**Course outline: Credit Hours = 3 Code: Psy-105**

**University of Management and Technology**

**Course Description& Objectives**

The course will examine the statistics most commonly used in the study of psychology, and social problems, with special emphasis upon frequency distributions, measures of central tendency, variability, correlation and tests of significance, chi-square, and non-parametric tests. This course will prepare students to effectively participate in the researcher process of their respective areas.

**Course objectives**

1. To be familiar with the basic logic of statistical reasoning.
2. To be able to use basic statistical concepts and procedures.
3. To show the interconnections between theory, methods, and statistics.
4. To be able to interpret statistical information, particularly from articles in the research journals.
5. To know the basic techniques of descriptive and inferential statistics.

**Course Contents**

**Week 1& 2: Overview of Descriptive Statistics**

1. Descriptive and inferential statistics
2. Scales of Measurement
3. Random sampling
4. Displaying data
5. Percentiles
6. Measures of dispersion
7. The normal distribution
8. Introduction to hypothesis testing

**Week 3: Confidence Intervals and Tests of Hypotheses about means**

1. Introduction using a normal sample distribution
2. One sample t-tests
3. Independent samples
4. Two correlated samples
5. Heterogeneity of variance
6. Power analysis

**Practicum 1: Analyze the assigned data using different versions of t-test on SPSS and present results in the form of APA format.**

**Week 4 & 5: Analyses of variance**

1. One-way designs
2. Factorial designs
3. Repeated measure designs
4. Monotonic verses nonmonotonic interactions
5. Multiple pairwise comparisons
6. Magnitude of effect
7. Power Analysis (g-factor and π2)
8. Multivariate Analysis of Variance (MANOVA)

**SPSS Practicum 2: Conduct different forms of ANOVA and MANOVA, and report the results in the form of APA style**

**Week 6 & 7: Bivariate Correlation**

1. Pearson product moment correlation coefficient
2. Point biserial *r*
3. Phi coefficient
4. Spearman’s rho
5. Scatter plots
6. Brief introduction of regression & canonical correlation

**SPSS Practicum 3: run correlation analysis on assigned data using SPSS and tabulate the results in APA format**

**Week 8& 9: Regression Analysis**

1. Linear regression analysis
2. Multiple regression analysis
3. Categorical variables in multiple regression
4. Continuous variables: interaction and curves
5. Binary logistic regression

**SPSS Practicum 4: conduct regression analysis on assigned data using SPSS and report the results in APA format**

**Week 8: MID TERM**

**Week 10: Application of Analysis on SPSS**

1. Mediation analysis
2. Moderation analysis

**SPSS Practicum 5: Run mediation and moderation analysis on assigned data and present results in APA format**

**Week 11: Factor Analysis**

1. Item analysis
2. Item discrimination index
3. Item difficulty index
4. Scree plot

**SPSS Practicum 6: Run factor analysis on assigned data and present results in APA format**

**Week 12 & 13: Structure Equation Modeling**

**Week 14 & 15: Nonparametric tests**

1. The Mann-Whitney test
2. Wilcoxon’s signed rank test
3. Kruskal-Wallis ANOVA on ranks
4. Friedman’s rank test on correlated samples
5. Goodness of fit
6. Analysis of contingency tables

**SPSS Practicum 7: Run nonparametric analysis on assigned data and present results in APA format**

**Week 16: Final Exam**

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| **Student Evaluation** |  |
| SPSS Practicum 1 | 5% |
| SPSS Practicum 2 | 5% |
| SPSS Practicum 3 | 10% |
| SPSS Practicum 4 | 10% |
| SPSS Practicum 5 | 10% |
| SPSS Practicum 6 | 10% |
| Mid-term | 25% |
| Final-term | 25% |
| **Total** | **100%** |

**Recommended Books**

Field, A. (2013). Discovering *statistics using SPSS*. (4th ed.). London: SAGE Publications Inc.

Gravetter, F., & Wallnau, L. B. (2002). *Statistics for the Behavioral Sciences,* Latest edition. Pacific Grove, CA: Brooks/Cole Publishing.

Green, Salkink, & Akey. (2000). *Using SPSS for windows: Analyzing and Understanding data* (2nd ed.). :NJ: Prentice Hall.

Howell, D. C. (2007). *Statistical methods in psychology* (6th ed.). Australia: Thomson Wadsworth.