



MASTER OF STATISTICS (MOS) PROGRAM

UP SCHOOL OF STATISTICS
GRADUATE PROGRAMS

UNIVERSITY OF THE PHILIPPINES
SCHOOL OF
STATISTICS

ABOUT THE PROGRAM

The program aims to produce practitioners who are knowledgeable in statistical methodologies and the practice of statistics in key areas. Likewise, it prepares students to meet the needs of industry and government for statistical personnel at the supervisory or higher levels. Students are provided with sound understanding of statistical concepts and methods with variety of applications.

FIRST YEAR				SECOND YEAR			
1 ST SEMESTER		2 ND SEMESTER		1 ST SEMESTER		2 ND SEMESTER	
Stat 221	3	Stat 222	3	Stat 250	3	Stat 290	1
Elective	3	Stat 223	3	Stat 290	1	Stat 298	5
Elective	3	Elective	3	Elective	3	Stat 251	3
		<i>Students are encouraged to start working on their Special Problem at this point.</i>		Elective	3		
TOTAL	9	TOTAL	9	TOTAL	10	TOTAL	9

CORE COURSES

Stat 221: Introductory Probability

Combinatorial analysis; sample space and random variables, probability distribution function; expectation; stochastic independence; common probability distributions

Stat 222: Introduction to Statistical Inference

Sampling distributions; point and interval estimation; tests of hypothesis.

Stat 223: Applied Regression Analysis

Model building; diagnostic checking; remedial measures; applications.

Stat 250: Sampling Designs

Concepts in designing sample surveys; non-sampling errors; simple random sampling; systematic sampling; sampling with varying probabilities; stratification, use of auxiliary information; cluster sampling; multi-stage sampling.

Stat 251: Survey Operations

Planning a survey; sample design and sample size, frame construction; tabulation plans; preparation of questionnaires and manual of instruction; field operations; processing of data, preparation of report.

OTHER COURSES & ELECTIVES

Stat 290: Statistical Consulting

Application of statistical concepts and methodologies to data of researchers seeking statistical consultancy services.

Stat 298: Special Problem

In the Special Problem, the student should be able to demonstrate capability in statistical analysis through the application of contemporary statistical methods in solving real problems, or the novel application of statistical methods in solving real-life problems.

Electives based on Area of Concentration

- Industrial Statistics
- Mathematical Statistics
- Computational Statistics
- Market Research and Business Intelligence
- Social Statistics
- Risk Management and Stochastic Finance

ELECTIVE COURSES

Stat 210: Statistical Software

Database management and programming using statistical software

Stat 224: Experimental Designs

Completely randomized designs; randomized complete block design; Latin square design; factorial experiments; incomplete block design; higher-order designs.

Stat 225: Time Series Analysis

Classical procedures; stationarity; Box-Jenkins modeling procedure: autocorrelation function, partial autocorrelation function, identification, estimation, diagnostic checking, forecasting; transfer functions; applications.

Stat 226: Applied Multivariate Analysis

Multivariate normal distribution; principal components analysis; biplots and h-plots; factor analysis; discriminant analysis; cluster analysis; multidimensional scaling; correspondence analysis; canonical correlation analysis; graphical and data oriented techniques; applications.

Stat 235: Survey of Stochastic Processes

Markov chains; Markov processes; Poisson processes; renewal processes; martingales.

ELECTIVE COURSES

Stat 240: High Dimensional Data

High dimensional data; high dimensional data visualization; high dimensional data analysis; dimension reduction; pattern search; clustering; applications.

Stat 242: Econometric Methods

Distributed lag models; structural change; simultaneous equations; limited dependent variables; ARCH, GARCH processes; cointegration; applications.

Stat 243: Categorical Data Analysis

Cross-classified tables, multidimensional tables; loglinear model; logit models, measures of association; inference for categorical data; applications.

Stat 245: Survival Analysis

Functions of survival time; estimation of survival functions; survival distributions and their applications; distribution fitting and goodness-of-fit tests.

Stat 246: Response Surface Methods

Product design and development; optimal designs; response surface models; response surface optimization; applications.

ELECTIVE COURSES

Stat 247: Data Mining and Business Intelligence

Principles of data mining; methods of data mining; themes of data mining; applications of data mining in business intelligence.

Stat 249: Nonparametric Modeling

Smoothing methods; kernel smoothing; spline smoothing; regression trees; projection pursuit; nonparametric regression; cross-validation; scoring; high dimensional predictors; additive models; backfitting

Stat 260: Quantitative Risk Management

Market risk; financial time series; copulas; extreme value theory; credit risk models; operational risks.

Stat 261: Stochastic Calculus for Finance

Continuous-time model; Brownian motion; random walk; quadratic variation; Ito formula; Black-Scholes equation; risk-neutral measure; martingale representation theorem; fundamental theorems of asset pricing.

Stat 263: Bayesian Analysis

Bayesian inference; empirical and hierarchical analysis; robustness; numerical procedures.

ELECTIVE COURSES

Stat 266: Applied Nonparametric Methods

Methods for single, two and k samples; trends and association; nonparametric bootstrap.

Stat 267: Advanced Applied Multivariate Analysis

Confirmatory factor analysis; multidimensional scaling; correspondence analysis; classification trees; CHAID; procrustes analysis; neural networks; structural equation modeling

Stat 268: Advanced Time Series Analysis

Nonstationarity; cointegration; interventions models; state space models; transfer functions; frequency domain; panel data; nonparametric methods for time series; nonparametric prediction; AR-Sieve; block bootstrap.

Stat 271: Statistical Quality Control

Overview of the statistical methods useful in quality assurance; statistical process control; control charts for variables and attributes, cusum chart, multivariate chart; process capability analysis; acceptance sampling; MIL STD tables and JIS tables; off-line quality control; introduction to response surface analysis; Taguchi method; applications.

ELECTIVE COURSES

Stat 274: Market Research

The marketing research; data and data generation in marketing research; analytical methods; consumer behavior modeling

Stat 275: Economic Statistics

The Philippine Statistical System; surveys being regularly conducted by the system: questionnaire designs, sampling designs, estimators, issues; official statistics being generated: national accounts, consumer price index, input-output table, poverty statistics, leading economic indicators, seasonally adjusted series; statistical methods useful in generating official statistics

Stat 276: Statistics for Geographic Information Systems

Components of a geographical information system, data structures and elements of spatial modeling; exploratory spatial data analysis; quadrat analysis, tessellations and spatial autocorrelation; spatial modeling and prediction; some sampling theory; applications.

Stat 277: Statistics for Image Analysis

Radiometric enhancement techniques; geometric enhancement using image domain techniques; multispectral transformation of data; supervised classification techniques; clustering and unsupervised classification; applications.