برنامج الماجستير المهنى

"Monitoring and Evaluation

توصيف مقرر
Statistical Methods/Tools)

(Statistics Methods

معهد التخطيط القومي
الدراسات العليا

توصيف مقرر

Statistical Methods/Tools)

(Statistics Methods

		Core Courses					
		Level one					
sr	Course Title	Code	TH	PH	CH	CU	Pre-Req.
4	**Statistical Methods/Tools Statistics Methods**	**PME-104**	30	15	45	3	----

Course Specification:

This course introduces students to basic statistical methods and their application in management, policies, and decision-making. It covers the essential elements of descriptive statistics, univariate and bivariate statistical inference, and introduction to multivariate analysis. In addition to covering statistical theory, and emphasizing on the importance of applied statistics and data analysis by using the software package STATA. The course targets specific types of students, and develops basic analytical skills and adopts a critical approach to reviewing statistical findings and using statistical reasoning in decision-making. This course outlines a detailed theoretical background for those who want to proceed their studies in Statistics.

Course Prerequisites:

None

Course Objectives:

- Understand how to analyze and present data using appropriate quantitative research methods. This includes an understanding of sampling techniques, data analysis, statistics, and visualization methods.
- Conduct an impact analysis using appropriate statistical methods and tools, and present well-constructed memo with appropriately incorporated tables and graphs.
- Develop constructive criticism on the results using statistical analysis.

Course Outcomes:

- Understand the different levels of measurement (nominal, ordinal and interval/ratio) and their relevance to different analytical techniques.

- Understand the basic descriptive statistics including the mean, median, mode, range and standard deviation; and ability to calculate these statistics and to generate them using STATA software; and identify when each may be appropriate for descriptive purposes.
- Calculate confidence intervals for means and proportions and to assess the relative merits of point versus interval estimates for means and proportions.
- Understand the basic principles of statistical inference including the importance of sampling distributions and the standard error.
- Determine appropriate tests of statistical significance for differences in means, differences in percentage distributions and cross-tabulations, and apply it manually and by using STATA software.
- Determine when bivariate regression and correlation are appropriate analytic approaches, in addition to calculating and interpreting regression and correlation coefficients, manually and by using STATA software.
- Design multiple regression analysis, to generate regression results using STATA software, and to interpret these results numerically and theoretically.
- Select, synthesize and summarize quantitative data for different target groups. A special focus will be on the ability to delieverstatistical concepts and findings in a simple way.
- Outline the importance of unbiased sample.
- Differentiate between Type I and Type II error.
- understand causality (Cause and effect relationships), including distinguishing between correlation and causation, the challenges to estimating causal relationships, and the importance of causality for determining impact.

Course Contents:

- Introduction: Statistics: what's it about?-Basic descriptive statistics.
- Central Tendency and Dispersion: Measures of central tendency - Measures of dispersion.
- The Normal Curve: The normal distribution.
- Sampling and the Sampling Distribution: How to sample, The sampling distribution, Using sample statistics to make inferences about population.parameters (sampling error - standard error of a sample statistic- the Central Limit Theorem).
- Estimation.

- Hypothesis Testing – 1.
- Hypothesis testing – 2.
- Analysis of Variance.
- Bivariate Tables, Chi-Square.
- Bivariate Regression & Correlation.
- Controlling for Other Variables.
- Dummy Variables and controlling Other Variables

Course Assessment:

• Participation and Discussion	10%
• Quizzes	10%
• Individual Assignment	15%
• Mid –Term Exam	25%
• Final Exam	40%

Key References:

- Freedman, David, Robert Pisani, & Roger Pervis (2007). Statistics. New York: W. W. Norton.
- James, Gareth, Daniela Witten, Trevor Hastie, & Robert Tibshirani (2013). An Introduction to Statistical Learning: With Applications in R. New York: Springer.
- Kabacoff, Robert (2015). R In Action: Data Analysis and Graphics with R. Shelter Island, NY: Manning Publications Co.
- J. F. Healey's The Essentials of Statistics: A Tool for Social Research (4th Edition).
- Wadsworth/Cengage Learning 2016, ISBN-3:9781305093836)– hereinafter Essentials