University of the Philippines School of Statistics
in partnership with
University of the Philippines Statistical Center Research Foundation, Inc.

Greetings!

The University of the Philippines School of Statistics, in collaboration with the University of the Philippines Statistical Center Research Foundation, Inc. (UPSCRFI), is pleased to announce the schedule of **training seminars in Applied Statistical Analysis for Oct-Dec 2017.**

The modules in Applied Statistics generally aim ***to provide the foundation in statistical techniques that are vital in the understanding and application of the quantitative methods*** that are employed in the analysis of data (e.g. social science, sales, monetary, financial, and economic data).

Moreover, these aim ***to provide the participants with the knowledge of statistical methodologies that underscore the quantitative methods*** employed in current research areas. A more detailed description of each module can be found in the enclosed brochure.

Professors of the UP School of Statistics with wide-ranging consulting and research experience will serve as resource persons.

Certificate of completion will be awarded to the participants upon successful completion of the module.

We are offering **reduced fees for those who will enroll in at least two modules**. *An advanced payment of Php 5,000.00 can be made to reserve your slot(s)*. Full payment shall be made **one week** before the start of the training and payments are **non-refundable** for NO SHOW participants.

We accept reservations on a **first-come-first-served basis** and each module can accommodate about **25 participants**. If you are interested, please see the attached training schedules, and kindly accomplish the registration form to be submitted via fax at **928-08-81** or email at upssextensionservices@gmail.com.

Please make all checks payable *to* ***U.P. Statistical Center Research Foundation, Inc.***

We hope to hear from you!

Very truly yours,

Dr. Dennis S. Mapa
Dean, UP School of Statistics
Executive Director, UPSCRFI

Inquiries and reservations may be made at:

Telefax No. : 928-0881

Trunk Lines : 981-8500 local 3502, 3504, 3505

E-mail : upssextensionservices@gmail.com

Contact Persons : Emma and May

INTRODUCTORY MODULES

Module	No. of Hours	Training Dates & Time	Last day for Registration	Training Fee*	Prerequisite
Basic Statistics with Exploratory Data Analysis	21	October 4–6 (Wed, Thurs, Fri) 8:00 am - 5:00 pm	September 27	P 9,500.00	Algebra and Basic Excel
Communicating Statistics through Infographics	14	October 12 – 13 (Thurs and Fri) 8:00 am - 5:00 pm	October 5	P 8,950.00	Descriptive Statistics and Basic Excel
Applied Statistical Forecasting	14	October 19 – 20 (Thurs and Fri) 8:00 am - 5:00 pm	October 12	P 8,950.00	Basic Inferential Statistics and Excel
Statistics for Market Segmentation and Predictive Modeling	14	October 26 – 27 (Thurs and Fri) 8:00 am - 5:00 pm	October 19	P 8,950.00	Basic Inferential Statistics and Excel

ADVANCED MODULES

Module	No. of Hours	Training Dates & Time	Last day for Registration	Training Fee*	Prerequisite
Advanced Regression Analysis	28	November 7 - 10 (Tue - Fri) 8:00am - 5:00pm	October 31	P 15,000.00	Basic Regression Analysis and Excel
Advanced Time Series Analysis	28	November 14-17 (Tue - Fri) 8:00am - 5:00pm	November 7	P 15,000.00	Basic Regression Analysis and Excel
Econometric Methods for Impact Evaluation	28	November 21-24 (Tue - Fri) 8:00am - 5:00pm	November 14	P 15,000.00	Basic Regression Analysis and Excel
Business and Customer Analytics	21	November 27-29 (Mon - Wed) 8:00am - 5:00pm	November 20	P 12,000.00	Basic Regression Analysis
Financial Risk Modelling	28	December 5-8 (Tue- Fri) 8:00am - 5:00pm	November 28	P 15,000.00	Advanced Time Series Analysis

