SYLLABUS – MATH 1530
PROBABILITY AND STATISTICS

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Textbook: ***Seeing Through Statistics, by Jessica Utts, 4th edition, published by CENGAGE.***

Topics Covered:

Part I: Finding Data in Life

This section of the course will lay the foundation for why the study of statistics is important to everyone and provide some basic tools that consumers of statistics can use to judge the validity and quality of statistical information they receive. Emphasis will be on developing the concepts of random sample, designed experiments, observational studies, good survey practices, and looking for misleading components of an analysis. Topics include:

Observational studies
Experiments
Data ethics
Measurement mistakes
Sampling

Part II: Finding Life in Data

In this section of the course you will learn to draw and interpret various graphs and learn which type of graph is appropriate for the type of data you have. You will also learn about measures of central tendency and variation and learn which measure is most appropriate for the level of measure of your data (nominal, ordinal, or numerical). An introduction to the normal distribution will be given as well as a discussion of finding the percentiles of a normal distribution. We will also look at the relationship between variables and how correlation can explain some of that relationship without implying a causative relationship. This section is important in order for you to be able to perform exploratory data analysis on data you collect in order to understand what level of measure you have and what sort of further analysis might be most appropriate. Topics include:

Histograms
graphs
Level of measurement
Numerical descriptions of data
Normal distribution
Correlation and causation

Part III: Understanding Uncertainty in Life

This section of the course will focus on the various ways of defining probability and the rules that all probability assignments must follow. We will learn to compute probabilities for common models such as tossing a coin and rolling a die. The concepts of sample space, events, mutually exclusive events, independent events and conditional probability will be discussed. Also discussed will be the assignment of personal probabilities and why these are often distorted and how and why our intuition can vastly differ from true probabilities. It is essential that you gain an understanding of the material in this section in order to understand the results of any analysis you choose to perform on your data. For this section there will be supplemental material to that presented in the textbook. Topics include:

Probability
Risk
Expected values

Part IV: Inference

In this section various types of analysis are discussed. The type of analysis that is appropriate depends on what you want to do with your data – whether estimate an unknown quantity or test a hypothesis. The type of analysis also depends on what level of measure you have in your data. We will discuss concepts such as the p-value which will rely heavily on the previous section's material, as well as how to set up a hypothesis test – which should be null and which should be alternative, and we will compute some confidence intervals and learn the correct interpretation of our results. This section is important in that it will demonstrate some basic concepts and techniques that will allow you to start thinking about appropriate analysis. Topics include:

Variation in samples
Estimating proportions
Confidence intervals
Hypothesis testing
Meta-analysis
Ethics in statistical studies

REQUIRED EQUIPMENT:

The textbook is required and will come with an online access code that will allow the student to do the on-line homework assignments. Internet access will be required for on-line homework assignments.

REQUIRED EXCEL LABS:

There will be 5 excel labs during the semester. Each lab will be during scheduled class time for this course. Each lab will have an assignment for the student to turn in. Labs cannot be made up so it is very important that you not miss any labs.

RESOURCES AVAILABLE TO THE STUDENT:

Free tutoring help is available through the Educational Support Program (ESP) in Dunn Hall room 143. Go to the Department of Mathematical Sciences' web page at www.msci.memphis.edu to find the hours of operation. The math department has made it a priority to have at least one graduate student studying statistics available at all times. This is a wonderful resource that is free to you. Take advantage of it or make arrangements to visit your instructor for more help.

EVALUATION:

There will be three in class tests plus a final exam worth 100 points each. In addition there will be on-line homework assignments that will count a total of 100 points. The excel labs will count a total of 100 points towards the final grade. Attendance will be considered as a part of grade with a maximum of 100 points to students who have no absences without excuse. The course coordinator will make the determination as to whether or not an absence may be excused. The total possible number of points is 700. The students grade in the course will be based on the percentage of the possible 700 points obtained according to the following scale.

90-100% - A
80 - 89% - B

70 – 79% - C
60 – 69% - D
Below 60% - F

No makeup tests will be given. If you must miss a test for any reason, your final exam grade may be used to replace the test missed if approved by the instructor. If you miss more than one test you will receive a zero on each test missed after the first. If you miss the final exam you will receive a grade of zero on the final exam. Each homework assignment will have a due date assigned. If the homework is not completed by the due date, the student will receive a grade of zero on that assignment. No replacement grades will be possible for any homework assignments not completed by the due date. **It is very important that you do not miss any tests or homework assignments or excel labs.**

For homework assignment grades: The lowest 1 assignment will be dropped.

ATTENDANCE:
Attendance in the course is mandatory and will be given a score which will be considered as a part of the grade. Five / 5 / points off the attendance grade / 100 / will be deducted for each absence that is not excused. The course coordinator will determine whether or not an absence may be excused.
/ example: if student missed 2 classes without excuse, his/her attendance score will be
100- 2x5 = 100-10=90 /
YOU MUST STAY FOR THE ENTIRE CLASS PERIOD TO BE CONSIDERED PRESENT DURING THE CLASS.

STUDENT DISABILITY POLICIES ACOMODATION AND SERVICES: Information available at www.memphis.edu/sas

ACADEMIC MISCONDUCT: The University policy is available at www.memphis.edu/studentconduct/miscondut.htm

The instructor has the right to remove anyone from the classroom for disruptive behavior at any time and has the right to have the student removed from the class. If you are removed from the class you will be considered absent for that class period. Behavior that might be considered disruptive includes but is not limited to:

- Cell phones that ring in class
- Talking during class
- Interrupting the instructor during a lecture
- Leaving before the class is over
- Making rude sounds in class

The professor reserves the right to make any necessary changes to the information provided in the syllabus during the semester.

I just noticed that the grading option for each attempts is the Average, not the highest, this is set by the system. But you still don't have to finish all of the three versions of each problem.

I have a different view of the homework assignments from yours, so if you have any problem, please let me know, and if that is a tech problem, you can contact **J. Tim Maloney** Tim.Maloney@cengage.com