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Text: *Applied Linear Statistical Models*, ed 5, by Kutner, Nachtsheim, Neter, Li
 A pdf copy of this text is available on my personal webpage (URL given above)

Computer Software: SAS software will be used for doing assignments.

Classes: Start the Week of January 11.

Lectures will be asynchronous. Notes for each week (in pdf format) will be posted the weekend before at the latest. Recorded lectures talking about the material in these notes and solving any class examples will then be posted on the Monday or Tuesday. It will help if you have the pdf notes in front of you while you listen to the recorded lectures.

Office Hours: On BigBlueButton or Zoom during the nominal class times of: Wed. & Fri. 11:30 – 1:00. You may also email or phone me at home (leave a message if there is no answer) with any questions or concerns. Please **do not phone after 9:30 in the evening** or before 9:00 in the morning. Generally I will try to get back to you within 24 hours. Week-ends may be an exception.

Computer Labs/Tutorials: Start Friday, January 22

Prerequisites: STAT 3503 or equivalent

Assignments: There will be 5 assignments. The assignments will **NOT** all have the same weight. **ALL** assignments **count** toward the term mark. It is acceptable and often valuable to work on assignments together – but **NOT TO COPY**. Assignments to be **submitted in pdf format and uploaded to CuLearn**.

Grading:	Final Exam	50%
	Assignments	25%
	Mid Term Test	25%

- NOTES:**
1. A mark of **at least 40%** is required on the final exam in order to receive a passing grade in the course.
 2. An overall **Term Mark** of **at least 40%** is required in order to pass the course.
 3. **At least 3 of the assignments** must be handed in or an automatic grade of **FAIL** will be given.
 4. A **2-hour Mid Term Test** will be held on **Saturday, March 6 from 10:00 a.m. – 12:00 noon**.
 Missing the midterm will result in a **mark of zero** unless you have spoken to me beforehand or have a documented emergency – in which case you will be expected to write a **MAKE-UP TEST**. **Under NO circumstances will the weight of the midterm be transferred to the final exam.**

Course Contents:

Analysis of Variance & Experimental Design: Introduction, Overview, terminology (15.1, 15.2, 15.3+); Single Factor Analysis (16.1 - 16.8, 17.1 - 17.7, 17.9, 18); Two Factor Analysis of Variance (19, 20); Multifactor Studies (24); Design & Analysis of Standard Experimental Designs: CRD, RCBD (15.2, 15.3, 21); Two Factor studies with unequal sample sizes (23.1-23.3); Selected Topics from chap. 25 – 28.

Note that chapters given are approximate only. You are **responsible for all material covered in the NOTES and RECORDED LECTURES whether it is in the textbook or not** unless you are specifically told otherwise. You are also **responsible for ANY ANNOUNCEMENTS MADE ON CULEARN**. ALSO, the weekly schedule below is subject to change. Make sure you keep up to date with any changes in order of presentation, etc.

STAT 3504 Approximate Weekly Outline

Week	Material	Text Sections
1 & 2	Introduction: experimental & observational comparative studies, experimental & observational factors, definitions & terminology, planning effective comparative studies, basic principles of experimental design, brief description of some basic experimental designs (CRD, RCBD, repeated measures). Relation between regression and analysis of variance models.	15.1, 15.2, 15.3 (up to p664), 16.1
3	Single factor ANOVA model (cell means), difference between fixed effects and random effects models; development of estimators and analysis for single factor, fixed effects model; Expected mean squares for ANOVA table. Diagnostics: detection of assumption violations,	16.1-16.6, 18.1-18.3
4	Seriousness of violations; remedial measures; non-parametric tests; Analysis of factor level means: plots, definition of contrast, single comparisons; multiple comparisons- why needed, what they do	18.4—18.6, 17.1 - 17.4
5	Tukey, Bonferroni, & Scheffe multiple comparisons, when to use which method. Analysis of factor effects when factor is quantitative.	17.5 - 17.9,
BREAK WEEK		
6	Factor effects model. Two Factor studies: why desirable, definition of types of interactions, additive Model I fixed factor levels - cell means & factor effects models. Analysis of Variance Table for 2 factor model. Kimball Inequality	16.7, 19.1- 19.6
7	Two Factor studies cont.: Strategy for analysis when factors do not interact, when they do interact. 3 factor studies: ANOVA table, strategy for analysis & interpretation of interactions.	19.7 - 19.9 24.1 –24.5
8	Elements of experimental design reviewed and expanded. Completely randomized design (CRD) and randomized complete block designs (RCBD).	21.1 - 21.5
9	RCBD cont.	21.6 - 21.9
10	Two factor studies with unequal sample sizes.	23.1- 23.3
11	Topics TBA	
12	TBA	

ACADEMIC INTEGRITY: Make sure you read Carleton's **academic integrity policy** at

<https://carleton.ca/senate/wp-content/uploads/Academic-Integrity-Policy1.pdf/>

Academic Accommodations for Students with Disabilities: The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC co-ordinator to send me your Letter of Accommodation at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. The deadline for requesting accommodations for the formally scheduled final examination is March 19. Please consult the PMC website (www.carleton.ca/pmc) for more details.