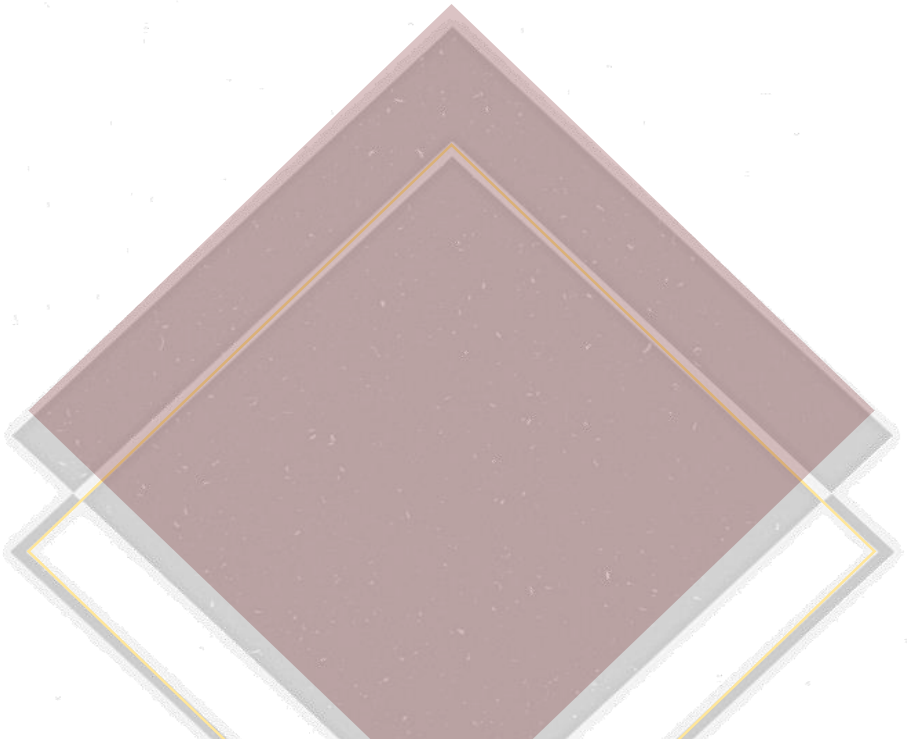
** Training Fee includes materials, lunch, snacks, and use of laboratory facilities. UPSCRFI is VAT-exempt. Copy of BIR certification is available upon request to aid processing of fees.*

UPSCRFI

presents

TRAINING PROGRAMS IN APPLIED STATISTICS

A Seminar Series
October–December 2017



TRAINING PROGRAMS IN APPLIED STATISTICS

APPLIED STATISTICS I:
Basic Statistics with Exploratory Data Analysis
October 4 - 6 (Wednesday-Friday)

APPLIED STATISTICS II:
Communicating Statistics through Infographics
October 12 - 13 (Thursday-Friday)

APPLIED STATISTICS III:
Applied Statistical Forecasting
October 19 - 20 (Thursday-Friday)

APPLIED STATISTICS IV:
Statistics for Market Segmentation and Predictive Modeling
October 26 - 27 (Thursday-Friday)

ADVANCED MODULE V:
Advanced Regression Analysis
November 7 - 10 (Tuesday-Friday)

ADVANCED MODULE VI:
Advanced Time Series Analysis
November 14 - 17 (Tuesday-Friday)

ADVANCED MODULE VII:
Econometric Methods for Impact Evaluation
November 21 - 24 (Tuesday-Friday)

ADVANCED MODULE VIII:
Business and Customer Analytics
November 27 – 29 (Monday-Wednesday)

ADVANCED MODULE IX:
Financial Risk Modelling
December 5-8 (Tuesday-Friday)

APPLIED STATISTICS I
Basic Statistics with Exploratory Data Analysis

Objectives: The participants are expected to learn the basic concepts in statistics, collect and present statistical data, learn the different sampling techniques, interpret summary measures, perform estimation and hypotheses testing and do exploratory data analysis.

Description: This module is designed to introduce basic concepts in statistics including methods of data collection, sampling techniques, data presentation, and summary measures. Statistical Inference is also introduced, covering estimation and hypothesis testing. Integrated into this course are Exploratory Data Analysis (EDA) techniques which provides a new way of approaching data. Participants are also trained the use of appropriate statistics software.

