<u>**COURSE SYLLABUS FORM**</u>

American University of Beirut
Faculty of Arts and Sciences
Department of Mathematics

Stat 237 Applied Nonparametric Methods

1. <u>**Course Learning Outcomes**</u>
After taking this course, a student should have an understanding of the following topics:

The Wilcoxon rank sum test and the Wilcoxon signed-rank test and their null distributions.
Randomization model and population model.
The use of midranks for the treatment of ties.
The sign test.
The Seigel-Tukey test for dispersion.
The Smirnov test for the equality of distributions.
Nonparametric estimation of the treatment effect and confidence intervals.
The use of blocking for the comparison of treatments, paired comparisons. Balanced design.
The Kruskal-Wallis test for the comparison of more than two treatments.
Power calculations for nonparametric tests. Comparison with parametric tests, Pitman efficiency.
Tests for randomness and independence, Spearman's rank correlation coefficient.
U-statistics, projection method.

2. <u>**Resources Available to Students**</u>
Textbook: Nonparametrics: Statistical Methods Based on Ranks, by E.L. Lehmann
If available, sample exams from previous semesters are distributed.

3. <u>**Grading Criteria**</u>
Homework assignments: 15%
Midterm Exam: 35%
Comprehensive Final Exam: 50%

4. <u>**Schedule**</u>
Some of the material from each of the seven chapters of the book is covered. Depending on the interests of the students, some of the material of the Appendix is covered which presents a more mathematical development of the nonparametric statistics. Homework is assigned at the end of each chapter (and the Appendix).
From one to two weeks is spent on each chapter and the Appendix.

Chap. 1	Rank tests for comparing two treatments.	9,25,26,40,46,56,56,60,68
Chap. 2	Comparing two treatments in a population model.	1,7,8,11,18
Appendix		5,7,25,41,46,47,48
Chap. 3	Blocked comparisons for two treatments.	8,12,23,29,34,44,49
Midterm Exam		
Chap. 4	Paired comparisons in a population model.	2,6,10,16,20,26
Chap. 5	Comparison of more than two treatments.	2,8,12,17,22,32
Chap. 6	Randomized complete blocks.	1,2,6,12,14
Chap. 7	Tests of randomness and independence.	1,6,16,28
Comprehensive Final Exam		