**Stat 531: Analysis of Variance**

**Instructor:  Prof. Dr. H. Al-Nachawati**

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**Time:         ………..**

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**Course Description**

Week 1 Introduction, Preview of Linear Models and Analysis of Variance Models, Random Vector and Matrix

Week 2-3 One Way of Classification, Partition of Sum of Squares, Mean Squares and Expectations, Fixed and Random Effect Models, Tests, Interclass Correlation and Variance Ratio Confidence Intervals.

Week 4 Analysis of Variance for Unbalanced Data, Estimates, Confidence Intervals, Inference about Difference between Treatment Means, Multiple Comparisons.

Week 5-6 Effects and Tests of Departures from Assumptions Underlying the Analysis of Variance Model.

Week 7-8 Two Way Crossed Classification without Interaction, Model, Assumptions, Mean Squares and Expected Mean Squares, Fixed Effects, Random Effects, Mixed Effects, Tests.

Week 9-10 Two Way Crossed Classification with Interaction. Model, Assumption, Partition of SS, Mean Squares and Expectations, Fixed Effect, Random Effect and Mixed Effects, Tests. Models for Unbalanced Data.

Week 11-12 Two Way Nested (Hierarchcal) Classification, Model, Assumptions, Fixed Effects, Random Effects and Mixed Effects, Estimation and Tests.

Week 13 Multivariate Analysis of Variance

Week 14 Repeated Measures Data and ANOVA, Multilevel Models

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| التحليل الإحصائي متعدد المتغيرات- باستخدام حزم ساس  |
| المؤلفون: أ. د. هشام مصطفى النشواتي، أ. د. خلف سلمان سلطان، أ. د. عبد الحميد عبد الله الزيد |
| Required Text(s):**Hardeo Sahai**, Mohammed I. Ageel *.*(2012).[*The Analysis of Variance: Fixed, Random and Mixed Models*](http://www.google.com.sa/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=1&ved=0CB8QFjAA&url=http%3A%2F%2Fwww.amazon.com%2FThe-Analysis-Variance-Random-Models%2Fdp%2F0817640126&ei=4iGtU6jWK8fW0QW324GIBQ&usg=AFQjCNHt1gShL6c8KU8vNz-xGwiYKFDj1Q), Birkhauser Verlag GmbH, ISBN: 1461271045, 9781461271048J. Rencher, A.C. (2000). *Linear Models in Statistics.* Wiley, New York.Sahai, H. and Ageel, M.I. (2000). The Analysis of Variance. Birkhauser, Boston.Christensen, R. (1998). Analysis of Variance, Design and Regression. Chapman and Hall, London.Sahai, H. and Ojeda, M.M. (2004). Analysis of Variance for Random Models. Birkhauser, Boston.Davis, C.S. (2002). Statistical Methods for the Analysis of Repeated Measurements. Springer, New York.Draper, N. and Smith, H. (1981). Applied Regression Analysis, Second Edition. Wiley, New York.  |

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