MODULE OUTLINE

I. Introduction to Statistics
- Definition of Statistics
- Basic Concepts
- Areas of Statistics
- General Uses of Statistics
- Steps in a Statistical Inquiry
- Levels of Measurement

II. Collection of Data
- Data Collection Techniques
- Types of Questionnaire
- Guidelines in Questionnaire Construction

III. Sampling Techniques
- Census vs Sample Survey
- Sampling vs Nonsampling Errors
- Probability and Nonprobability Sampling

IV. Descriptive Statistics
- Presentation of Tables
- Construction of Graphs
- Computation of Summary Measures

V. Inferential Statistics
- Estimation
- Hypothesis Testing
  - i. Tests concerning the Population Mean
  - ii. Tests concerning the Difference between Two Population Means

VI. Exploratory Data Analysis
- Boxplots
- Re-expression to Improve Symmetry

APPLIED STATISTICS II
Communicating Statistics through Infographics

Objectives: The participants are expected to create infographics as a medium to present and communicate important statistics and results of their research or inquiry, especially with the aid of Canva, a simple drag-and-drop design interface available for everyone.

Description: More than reviewing the basics of Descriptive Statistics especially summary measures and presentation of data, this module lays down the guidelines and tips of making proper, informative, and effective infographics in Canva through a guided step-by-step procedure to navigate its interface, account settings, infographic design tools, and integrated workshops. This course also highlights the design elements and principles in creating an infographic .

MODULE OUTLINE

I. Review of Descriptive Statistics

II. What is Canva?

III. What can I do with Canva?

IV. Setting up an Account in Canva

V. Canva Interface

VI. Creating Your Infographic Design
- Search
- Grids
- Frames
- Layouts
- Text and Textholders
- Photos
- Backgrounds
- Illustrations and Icons
- Shapes and Lines
- Charts
- Page Setup
- Folders

VII. Canva Learn
- Tips and Tricks for Great Design
- Integrated Workshops
- Design Elements and Principles
- Infographic Design

VIII. Applications of Canva

APPLIED STATISTICS III
Applied Statistical Forecasting

Objectives: The participants are expected to learn how to forecast time series data.

Description: Two approaches to forecasting time series data are presented: classical smoothing procedures and the use of statistical models. Details of techniques like exponential smoothing, moving average, seasonal decomposition, ARIMA models, and transfer function models are discussed. These procedures are applicable in forecasting many types of time series, e.g. economic, agricultural.

MODULE OUTLINE

I. Motivation
- Requirements of Forecasting
- Sources of Data
- Demand Forecasting
- Sales Performance
- Role of Forecasting Models

II. Basic Concepts
- Statistical Forecasting Techniques
- Types of Data
- Nature of Model
- Descriptive Statistics
- Autocorrelation

III. Exploring the Data
- Time Plot
- Measuring Forecast Accuracy
- Addressing Data Gaps

IV. Simple Moving Averages

V. Exponential Smoothing
- Single Exponential Smoothing
- Double Exponential Smoothing
- Triple Exponential Smoothing
- Exponential Smoothing in EViews

VI. Seasonal Indexes and Deseasonalization

VII. Univariate Box-Jenkins or ARIMA Models
- Singe Series Analysis
- Concept of Stationarity
- Preliminary Transformation-Differencing
- The Box-Jenkins Modeling Procedure
- Estimated Autocorrelation Functions
- Stationarity and Estimated Autocorrelation Functions

VIII. Two Common ARIMA Models
- Algebric Form of Two Common Processes
- Theoretical ACF's and PACF's
- ARIMA Models
- Testing Autocorelation Coefficients

IX. Impact of Events in Forecasting
- Issues
- The Delphi Technique
- Value of the Technique

X. Modern Approach in ARIMA

APPLIED STATISTICS IV

Statistics for Market Segmentation and Predictive Modeling

Objectives: At the end of the seminar, participants are expected to independently create a research/study paradigm that employs the multivariate approach relevant to discovery of hidden subgroups in a heterogeneous population and to use statistical models to anticipate membership in such segments.

Description: The seminar features techniques in multivariate data analysis which are useful in identifying homogeneous subgroups (segments) in a population. Algorithms in predicting membership of future elements in such segments are also discussed. Development of techniques is set in accordance with key business questions relevant to end-users. All necessary statistical computations are software-aided. Focus is on interpretation of statistical quantities that lead to identification of segments and corresponding allocations rules.

