MATH 2330 – Introduction to Statistics for Nursing Research
MW 3:10 p.m. – 4:25 p.m. Malloy 020

INSTRUCTOR: Jack Follis
TELEPHONE: 713-942-5046
Email: follisj@stthom.edu
OFFICE Math 113
OFFICE HOURS MW 10 am -12 pm, 2-3 pm
TTh 11 am -12 pm
Th 4:30-6:30 p.m.
Or by appointment

Course Catalog Description: Provides students with the methods and logic to perform elementary statistical analysis commonly used in clinical research including descriptive measures, probability, sampling, normal distribution, Student t and Chi squared distributions, estimation and hypothesis testing, analysis of variance, regression and correlation.

COURSE OBJECTIVES:
Upon completion of this course, students will be able to:

- Develop a basic working knowledge of commonly used concepts in statistical theory as a key to sound analysis of nursing research literature:
  - Hypothesis testing
  - Correlation and regression
- Develop an understanding of measures of central tendency: mean, median, mode, variance and standard deviation.
- Use contingency tables to develop discrete probabilities.
- Discuss the uses for measures of dispersion – range, variance and standard deviation – when analyzing clinical data.
- Understand the use of various probability distributions, along with their limitations in practice.
- Differentiate one-tailed and two-tailed tests of significance in a clinical context.
- Compare and contrast Type I and Type II errors and their implications for clinical conclusions.
- Determine p values for continuous random variables and their significance in determining the validity of clinical conclusions.
- Using examples from nursing research literature, gain insight into the process of inferring from a sample to a population
- Discuss the purpose, calculation and interpretation of chi-square analysis, t-test, analysis of variance, Pearson correlation and regression analysis.
**Instructional methods:**

**This is blended learning course.**
Blended/hybrid courses are courses which “… combine the flexibility of online instruction with the benefit of face-to-face instruction in the classroom.” Additionally, “These courses effectively combine classroom-based instruction with online instruction thereby reducing the amount of time spent in the physical classroom.” These courses maintain the same academic standards and rigor of traditional courses.

Lectures for the course will be available for you to download/view on Blackboard, with the class meetings on Tuesdays and Thursdays to discuss the concepts covered in the online lectures and/or work through problems and applications of the material. Having the lectures online not only allows you to move through the lectures at your own pace, but it allows you a chance to review the lectures. There will be online and in-class quizzes over the material covered.

Since at least 30% of this course (lectures) will be online, the in-class component of the course will not meet for the fully scheduled course time.

**Technology**

1) Course syllabus, documents, and lectures will be available on the UST Blackboard site.
2) *Software:* This course will use Excel.
3) *Students are expected to access their UST email accounts.* All email communications from the professor will be via the email list in Blackboard and this will send emails to the UST email account of each student. If you do not regularly access this account it is **IMPERATIVE** that you have your email forwarded to the account which you regularly use.
Course Outline:
The outline below is tentative; it may change in the event of circumstances beyond the instructor's control.
I. Overview of Statistical Theory and Analysis
   Quick review of the algebraic concepts and notations which will be used in this course
   a. Purpose and application of statistical methods
   b. Probability
   c. Inference and Generalization in Nursing Research Literature
II. Descriptive Statistics
   a. Sample Vs Population
   b. Pictures of Data
   c. Frequency Distribution
   d. Measures of Central Tendency
   d. Measures of Dispersion
III. Hypothesis Testing and Level of Significance
   a. Inference and Probability of Reaching Reasonable Generalizations
   b. Creation of a Single Test Statistic from a set of Clinical Data.
   c. Selection from among Normal, Student t and Chi-squared distributions according to Logic of a Particular Clinical Study
   d. Chi-Square Test of Theory vs Observations
   e. Tests of Independence of Variables
IV. Margin of Error
   a. Minimal Sample Size to Limit Error Within Specific Range
V. Using Statistics to Examine Relationships
   a. Pearson Product-Moment Correlation
VI. Using Statistics as a Predictive Tool
   a. Regression Analysis
   b. Limitations of Predictions for Clinical Conclusions
VII. Statistical Analysis of Causality
   a. t-tests to find limits on Range of Validity of Regression Results
VIII. As time permits: Analysis of Variance
IX. Case Studies from Nursing Research Literature
   a. Application and Appraisal of Statistical Analysis using Case Examples
GRADE IN COURSE:

<table>
<thead>
<tr>
<th>Item</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Quizzes*</td>
<td>40%</td>
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<tr>
<td>Assignments/Online Quizzes**</td>
<td>15%</td>
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<tr>
<td>Midterm</td>
<td>15%</td>
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<tr>
<td>Final</td>
<td>30%</td>
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</tbody>
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* There are no make-ups for missed quizzes.
**Late assignments and/or electronic submissions will only be accepted with the instructor’s consent.

GRADING SCALE: *In this class the final course grades will be determined using the following grade scale:*

<table>
<thead>
<tr>
<th>Score Range</th>
<th>Grade</th>
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<tbody>
<tr>
<td>93.0-100</td>
<td>A</td>
</tr>
<tr>
<td>90.0-92.9</td>
<td>A-</td>
</tr>
<tr>
<td>87.0-89.9</td>
<td>B+</td>
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<tr>
<td>83.0-86.9</td>
<td>B</td>
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<tr>
<td>80.0-82.9</td>
<td>B-</td>
</tr>
<tr>
<td>77.0-79.9</td>
<td>C+</td>
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<tr>
<td>73.0-76.9</td>
<td>C</td>
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<tr>
<td>70.0-72.9</td>
<td>C-</td>
</tr>
<tr>
<td>67.0-69.9</td>
<td>D+</td>
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<tr>
<td>60.0-66.9</td>
<td>D</td>
</tr>
<tr>
<td>&lt; 60</td>
<td>F</td>
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Policy on Academic Dishonesty
(From the 2014-2016 Undergraduate Catalog)

Policy/Procedure
Every offense against academic honesty seriously undermines the teaching-learning process for which the University exists, and such offenses will be dealt with expeditiously according to the following criteria.

Definition
Academic dishonesty includes but is not limited to:
1. Cheating on an examination or test; for example, by copying from another’s work or using unauthorized materials before or during the test, including the use of electronic devices;
2. Plagiarism, which represents as one’s own the work of another, whether published or not, without acknowledging the precise source;
3. Participation in the academic dishonesty of another student, even though one’s own work is not directly affected;
4. Any conduct which would be recognized as dishonest in an academic setting.

Penalty
The penalty for an incident of academic dishonesty is, at the discretion of the faculty member, either a mark of zero for the work in question or a grade of F for the course.

Disabilities
Any student with a disability requiring accommodations in this course is encouraged to contact me after class or during office hours. Additionally, students will need to contact Counseling and Disability Services in Crooker Center. This office can be reached at (713) 525-2169 or 6953

DROPPING THE COURSE: If you decide you do not wish to continue the course, it is your responsibility to go through the proper channels and officially drop the course.

Tutorial Services
Students needing extra assistance with course concepts may also visit the Tutorial Services Center and/or ust.askonline.net.