

KING SAUD UNIVERSITY
College of Science
Physics and Astronomy Department

Course Code	Phys 500		
Course Name	Research Methodology		
Credit hours	1		
Level	MSc		
Pre-requisites	----		
Co-requisites	----		
Credit Distribution			
Course Description: Uncertainties in measurements. Measuring errors. Uncertainties. Parent and Sample Distributions. Mean and Standard Deviation of Distributions. Probability Distributions. Binomial Distribution. Poisson Distribution. Gaussian Distribution. Lorentzian Distribution. Error Analysis. Instrumental and Statistical Uncertainties. Propagation of Errors. Specific Error Formulas. Application of error Equations. Estimates of Mean and Errors. Method of Least Squares. Statistical Fluctuations. Probability Tests. χ^2 Test of a Distribution. Least-Squares Fit to a Straight Line. Dependent and Independent Variables. Methods of Least Squares. Minimizing χ^2 . Error Estimation. Some Limitations of the Least Squares Method. Alternate Fitting Method. Least-Squares Fit to a Polynomial. Least-Squares Fit to an Arbitrary Function.			
Textbook: Data Reduction and Error Analysis for the Physical Sciences 3rd ed. – P. Bevington, D. Robinson (McGraw-Hill, 2003)			
Other book: Probabilities and Statistics, M. Spiegel, Schaum's Outline Series			

Grades Distribution:

Midterm Exam: 30% Homework: 30% Final Exam: 40%

Instructor:

Dr. Vasileios Lempesis (vlempesis@ksu.edu.sa)