Palestine Polytechnic University

Faculty of Applied Sciences

4315 - Experimental Design and Biostatistics
First Semester 2020-2021

Course Name	:	(4315) Experimental Design and Biostatistics.
Prerequisites	:	—.
Class Schedule	:	Sun. Tues. Thur. 8:00-8:50, Room B+610.
Instructor	:	**Name:** Monjed H. Samuh
		E-mail: `monjedsamuh@ppu.edu`
		Website: `http://staff.ppu.edu/monjedsamuh`
Office	:	B+503.
Office Hours	:	Sun. Tues. Thur. 11:00-11:50.
	:	Mon. Wed. 9:30-10:50.
	:	or by appointment (via email).

Required Texts

1. Daniel, Wayne W. and Cross, Chad L. **Biostatistics: A Foundation for Analysis in the Health Sciences (10th Edition)**. (2013) New York: John Wiley & Sons.

2. George, Darren and Mallery, George. **IBM SPSS Statistics 19 Step by Step: A Simple Guide and Reference (12th Edition)**. (2011) Pearson.

Required Software IBM SPSS Statistics Software, version 22.0 or later.

Course Description This course provides an introduction to selected important topics in biostatistical concepts and reasoning. It covers statistical aspects of collecting and analyzing experimental data. Specific topics includes tools for describing central tendency and variability in data; methods for performing inference on population means and proportions via sample data; statistical hypothesis testing and its application to group comparisons; categorical data analysis; analysis of variance; an introduction to simple linear regression.

Intended Learning Outcomes After the completion of this course, students should be able to:

1. Describe, summarize, and present data using appropriate methods, such as joint frequency table, frequency histogram and various types of bar charts.

2. Describing data using numerical measures and understand how they are applied in decision-making situations.

3. Understand how to use SPSS.
4. Define a variety of statistical variables.
5. Enter basic data into SPSS and carry out a statistical analysis.
6. Apply the common rules of probability and to identify the types of processes that are presented by continuous probability distributions.
7. Learn methods of sampling and sampling distribution.
8. Perform statistical inference (Estimation and hypothesis testing).
9. Understand the concepts of correlation and regression.
10. Analyze the differences between group means and their associated procedures.

Course Outline and Calendar

Chapters/Topics	HOURS
Chapter 1: Introduction to Biostatistics	3
Chapter 2: Descriptive Statistics	3
Chapter 3: Some Basic Probability Concepts	3
Chapter 4: Probability Distributions	3
Chapter 5: Sampling Distributions	3
Chapter 6: Estimation	3
Chapter 7: Hypothesis Testing	5
Chapter 8: Analysis of Variance	5
Chapter 9: Simple Linear Regression	5
Chapter 10: Chi-square Tests	5
Chapter 11: Nonparametric Statistics	5

Course Policies

- Please do the reading from the sections to be covered before coming to class each day. Your instructor will be planning class activities assuming you have done the reading.
- **Homework**: There will be two types of homework assignments.
  1. **Mini Homework**: these are problems which arise while lecturing. I will assign a mini homework almost every class day.
  2. **Major Homework**: these are set of problems assigned weekly.
- You may collaborate on homework, but you must write your submitted work in your own words. All steps are required, this includes showing calculations, derivations, and proofs.

- You have to devote to this class several hours per week of concentrated attention to understand the subject enough so that standard problems become routine. If you think that coming to class and reading the examples while also doing something else is enough, you're in for an unpleasant surprise on the exams.
- Attending classes is compulsory; according to the University regulations, a student who misses more than 6 lectures will be prevented from entering the final exam.
- In the event that a student has to miss a class, he is responsible to get caught up with the materials covered and homework assigned.
- No make-up tests will be hold in any circumstance, any student with accepted excuse will be given the grade of the final transferred to appropriate weight. Make-up of the final test will follow the university regulations.
- All students are expected to be in the classroom on time. Being late will be treated as being absent.
- It is the **student's responsibility to observe the academic calendar for important dates**.
- It is the **student's responsibility to be knowledgeable about the rules and regulations that govern your study at the university**.
- I assume, the students come to class to learn, I come to class to teach.
  - We will be respectful of everyone in class.
  - Mobiles should be turned off before the beginning of each class, no exceptions.
  - There will be no talking in class, except to ask instructor questions or share comments with the entire class. Talking is disruptive to the class and disrespectful to the Instructor.
  - There will be no texting, reading, eating, etc., while in class.
- Cheating will be dealt with according to the University rules.
- Wastah is the thing that the Instructor hates the most!. Definitely, No grade will be changed because of Wastah.

Teaching Methods

- Explaining concepts and applications through videos. **Videos will be posted on Facebook**.
- Group discussions and solving problems.
- Problems and exercises will be assigned from the text on each section at the time of discussing the section.

Grade Distribution

- Your final grade will depend on the following components with these proportions:
  - **Assignments and Quizzes** (15%): **Quizzes may not be announced in advance**.
  - **Mini-Project** (15%).
  - **Midterm Exam** (30%). Nov. 19, 2020 (Thursday).
    - If the exam is not held for any reason (urgent circumstances), it will be immediately postponed to the next regular class.
  - **Final Exam** (40%): To be announced by the University.
- You need to achieve at least 60% in order to pass the course.