MODULE OUTLINE

I. Introduction

II. Key Business Questions

III. Segmentation Levels

IV. Segmentation & Profiling Variables

V. Supervised and Unsupervised Segmentation

VI. Unsupervised Segmentation through Cluster Analysis

VII. Types of Cluster Analyses

VIII. Measuring Similarity in a Customer Database

IX. Hierarchical Clustering Techniques

X. Nonhierarchical Clustering Techniques

XI. Predictive Modeling

XII. Discriminant Analysis Approach

- Selecting Relevant Variables
- Modeling
- Checking for Usefulness of Discriminant Model

XIII. Regression Approach

XIV. Review of Basic Linear Regression

XV. Fitting a Logistic Model to Predict Segment Membership

XVI. Summary and Closing

ADVANCED MODULE V
Advanced Regression Analysis

About the Module

One of the significant developments in the field of research is the increase availability of survey data sets. This positive development is being matched by research efforts in optimizing utility of such data sets for more in-depth statistical analysis, thereby revealing more interesting information which can be excellent inputs to policy formulation and evaluation. This training course will update and guide researchers on the "What's" and "How's" of this emerging analytical technique.

This module discusses various tools and techniques on the quantitative analysis in cross section data, pooled and panel data, including the linear regression model using Least Squares estimation, Instrumental Variable (IV) regression, Difference-in-Differences (DID), Fixed and Random Effects Models and Dynamic Panel Models. The objectives of this module are for participants to learn and apply the different multivariate techniques commonly used in analyzing cross-section, pooled and panel data and for the participants to extract useful information for strategy and policy formulation.

The target group of the module are those working with cross-section, pooled or panel data from household or individual surveys, for research (e.g. researchers from market research agencies), government workers (e.g DBM, DSWD, DOH, NEDA), members of the academic community, private institutions and Non-Government Organizations (NGOs) who work with social survey data or researchers who are interested in statistical analysis of real data for policy formulation and evaluation.

During the hands-on sessions, the participant will have opportunities to analyze real data using STATA for various interesting issues such as studying the determinants of wage, savings, fertility and poverty. The data are selected mostly from those used in actual research projects. For example, we analyze data using the Family Income and Expenditure Survey (FIES) and the National Demographic and Health Survey (NDHS). Participants are expected to have some statistical (regression) and computational skills (knowledge of Excel). The software that will be used is STATA©.

MODULE OUTLINE

I. Introduction to the Course
II. Structure of Economic Data
III. Regression Analysis and Least Squares Estimation
IV. Different Functional Forms
V. Important Statistics and Tests
VI. Use of Indicator Variables in the Regression Analysis
VII. Use of Interaction Terms
VIII. Diagnostic Procedures in Regression Analysis
- Constancy of Variance (Homoskedasticity)
- Independence of Error Terms (Test for Serial Correlation)
- Mis-specification of Model (Ramsey RESET)
- Multicollinearity
- Outlying Observations

ADVANCED MODULE V
Advanced Regression Analysis

MODULE OUTLINE

IX. Problems of Endogeneity in Econometric Models

X. Use of Instrumental Variable

XI. Conditions for Instruments (Relevance and Exogeneity)

XII. Two-Stage Least Squares (TSLS)

XIII. Test for Endogeneity using the Hausman Procedure

XIV. Analysis of Pooled Data

XV. Policy Evaluation using Difference-in-Difference (DID) Model

XVI. Motivation behind Panel Data Methods: Omitted Variables Problem

XVII. Unobserved Effects Model (UEM)

XVIII. Panel Data Analysis - Fixed Effects (FE) Models

XIX. One Way FE Model

XX. Time Effects and Two Way FE Model

XXI. Comparison of FE Model with Model using Pooled Data

XXII. How to Estimate the FE Model in STATA

XXIII. Random Effects (RE) Model

XXIV. Testing the Appropriateness of the FE and RE Models – Hausman Test

XXV. Instrumental Variable (IV) in Panel Data Estimation

XXVI. Hausman-Taylor Estimator

XXVII. Dynamic Panel Models (DPM)

XXVIII. Arellano Bond Estimator

XXIX. Arellano Bover/Blundell Bond Estimator

ADVANCED MODULE VI
Advanced Time Series Analysis

About the Module

This module focuses on multivariate time series analysis of economic (macro) and financial data, in the context of the system of equations, and is deemed useful for researchers who are interested in doing research in the areas of macro-econometrics and financial econometrics. The module aims to train researchers how to analyze causal relationships between macro-economic variables, use quantitative analysis of macro-economic and financial data using econometric methods, use econometric techniques and their statistical and practical interpretations and implement these econometric techniques (using statistical/econometric software).

