DEREE COLLEGE SYLLABUS FOR: MA 3111 STATISTICS II

– UK LEVEL: 5
UK CREDITS: 15
US CREDITS: 3/0/3

(SPRING 2015)

PREREQUISITES:	MA 2010 Statistics I
CATALOG DESCRIPTION:	Confidence interval for one mean, one variance, and one proportion. Hypotheses testing. Parametric tests for one mean and for the difference between two means. Parametric tests for one standard deviation and for the difference between two standard deviations. Parametric tests for one proportion and for the difference between two proportions. Test for independence of two qualitative/categorical variables. One way analysis of variance. Simple and multiple correlation and regression.
RATIONALE:	The course focuses on inferential statistics and correlation/regression analysis. The student learns how to construct confidence intervals and perform various tests of hypotheses, examine two variables for correlation, and use the least squares method for fitting regression equations to a set of data.
LEARNING OUTCOMES:	1. Construct confidence intervals and apply tests of hypothesis concerning one mean, one standard deviation, one proportion. 2. Apply tests of hypothesis concerning the difference of two means, the difference of two proportions, and the difference of two standard deviations. 3. Apply the test for independence of two qualitative/categorical variables. 4. Apply the method of one analysis of variance to perform the test of the equality of k-means. 5. Apply simple and multiple correlation and regression. 6. Utilize EXCEL for data presentation and probability calculation and interpret relevant outputs.
METHOD OF TEACHING AND LEARNING:	In congruence with the teaching and learning strategy of the college, the following tools are used: ➢ The concepts of the course are introduced, exemplified and illustrated through extensive problem solving. Homework will be regularly assigned and discussed in class with students actively participating in the discussion. Computer software will be available both as a teaching aid and as a medium for solving problems. ➢ Office hours: students are encouraged to make full use of the office hours of their instructor, where they can ask questions, see their exam paper, and/or go over lecture material. ➢ Use of a blackboard site, where instructors post lecture notes, assignment instructions, timely announcements, as well as additional resources.
ASSESSMENT:	Summative: Midterm Examination **40%** Final Examination **60%** **Formative:** **0%** The formative, a 1-hour in-class examination, aims to prepare students for the examinations. The midterm examination is a 1-hour common examination.

	Learning Outcomes 1, 2, 6. The final examination is a 2-hour common examination. Learning Outcomes 3, 4, 5, 6. The final grade for this module will be determined by averaging all summative assessment grades, based on the predetermined weights for each assessment. If students pass the comprehensive assessment that tests all Learning Outcomes for this module and the average grade for the module is 40 or higher, students are not required to resit any failed assessments. Students are required to resit failed assessments in this module.
INDICATIVE READING:	**REQUIRED READING:** Anderson, David, R, Dennis J. Sweeney, Thomas A. Williams, Jim Freeman, and Eddie Shoesmith. *Statistics for Business and Economics*. Australia-Brazil-Japan-Korea-Mexico-Singapore-Spain-United Kingdom-United States, CENGAGE Learning. Custom e-book. 2014. **RECOMMENDED READING:** • Levine, David M., David F. Stephan, Kathryn A. Szabat. *Statistics for Managers Using Microsoft EXCEL*. Pearson. Seventh edition. 2014. • American Statistician. • College Mathematics. • Mathematics Magazine. • American Mathematical Monthly. • Mathematical Spectrum.
INDICATIVE MATERIAL: *(e.g. audiovisual, digital material, etc.)*	**REQUIRED MATERIAL:** **RECOMMENDED MATERIAL:** • Instructor hand-outs. • Books on reserve in the library.
COMMUNICATION REQUIREMENTS:	Verbal presentation skills using academic / professional English.
SOFTWARE REQUIREMENTS:	Fundamental knowledge of Microsoft WORD. Fundamental knowledge of Microsoft EXCEL. Any software distributed with the course textbook.
WWW RESOURCES:	www.wolframalpha.com www.quickmath.com www.sosmath.com www.freestatistics.info
INDICATIVE CONTENT:	**1. Tests of Hypotheses** 1.1. Null, alternative hypothesis, the level of significance. 1.2. Tests and confidence intervals concerning one mean. 1.3. Tests concerning the difference between two means (dependent and independent samples). 1.4. Tests and confidence intervals concerning a variance/standard deviation. 1.5. Tests concerning the difference between two variances/standard deviations. 1.6. Test and confidence interval concerning a proportion. 1.7. Test concerning the difference between two proportions. 1.8. Test for independence of two qualitative/categorical variables.

	1.9. Applications using EXCEL **2. Analysis of Variance.** 2.1. One-way analysis of variance. 2.2. Applications using EXCEL **3. Simple Linear Correlation and Regression.** 3.1. The correlation coefficient, the coefficient of determination and the test of linear relationship between two variables. 3.2. The least-squares method. 3.3. Determine the regression line and use it as a prediction tool. 3.4. Applications using EXCEL **4. Multiple Linear Regression.** 4.1. Determine the equation of a regression plane and use it as a prediction tool. 4.2. Calculation of the coefficient of multiple determination. 4.3. Calculation of the coefficient of partial determination. 4.4 Applications using EXCEL