

DE LA SALLE UNIVERSITY - MANILA COLLEGE OF SCIENCE Mathematics Department

SYLLABUS

COURSE NAME/CODE:
COURSE TITLE:
CLASS DAY & TIME:
ROOM:
NAME OF FACULTY:
COURSE CREDIT:
CONTACT NO. (DEPT):
TERM/SCHOOL YEAR:

MSS911M, MSS913M, MSS915M Statistical Consulting 1-3

3 units spread over three terms at 1 unit per term 536-0270, 524-4611, loc. 420

COURSE DESCRIPTION

This is a practicum course for MS Statistics students. This course is spread over three terms. **Statistical Consulting 1** taken first will discuss basic principles of statistical consulting and discuss case studies faced in actual consulting work. The second series, **Statistical Consulting 2** will be supervised consulting for 14 hours in the term and **Statistical Consulting 3** will be 14 hours of independent consulting.

PREREQUISITES: MSS911M (for MSS913M) MSS913M (for MSS915M)

COURSE OBJECTIVES

- Appreciate the basic principles of statistical consulting
- Develop skills needed by a statistical consultant
- Demonstrate the basic principles of statistical consulting in actual consulting work in different fields such as business, finance, economics, social science, psychology, biology, medicine, and engineering, among others
- Exhibit values like:
 - cooperation through group study;
 - honesty by claiming credit only for the work he has done;
 - patience, perseverance and diligence;
 - faith by doing what is right and giving his best in performing any assigned task;
 - self-reliance by being able to solve problems independently.

Topic/ Subtopic	Learning Strategies /Activities	Week/ Meeting
 STATISTICAL CONSULTING 1 1. Introduction to Statistical Consulting 1.1 History of the Scientific Method 1.2 The Development of Statistics 	Lecture Class Discussion Problem Set	6 Hours

Topic/ Subtopic	Learning Strategies /Activities	Week/ Meeting
1.3 Overview of Statistical Consulting		
 2. Communication 2.1 Verbal Interaction 2.2 How to Write Reports 2.3 How to Make Effective Presentations 2.4 Importance of Quality Graphics 	Lecture Class Discussion Problem Set	6 Hours
 3. Methodological Aspects 3.1 Data Collection 3.2 Data Processing 3.3 Statistical Issues 3.4 Statistical Methods Used in Consulting 3.5 Standard and General Methods 3.6 Design of Experiments 3.7 Statistical Software 	Lecture Class Discussion Problem Set	6 Hours
 4. A Consulting Project 4.1 Prior Information 4.2 Financial Issues 4.3 Session 1: The first meeting 4.4 Documentation 4.5 Project Analysis 4.6 Session 2: Presenting the Results 4.7 The Final Report 	Lecture Class Discussion Problem Set	3 Hours
5. Case Studies		6 Hours

TEACHING STRATEGIES/METHODOLOGY

1. Lecture

2. Report

3. Case Studies

REQUIREMENTS OF THE COURSE

Statistical Consulting 1	
1. Article Critique (2)	50%
2. Reporting	50%

Statistical Consulting 2	
1. 2 Case Studies (Group)	50%
2. Oral Presentation	50%
Statistical Consulting 3	
1. 5 Case Studies/Individual Project	50%
2. Oral Presentation	50%

TEXTBOOKS

- Cabrera, J. and A. McDougal. (2002). Statistical Consulting. NY: Springer.
- Chatfield, C. (1995). Problem Solving: A Statistician's Guide. London: Chapman & Hall.
- Derr, J. (2000). Statistical Consulting: A Guide to Effective Communication. Pacific Grove: Duxbury. Enders, W. (2010). Applied Econometric Time Series. Hoboken, N.J.: Wiley
- Everitt, B. and Hothorn, T. (2011). An introduction to applied multivariate analysis with R [electronic resource]. New York, NY; Springer New York.
- Fichet, B. (2011). Classification and multivariate analysis for complex data structures [electronic resource]. Berlin, Heidelberg: Springer Berlin Heiderberg.
- Freedman, D. (2009). Statistical models: theory and practice. Cambridge: Cambridge University Press.
- Grissom, Robert J. and Kim, John J. (2012). Effect Sizes for Research: Univariate and Multivariate Applications. New York : Routledge.
- Hair Jr., Joseph F. et. al. (2010). Multivariate Data Analysis (7th ed.). New Jersey: Prentice Hall.
- Hardle, W. and Simar, L. (2012). Applied Multivariate Statistical Analysis (3rd ed.). NY: Springer.
- Johnson, Richard A. and Wichern, Dean W. (2007). Applied Multivariate Statistical Analysis (6th ed.). NJ: Pearson Prentice Hall.
- Kahane, L. H. (2008). Regression basics. Los Angeles: Sage Publications.
- Montgomery, D.C. (2009). Design and Analysis of Experiments (7th ed.). New York: Wiley.
- Mukhopadhyay, P. (2009). Multivariate statistical analysis. Hackensack, NJ: World Scientific.
- Ohio State University. (1982). Teaching of Statistics and Statistical Consulting: Proceedings of a Conference held at the Ohio State University, Nov 24-25, 1980. NY: Academic Press.

