

COURSE APPROVAL ROUTING CHECK LIST

091028

1. Course Number: ACM PSM 642

1st Bulletin 11-5-09
2nd Bulletin 11-19-09

2. Course Title: Nonparametric Statistics
(no more than 70 characters)

Title Abbreviation: Nonpar Stats
For use in Master Schedule (no more than 19 characters)

3. Action: New Course Revision IF Designation WAC

Requested Designation(s): _____

Course Proposal/Revision Check List

This checklist will help departments avoid some of the most common mistakes made on course proposals. Your use of the checklist will allow the College Senate Curriculum Committee to focus its review on more substantive issues and expedite the approval process.

- Proposal format conforms to the Directory of Policy Statements, Section IV:02.00 (2002).
- Proposal has been proofread for spelling, punctuation, grammar, style and gender-neutral language.
- If the course is a new course, reasons for the additions are included; if the course is a revision of an existing course, reasons for revision and a copy of the old course are included as well as the IF Narrative when appropriate.
- Catalog description follows the guidelines in the Curriculum Handbook, Appendix C.
- Student learning outcomes are coherent with course content and assessment.
- Outcomes are referenced with course content.
- All resource entries are alphabetized and conform to a specific style manual.
- Cross listed courses have been checked with all chairs and deans included in development of the course.

DEPARTMENT ACTION

Wesley S. Sabers 10/16/09
Chair, Department Curriculum Committee Date

4. **Approved** with confirmation that all necessary laboratories, studios, resources, facilities and personnel for support of this course are available.
David C. Wick MATH 10/16/09
Signature of Department Chairperson Department Date

(OVER)

Prefix, Number and Name of Course: PSM 642 Nonparametric Statistics

Credit Hours: 1

In Class Instructional Hours: 1 **Labs:** 0 **Studio:** 0 **Field Work:** 0

Catalogue Description:

Prerequisite: Admission to program or instructor permission

Introduction to nonparametric tests such as sign-test, signed rank test, rank sum test, two-way analysis of variance by ranks, tests of randomness, rank correlation coefficient.

Reasons for addition:

To create a one-semester-hour module for the graduate Professional Applied and Computational Mathematics program where students will use distribution-free statistical procedures that are relatively insensitive to departures from typical assumptions, while retaining the expected behavior when assumptions are satisfied to solve real world problems.

Student Learning Outcomes: Students will:	Course Content References:	Assessment:
1. use appropriate nonparametric methods for testing procedures that assume no knowledge about the distribution of the underlying population.	I-VII	Individual homework assignments, group work, examinations and computer projects.
2. compare and contrast parametric and nonparametric tests.	I-VII	Individual homework assignments, group work, examinations and computer projects.
3. use appropriate statistical software to analyze real world problems.	I-VII	Individual homework assignments, group work, and computer projects.
Course Content: I. Sign-test: one-sample, paired-sample, large samples II. Wilcoxon signed rank test III. Wilcoxon rank sum test or Mann-Whitney test IV. Kruskal Wallis test V. Friedman two-way analysis of variance by ranks VI. Tests of randomness: runs VII. Rank correlation coefficient		

Resources

Scholarship:

- Conover, W. J., *Practical Nonparametric Statistics*, 2nd ed., Wiley, 1980.
- Gibbons, J. D., *Nonparametric Statistics: An Introduction*, Sage, 2003.
- Gibbons, J. D., and Chakraborti, S., *Nonparametric Statistical Inference*, 3rd ed., Dekker, 2003.
- Gnedenko, B. V., Puri, M. L., and Vincze, I., *Nonparametric Statistical Inference*, North Holland, 1982.
- Krishnaiah, P. R., and Sen, P. K., *Nonparametric Methods*, Elsevier Science, 1984.
- Hettmansperger, T. P., and McKean, J. W., *Robust Nonparametric Statistical Methods*, Wiley, 1998.
- Hollander, M., and Wolfe, D. A., *Nonparametric Statistical Methods*, 2nd ed., Wiley, 1999.
- Kvam, P. H., and Vidakovic, B., *Nonparametric Statistics with Applications to Science and Engineering*, Wiley, 2007.
- Lehmann, E. L., *Nonparametrics: Statistical Methods Based on Ranks*, Holden Day, 1975.
- Maritz, J. S., *Distribution-free Statistical Methods*, Chapman & Hall, 1981.
- Neave, H. R., and Worthington, P. L., *Distribution-free Tests*, Unwin Hyman, 1988.
- Pagan, A. R., *Nonparametric Econometrics*, Cambridge University Press, 1999.
- Pett, M. A., *Nonparametric Statistics for Health Care Research: Statistics for Small Samples and Unusual Distributions*, Sage, 1997.
- Rao, C. R., *Linear Statistical Inference and its Applications*, 2nd ed., Wiley Eastern, 1973.
- Sheskin, D., *Handbook of Parametric and Nonparametric Statistical Procedures*, 4th ed., Chapman & Hall, 2007.
- Sprent, P., and Smeeton, N. C., *Applied Nonparametric Statistical Methods*, 4th ed., Chapman & Hall, 2007.

Periodicals:

- Annals of Applied Statistics*
- Annals of Mathematical Statistics*
- Annals of Statistics*
- Biometrics*

Biometrika
Communications in Statistics
Demography
International Statistical Review
Journal of the American Statistical Association
Journal of Applied Statistics
Journal of Applied Statistical Science
Journal of Nonparametric Statistics
Journal of Statistical Computation and Simulation
Journal of the Royal Statistical Society
Life-time Data Analysis
Scandinavian Journal of Statistics
Statistics in Medicine
Statistical Methods in Medical Research
Technometrics
The American Statistician

Electronic and/or Audiovisual Resources:

Analyse-It Software, "Analyse-it," www.Analyse-it.com.

Francis and Taylor Group, "Journal of Nonparametric Statistics,"
www.tandf.co.uk/journals/titles/10485252.html.

Love, T. and Murphy, J., "Nonparametric Statistics,"
www.referenceforbusiness.com/encyclopedia/Mor-Off/Nonparametric-Statistics.html.

StatLink, "Non-Parametric Statistics," statlink.tripod.com/id18.html.