DEREE COLLEGE SYLLABUS FOR: MA 2010 STATISTICS I	
(Updated Fall 2021) **UK LEVEL: 4** **UK CREDITS: 15** **US CREDITS: 3/1/3**	
PREREQUISITES:	NONE
CATALOG DESCRIPTION:	An introduction to foundational concepts and applications of descriptive statistics and basic probability and probability distributions. Organizing and summarizing data. Probability distributions: Binomial, Poisson, Normal, *t*-distribution, Chi-square. Sampling and sampling distribution of the mean. The central limit theorem. The course is not open to students who have completed an MA-course in statistics.
RATIONALE:	The course introduces the elementary foundations in descriptive statistics and probability distributions that provide background knowledge for inferential statistics. The students learn to apply and interpret descriptive statistics to summarize and describe data, and to apply basic probability distribution theory to calculate probabilities of random events. The focus of the course on foundational concepts and tools in statistics provide a base for developing statistically literate students equipped with fundamental statistics knowledge useful in real-life applications as well as necessary for advanced studies in quantitative areas involving data analysis.
LEARNING OUTCOMES:	Upon successful completion, the students should be able to: 1. Demonstrate ability to construct and interpret summary presentations of data using tabular, graphical and numerical descriptive statistics. 2. Apply basic probability rules and discrete probability distributions to determine probabilities of random events. 3. Apply the Normal probability distribution to compute probabilities of a continuous random variable and to solve application problems involving the sampling distribution of the mean of large samples. 4. Utilize pertinent software 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: ➢ Class lectures, interactive learning (class discussion, group work), online-digital resources, video presentations, and practical problems solved in class. ➢ Lab periods using statistical software will be used to cover probability theory and enhance concepts ➢ Exercises and primary source documents are assigned as homework, the solutions of which are reviewed in class. ➢ 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 the Blackboard site, where instructors post lecture notes, assignment instructions, timely announcements, as well as additional resources.

ASSESSMENT:

Summative:

First Assessment: Midterm examination	40%	Numerical problems/ questions on applications of statistical concepts, measures, figures / interpretations
Second Assessment: Portfolio of student work	10%	Homework using online digital resources and/or statistical software for problem-solving to promote engaged learning and critical thinking in applications of statistics
Final Assessment: Final examination	50%	Numerical problems/ questions on applications of statistical concepts, measures, figures / interpretations

Formative:

Practice sets of problems assigned through Blackboard	0%	Numerical problems/ questions on applications of statistical concepts, measures, figures / interpretations

The formative practice sets aim to prepare students for the examinations and ensure that students are actively engaged during the term.

The first assessment tests Learning Outcomes 1, 2 and 4
The second assessment tests Learning Outcomes 1, 2, 3 and 4.
The final assessment tests Learning Outcomes 1, 2, 3 and 4.

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. Latest Edition.

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. Statistics and its Applications** 1.1 Descriptive statistics 1.2 Inferential statistics **2. Frequency Distributions and Graphical Representations** 2.1 Summarizing and classifying data 2.2 Class intervals, class limits, and class marks 2.3 Class frequency, relative frequency and cumulative frequency 2.4 Histograms, polygons, bar charts and pie charts, box-plots 2.5 Applications using EXCEL **3. Descriptive Measures for Population and Sample Raw or Grouped Data** 3.1 Measures of Central Tendency: mean, median and mode 3.2 Measures of Variation: range, variance and standard deviation 3.3 Applications using EXCEL **4. Probability and Probability Distributions** 4.1 Basic Probability Concepts and Rules 4.2 Random variables and their probability distribution 4.3 Discrete Distributions: Binomial and Poisson distributions 4.4 Continuous Distribution: Normal distribution and z-scores 4.5 Applications using EXCEL **5. Sampling Distributions** 5.1 Sampling distribution of the mean 5.2 The central limit theorem 5.3 Applications using EXCEL **6. Introduction to Other Continuous Distributions** 6.1 The family of *t*-distributions 6.2 The family of χ^2-distributions