Prado, R. (2010). Time Series: Modeling, Computation, and Inference. Berlin, Heidelberg: Springer Berlin Heidelberg. Shumway, R.H. (2011). Time Series Analysis and Its Applications with R Examples. Ny: Springer New Y

- Stevens, J. P. (2009). Applied multivariate statistics for the social sciences. New York: Routledge.
- Wehrens, Ron (2011). Chemometrics with R [electronic resource]: Multivariate Data Analysis in the Natural Sciences and Life Sciences. Berlin, Heidelberg: Springer Berlin Heidelberg.
- Yan, X. (2009). Linear regression analysis: theory and computing. Hackensack, NJ: World Scientific.

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- Chen, X., Ender, P., Mitchell, M. and Wells, C. (2003). Regression with SAS: <u>http://www.ats.ucla.edu/stat/sas/webbooks/reg/default.html</u>
- Lock, R. WWW Resources in teaching Statistics: http://it.stlawu.edu/~rlock/tise98/onepage.html
- StatSoft, Inc. Electronic Statistics Textbook. Tulsa, OK: StatSoft. Web: http://www.statsoft.com/textbook/
- West, R. Regression Applet: <u>http://www.stat.sc.edu/~west/javahtml/Regression.html</u>
- Concepts of Experimental Design: Design Institute for Six Sigma: http://support.sas.com/resources/papers/sixsigma1.pdf
- Basic Experimental Design:
 - http://liutaiomottola.com/myth/expdesig.html
- DoE & Analysis of Experimental Data (using R):
 - http://cran.r-project.org/web/views/ExperimentalDesign.html
- What is Experimental Design?:
 - http://www.itl.nist.gov/div898/handbook/pri/section1/pri11.htm
- A Field Guide to Experimental Designs: <u>http://www.tfrec.wsu.edu/anova/index.html</u>

FACULTY OUTPUT

 Arcilla, R., Co, F. and Ocampo, S. (2011). "Correlates of Poverty: Evidence from the Community-Based Monitoring System (CBMS) Data". DLSU Business and Economics Review, Vol. 20, No. 2, January 2011, pp. 33-43 (ISSN) 0116-7111, http://www.philjol.info/philjol/index.php/BER/article/view/1912).

- Beltrano, Elline Jade, Leong, Robert Neil F., and Co, Frumencio F. (2013). Regression Analyses of the Philippine Birth Weight Distribution. *The Philippine Statistician*, 62(2), 31-52.
- Carandang, J. and Co, F. (2012). "Some factors affecting the student evaluation ratings of Biology faculty at DLSU". Proceedings of the 3rd International DLSU Education Congress, DLSU College of Education, Manila, September 2012.
- Co, F., Arcilla, R., and Ocampo, S. (2012). "*Correlates of Hunger: Evidence from the CBMS Data of Pasay City*". Proceedings of the 2012 Philippine Statistical Association Annual Conference, Quezon City, August 2012.
- Janairo, J.I.B., Janairo, G.C., Yu, D.E.C. and F. Co. (2010). "Regression Analysis on the Chemical Descriptors of a Selected Class of DPP4 Inhibitors". Studies in Mathematical Sciences, Vol. 1, No. 1, 2010, pp. 01-06 (ISSN 1923-8444-Print; ISSN 1923-8452 – Online, <u>www.cscanada.net</u>).
- Janairo, J.I.B., Janairo, G.C., Yu, D.E.C. and F. Co. (2011). "Assessing the Binding Affinity of a Selected Class of DPP4 Inhibitors using Chemical Descriptor-Based Multiple Linear Regression". Orbital (The Electronic Journal of Chemistry), Vol. 3, No. 1, January March 2011, pp. 01-06 (ISSN 1984-6428, <u>http://www.orbital.ufms.br/inpress/inpress.htm</u>).
- Ocampo, S., Arcilla, R., Co, F., Jumangit, R. and F. J. Diokno. (2011). "*Exploring Latent Factors Using Non-Bayesian and Bayesian Factor Analyses*". Proceedings of the DLSU Science and Technology Congress, DLSU, Manila, February 2011.
- Ocampo, S., Arcilla, R., Co, F., Jumangit, R. and F.J. Diokno. (2013). "Enthusing students towards statistical literacy using transformative learning paradigm: Implementation and Appraisal". Proceedings of the 2013 IASE/IAOS Conference, IASE/IAOS, Hong Kong/Macau, China, August 2013.

Noted by:

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