Participants involved in Industry Forecasting (e.g. marketing, electricity), Risk Management, Derivatives, Credit, Equity and FX asset class, Macroeconomic and Financial Research and members of the academic community will find the materials useful and relevant.

Participants are expected to have some statistical (regression) and computational skills (knowledge of EXCEL). The software that will be used is the Econometric Views (EVIEWS©).

MODULE OUTLINE

I. Introduction
II. Issues related to non-stationary time series
III. Problem with non-stationary time series: Spurious Regression
IV. Random Walk Process
V. Tests Introduction to the concept of co-integration
VI. Test for Co-integration using the Engle-Granger Procedure
VII. Granger Causality
VIII. Multivariate Analysis in Single Equations
IX. Error Correction Model (ECM) in Single Equations
X. Regression models for Stationary Series
XI. AutoRegressive Distributed Lag (ARDL) Models
XII. Issues Related to Exogeneity in Econometrics
XIII. Introduction to the Vector AutoRegressive (VAR) Models
XIV. Building VAR Models
XV. Forecasting
XVI. Analysis of VAR Models
XVII. Impulse Response Function (IRF)
XVIII. Variance Decomposition
XIX. Granger Causality in VAR Model
XX. Testing for Vector Cointegration – Johansen Test
XXI. Introduction to the Vector Error Correction Model (VECM)
XXII. Review of the Univariate ARCH/GARCH Models
XXIII. Multivariate GARCH Models
XXIV. DVEC, BEKK, and CCC Models

ADVANCED MODULE VII
Econometric Methods for Impact Evaluation

About the Module

Evaluation approaches for development projects in the country have evolved considerably over the past years mainly due to the rapidly expanding research on impact evaluation. National and local agencies, donors, and other practitioners in the development community are keen to determine the effectiveness of programs with far-reaching goals such as lowering poverty, increasing employment or increasing school attendance. Comparing program effects across different cities/municipalities, provinces and regions is also receiving greater attention, as various government and non-government sponsored programs target larger populations and become more ambitious in scope, and researchers acquire enough data to be able to test specific policy questions across areas. These policy quests are often possible only through impact evaluations based on hard evidence (empirical) from survey data or through related quantitative approaches.

The process of evaluating development projects faces empirical and practical challenges that can be overwhelming for researchers and evaluators who often have to produce results within a short time span after the project or intervention is conceived, as both donors and governments are keen to regularly evaluate and monitor aid effectiveness. With multiple options available to design and evaluate a program, choosing a particular method in a specific context is not always an easy task for an evaluator, especially because the results may be sensitive to the context and methods applied.

The course on Econometric Methods for Impact Evaluation is aimed to researchers and those involved in the implementation of development programs in the country (program managers and evaluators). The objective of the course is to introduce the researchers and program managers and evaluators to the different techniques in program evaluations, including some of the case studies on program evaluation. Participants are expected to have some statistical and computational skills. The software that will be used is STATA©.

MODULE OUTLINE

I. Introduction to Impact Evaluation
II. Quantitative and Qualitative Impact Assessments
III. Ex Post and Ex Ante Impact Assessment
IV. Fundamental Problem of Causal Inference
V. Average Treatment Effect (ATE) and the Problem of Selection Bias
VI. Overview of the Quantitative Approaches to Impact Evaluation
VII. Introduction to STATA
VIII. Introduction to Regression Model
IX. Least Squares (LS) Estimation Procedure
X. Problems on Endogeniety
XI. Instrumental Variable (IV) Regression
XII. Tests for Valid Instruments
XIII. Regression Discontinuity Design (RDD)
XIV. Propensity Score Matching (PSM)
XV. Pooled Data Analysis
XVI. Double Difference Model
XVII. Panel Data Analysis
XVIII. Fixed and Random Effects Models

ADVANCED MODULE VIII
Business and Customer Analytics

About the Module

Businessdictionary.com defines *analytics* as "(t)he field of data analysis. (It) involves studying past historical data to research potential trends, to analyze the effects of certain decisions or events, or to evaluate the performance of a given tool or scenario." The module is based largely on Putler and Krider's book *Customer and Business Analytics: Applied Data Mining for Business Decision Making Using R*, which implements a data mining approach to analytics "using software tools and *models* to summarize large amounts of data in a way that supports decision making." Implementation of procedures would be done using the open-source *R* Commander, a user-friendly GUI running under *R* environment.

