

**PHA 5719**  
**Introduction to Quantitative Methods in Pharmacy**  
**Course Syllabus**

**Course Description:** The course provides students with the knowledge and skills needed to read, interpret, and evaluate quantitative findings found in pharmacy and medical literatures. It emphasizes recognizing and applying the correct quantitative methods to assist in professional practice decision-making.

**Methods for reaching course objectives:** Readings, lectures, written assignments, discussion board postings, and other feedback strategies will be utilized to reach the course objectives.

**Course Information:**

**1. Course instructors and contact information:**

The course instructor is Dr. L Douglas Ried. Dr. Ried's office hours are:

Monday:                   12:30 to 1:30PM  
Wednesday:             12:30 to 1:30PM

Dr. Ried will answer questions and postings on the discussion board on a daily basis. He will be available for personal visits, telephone calls or online chats during his office hours.

Dr. Ried's office is in HPNP 3321 on the Gainesville Campus of the University of Florida, College of Pharmacy.

Telephone:   352-273-6259  
FAX:         352-273-6270  
Email:        [Ried@cop.ufl.edu](mailto:Ried@cop.ufl.edu)

You can find out more about Dr. Ried and his academic interests on the course Blackboard site, under course contacts.

The teaching assistants for this course are shown below. Their schedules will be posted at the beginning of the semester. They will be available for online chats and discussion board postings, as well.

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|----|-------------------------|--|
| 1. | Annesha White           | <a href="mailto:Whiteann@ufl.edu">Whiteann@ufl.edu</a>                       |
| 2. | Kumar Mukherjee         | <a href="mailto:Kumar@ufl.edu">Kumar@ufl.edu</a>                             |
| 3. | Sawaeng Watcharathanaki | <a href="mailto:Sawaeng@cop3.health.ufl.edu">Sawaeng@cop3.health.ufl.edu</a> |

**2. Days and Hours:** The course lectures will be provided via streaming video. The lectures will be available by accessing the course web site via the course management software (Blackboard). The dates identified for lectures in the class schedule are the days that the lectures will become available to students.

### 3. Course Credit: 3 hours

**Required Lecture Readings:** The required readings for the course are identified in the class schedule that is included in this syllabus and on Blackboard. The readings are available in the required textbook. You are responsible for all readings. The importance of reading the assigned material prior to each lecture and assignment cannot be overemphasized. You will achieve a greater understanding of the lectures and you will be more able to accurately complete the course surveys and assignments if you do so.

### Performance Evaluation and Grading

1.	Mid-term Exam #1	100 points
2.	Mid-term Exam #2	100 points
3.	Final Exam	100 points
4.	Weekly “Quizzes”	50 points
5.	Weekly Assignments	250 points

Unexcused late assignments missing the exams will be counted as a zero grade. No exceptions permitted. Make-up assignments or exam for illness or other University approved absences must conform to policies and procedures of the College of Pharmacy Student/Faculty handbook and the UF undergraduate catalog in the Academic Regulations Section regarding attendance policies.

Grades	Percentage
A	90-100
B+	85-89.9
B	80-84.9
C+	75-79.9
C	70-74.9
D+	65-69.9
D	60-64.9
E	<=59.9

Grades will be assigned A-E and will correspond to the following percentages found in Table 2. If you miss an assignment or exam, you **must** give prior notice or no make up will be considered. Make-ups will not be given after one week after the originally scheduled quiz or exam is missed. Make-up individual assignments (for approved absences) will not be given. Instead, the average for the other assignments that the student has completed will be assigned.

All grading disputes must be brought to the attention of the course coordinator no later than five working days following the return of the assignment or posting of grades. All grading disputes must be offered in writing and provide a clear rationale for your argument and reference documentation. If your rationale is found lacking, you will score on the assignment will be reduced by 10 percent.

**Academic honesty policy for the course:** Dishonesty (refer to the Academic Honesty Guidelines in the University Catalog and Student Handbook for the College of Pharmacy for details) shall result in an E in the course grade and submission of the case to the appropriate authority.

