

Department of Applied Statistics

1. Educational Goal

We train students to retrieve a wealth of information from a variety of sources, effectively analyze data, and provide useful information to a wide range of users. Our program is designed to challenge students both intellectually as well as to encourage them to apply theoretical concepts to real-world problems.

2. Educational Objective

① The educational objective of this department is to foster competent statisticians who are both well-equipped in and adaptable to any environment. Students will also acquire and retain a practical ability within the field of social sciences and economics.

② We train our students to be professionals, encouraging them to take on new challenging roles in applied statistics by understanding basic principles and methods for data analysis.

3. List of Full-time Faculty

Name	Position	Degree (University)	Field of Instruction	Area of Research
Kim, Tai-Kyoo	Professor	Ph.D. in Economics (Chung-Ang University)	Statistical Quality Management; Reliability Analysis; Design of Experiments	Quality Management
Jeong, Gyu Jin	Professor	Ph.D. in Statistics (Seoul National University)	Statistical Practice	Biostatistics; Statistical Theory
Kwon, Sehyug	Professor	Ph.D. in Statistics (North Carolina State University)	Multivariate Analysis	Group Testing; Clinical Research; Data Analysis
Kim, Myung Joon	Assistant Professor	Ph.D. in Statistics (University of Florida)	Financial Statistics; Statistical Estimation	Insurance Pricing; Bayesian Estimation
Park, Byeonghwa	Assistant Professor	Ph.D. in Computational Sciences and Informatics (George Mason University)	Data mining; Exploratory Data Analysis; Quality Management	Big Data; Data Mining; Social Network Analysis
Tlapa, Peter	Assistant Professor	MBA (The College of Santa Fe)	Business English	

4. Course Description

Introduction to Statistics (3 credits)

This course is designed to provide a foundation to understanding statistical concepts, statistical theory and procedures for the business student. The course will cover topics in descriptive and inferential statistics such as grouping of data, measures of central tendency and dispersion, probability concepts and distribution, sampling, statistical estimation, statistical hypothesis testing, and analysis of variance.

Exploratory Data Analysis (3 credits)

This course is designed to provide the essential exploratory techniques for summarizing and analyzing data. Students will learn how to plot and visualize data.

Probability and Statistics Theory (3 credits)

This course covers basic probability theory, random variables, probability distributions, general theory of estimation, testing of hypotheses, statistical decision theory etc.

Statistical Practice (3 credits)

The objectives of this course are to help students develop a critical approach to the evaluation of data and results, and to develop skills in application of statistical methods by having various practical examples and problems.

Statistical Methods (3 credits)

The objectives of this course are to provide basic concepts about probability, method of moments, confidence interval, hypothesis testing, and basic concepts about linear regression with the concentration on methods and applications.

Financial Statistics (3 credits)

Concepts of financial statistics with pure premium and gross premium and etc and also risk model, survival function and insurance model are covered.

Probability Theory (3 credits)

Fundamentals of measure and integration theory, Basic concepts of conditional probability and expectation, strong Laws of large numbers and martingale theory, The central limit theorem.

Numerical Analysis (3 credits)

This course covers iterative methods, convergence of iterative methods, Gauss elimination, Lagrange interpolation, spline function, B-spline, numerical differentiation, numerical integration.

Time Series Analysis (3 credits)

With time series data(trend, periodical, seasonal, irregular), modelling analysis and prediction of future is the main topic of this course using exponential smoothing, ARMA model, seasonal effect consideration and its application.

Financial Data Analysis (3 credits)

The course is to provide the necessary analysis toolkit for financial data from stock and insurance business field. Statistical tools for financial market, role, analysis flow, modelling and credit evaluation and outstanding reporting techniques are covered.

Mathematical Statistics (3 credits)

The basic theoretical fundamental of statistics is covered such as distribution of random variable, conditional probability, independency and famous PDF(Normal, Binomial, Multinomial, Gamma, Chi-square, Poisson and Multivariate Normal), CDF and etc.

Quality Management (3 credits)

This course is designed to provide a framework for organizing and managing a continuous improvement program. This course also examines the ways in which quality can be improved. etc.

Sampling (3 credits)

This course is designed to provide understanding of sampling and sample surveys in the context of social, political, and economic issues.

Design of Experiments (3 credits)

This course covers principles of experimental designs, multiple comparison, missing value, etc.

Data Mining (3 credits)

This course is designed to introduce the concepts of data mining, its techniques, and applications. The course will provide an opportunity for hands-on practice with algorithms for data mining using various softwares.