Murat m.murat@pollub.pl