***"Course and instructor evaluations are requirements for the successful completion of this course. Course and instructor evaluations must be completed, just as exams, papers, and assignments must be completed for you to receive credit for this course. If you do not complete all required course and instructor evaluations by the last day of classes, you will receive an "I" or an incomplete grade for the semester because you have not completed all of the course requirements. See the College of Pharmacy Student/Faculty handbook and the UF undergraduate catalog in the Academic Regulations Section (Page 44) regarding policies and procedures for the conversion of "I" grades."***

### **Course Outline**

The overall goal of the course is to provide students with the knowledge and skills needed to read, interpret, and evaluate quantitative findings found in pharmacy and medical literatures. The goals of the course will be achieved by meeting the following attitudinal, general education, cognitive, and behavioral objectives.

#### ***Attitudinal Objectives***

1. Develop an appreciation for the appropriate application of quantitative tools in the clinical decision-making process as a professional pharmacy practitioner.

#### ***General (Educational) Objectives:***

1. Use critical thinking and problem-solving skills to evaluate the correct use and interpretation of quantitative methods found in the pharmacy and medical literature.
2. Learn terms and major concepts that support the use of quantitative tools frequently employed in the pharmacy and medical literature.
3. Apply mathematical formulas to investigate clinical and epidemiological problems in professional practice.
4. Communicate the findings and interpretation of the findings of quantitative analyses using both oral and written formats.

#### ***Cognitive Objectives***

1. Identify the most appropriate quantitative tool to be used with data found in pharmacy practice and the research in pharmacy and medical literature.
2. Recognize when quantitative tools have been correctly and incorrectly applied in the pharmacy and medical literature.
3. Describe *why* quantitative tools have been incorrectly applied in a clinical application.
4. Describe the three levels of measurement and the relationship between measurement and the appropriate selection of quantitative methods.

5. Recognize the independent (predictor) variable and the dependent (outcome) variable in a pharmaceutical problem.
6. Describe the inter-relationships between power, sample size, and effect size.
7. Describe the “Central Limits Theorem” and its implications for quantitative methods used in pharmaceutical literature.
8. Compare and contrast the appropriate conditions under which to use correlation, analysis of variance, and regression.
9. Discuss the relationship between stratification and statistical interactions.
10. Describe essential aspects of various retrospective and prospective; experimental and quasi-experimental study designs and determine whether the quantitative analytic method chosen was appropriate for those study designs.

### **Behavioral and Skill Objectives**

1. Use the computer and commonly available computer software to conduct analyses of data likely to be found in the course of clinical practice.
2. Apply the correct quantitative tools to solve pharmacy problems.
3. Correctly interpret the results of an analysis shown in an appropriately formatted table, histogram, or another type of graphical display of data.
4. Create an analytic strategy to determine whether the difference between two pharmaceutical treatments is statistically and clinically significant.
5. Determine the incidence and prevalence of an adverse event in a population of patients and whether it is greater than expected by chance.
6. Calculate the sensitivity and specificity of a therapeutic test, such as a drug screening or test to monitor the outcomes of drug therapy.
7. Calculate the sample size needed to test the difference in effectiveness between two pharmaceutical interventions.

**Teaching methods.** This class embraces the teaching and evaluation methods described in the College of Pharmacy’s educational philosophy. The COP Educational Philosophy uses multi-faceted, active learning teaching strategies as part of its case-assisted, student centered learning (CASCL). The College’s CASCL includes:

1. Video-streamed lectures.
2. Problem solving exercises and assignments.
3. Case scenarios.
4. Computer simulations.
5. Selected readings.
6. Discussion board participation.

### **Readings and Resources**

1. Required textbook: Beth Dawson and Robert G. Trapp, *Basic and Clinical Biostatistics (4<sup>th</sup> Edition)*. Lange Medical Books/McGraw-Hill: New York, 2004.
2. Collected reprints and lecture slide handouts available on Blackboard.
3. Statistical software for use in conducting analysis of data (elective).