MODULE OUTLINE

I. Introduction
- Database Marketing and Data Mining
- A Process Model for Data Mining

II. Predictive Modelling Tools
- Multiple Linear Regression
- Logistic Regression
- Lift charts
- Multinomial Regression Model
- Ordinal Regression Models
- Tree Models
- Neural Network Models

III. Grouping Methods
- Ward's Method of cluster analysis
- K-centroids partitioning cluster analysis

ADVANCED MODULE IX
Financial Risk Modeling

About the Module

The application of econometrics in financial risk modeling is a major development in the financial markets. One of the most important features of financial markets is volatility. Accurate estimates of the volatility are essential for successful risk management. The use of nonlinear time series structures such as the Generalized AutoRegressive Conditional Heteroskedasticity (GARCH), in the univariate and multivariate cases, has been found to be successful in modeling the attitude of investors towards risk. Newer volatility models such as the Stochastic Volatility (SV) and the Realized Volatility (RV) have been found to forecast financial risk more accurately. The aim of this module is to explain the different theories and techniques in analyzing and forecasting univariate and multivariate financial time series (returns and risks). Application to estimating financial market risk will be discussed in this module.

Participants involved in Industry Forecasting (e.g. marketing, electricity, power), Risk Management, Derivatives, Credit, Equity and FX asset class, Macroeconomic and Financial Research and members of the academic community will find the materials useful and relevant.

Participants are expected to have some statistical (regression) and computational skills (knowledge of EXCEL).

MODULE OUTLINE

I. Review of AutoRegressive Moving Average (ARMA) Models
II. Forecast Evaluation of Competing Models using the Diebold-Mariano Test
III. Generalized AutoRegressive Conditional Heteroskedasticity Models for Volatility
IV. Stochastic Volatility (SV) Models
V. Realized Volatility (RV) Models
VI. GARCH in Mean Models to test Risk-Return Trade-off
VII. Value at Risk (VaR) Estimation using Econometric Models
VIII. Backtesting in Value at Risk (VaR) using Likelihood Ratio Tests
IX. Multivariate GARCH (MGARCH) Model
X. DVEC Model
XI. BEKK Model
XII. Constant Conditional Correlation (CCC) Model
XIII. Dynamic Conditional Correlation (DCC) Model

ADVANCED MODULE V, VI, VII, IX
Principal Lecturer

Dr. Dennis S. Mapa

Dr. Dennis S. Mapa is the Dean and Professor in Statistics at the School of Statistics, University of the Philippines in Diliman (UPD), Quezon City. He is also serving as an Affiliate Professor in Economics at the School of Economics, UP Diliman and Research Fellow at the Social Weather Stations (SWS). He was a visiting scholar at the International Centre for the Study of East Asian Development (ICSEAD) in Kitakyushu, Japan. He finished his Bachelor of Science degree in Statistics in 1990 and completed two Master's degrees: in Economics (2002) and in Statistics (2004) and his Ph.D in Economics in 2008, all from the University of the Philippines.

A multi-awarded researcher, Dr. Mapa is the Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA) Regional Professorial Chair holder for 2015 for his research contribution in the areas of Econometric Analysis, Economic Growth and Poverty Analysis.

He is also a University of the Philippines *Scientist* for 2012-2014 and he received the *Outstanding Young Scientist (OYS) Award in Economics* from the National Academy of Science and Technology (NAST) for his research contribution in the areas of Financial Econometrics and Empirical Economic Growth analysis in 2008.

Currently, he is serving as the President of the Philippine Statistical Association, Inc. (PSAI), the country's sole scientific society of professionals committed to the proper use of statistics. He is also the Executive Director UP Statistical Center Research Foundation, Inc. (UPSCRFI) and a member of the Governing Board of the Philippine Statistics Authority (PSA) and the Philippine Statistical Research and Training Institute (PSRTI).