

# Palestine Polytechnic University

Faculty of Applied Sciences

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## 4535 - Analysis of Variance

Second semester 2018-2019

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**Course Name** : (4535) Analysis of Variance.  
**Prerequisites** : Regression Analysis.  
**Class Schedule** : Sun. Thurs. 11:00-12:15, Bld Wade Al hareiah Room B+108.  
**Instructor** : **Name:** Monjed H. Samuh  
**E-mail:** monjedsamuh@ppu.edu  
**Website:** <http://staff.ppu.edu/monjedsamuh>  
**Office** : B+503.  
**Office Hours** : Mon. Wed. 9:00-10:50.  
: Tues. 9:00-11:00.  
: or by appointment (via email).

**Textbook** Kutner, M., Nachtsheim, C., Neter, J., Li, W. (2004), Applied Linear Statistical Models, 5th Edition. McGraw-Hill/Irwin.

### Recommended Texts

1. Analysis of Variance Designs: A Conceptual and Computational Approach with SPSS and SAS, by Gamst et.al.
2. Fundamentals of Exploratory Analysis of Variance, by DAVID C. HOAGLIN et.al.

**Course Description** This course aims to teach student some statistical techniques that can be used to detect differences between means from two or more separate groups. Topics include one-way ANOVA, two-way ANOVA, multifactor studies, random and mixed effects models, and analysis of covariance (ANCOVA).

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

1. State the hypotheses for a oneway and two-way analysis of variance (ANOVA);
2. Conduct a oneway and two-way ANOVA test;
3. Interpret the results from a one-way and two-way ANOVA test;
4. Use the one-way ANOVA technique to determine if there is a significant difference among three or more means;
5. Determine which means differ, using the Scheffe or Tukey test if the null hypothesis is rejected in the ANOVA;

6. Compare the relationships between the quantitative variables and at least one categorical variable;

**Software Package** Use **SPSS**.

### Course Outline and Calendar

Chapters/Topics	HOURS
Introduction to the Design of Experimental and observational Studies	6
Single-Factor Studies	6
Analysis of Factor Level Means	6
• ANOVA Diagnostics and Remedial Measures	6
Two-Factor Studies with Equal Sample Sizes	6
Two-Factor Studies: One Case per treatment	3
Randomized Complete Block Designs	6
Analysis of Covariance	6

### 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 4 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 lectures using white-board.
- 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 (10%): Quizzes may not be announced in advanced.**
  - **Mini-Project (10%).**
  - **First Exam (20%).** 8<sup>th</sup> Week: Mar. 3, 2019 (Sunday).
  - **Second Exam (20%).** 13<sup>th</sup> Week: Apr. 7, 2019 (Sunday).
    - \* 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.