

COURSE APPROVAL ROUTING CHECK LIST

091032

1. Course Number: ACM PSM 660

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

2. Course Title: Logistic Regression
(no more than 70 characters)

Title Abbreviation: Logistic Regression
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

[Signature] _____ 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.

[Signature] _____ MATH 10/16/09
Signature of Department Chairperson Department Date

(OVER)

Course Approval Routing Check List – Page 2

Faculty (Check one) SNSS *School of Natural and Social Sciences*
 SOE *School of Education*
 SAH *School of Arts and Humanities*
 SOP *School of Professions*

DEAN'S ACTION

Approved with confirmation that all necessary laboratories, studios, resources, facilities and qualified faculty for support of this course are available.

10/26/09
Date

Karen O'Leary
Signature of Dean (both Dean's if cross-listing)

COURSE PACKET INCLUDES:

- Electronic proposal form
- Attached electronic document with explanations of contingencies as stipulated at Dean's level
- One hard copy of proposal with attached contingencies and routing sheet with all appropriate signatures (copy of routing sheet in packet sent to Academic Affairs)
- For all revisions, one hard copy of current course should be submitted (e-copy is preferable when available)

COLLEGE SENATE ACTION

1. **Received**, logged and electronic packet and hard copies forwarded to the College Senate Office. Program title to be published in the *College Bulletin*.

10/27/09 Vincent P. Masci 091032
Date Signature of College Senate Office Log Number

2. Action for Intellectual Foundations' Designation

____ Recommend approval _____
Signature of Assistant Dean, Intellectual Foundations

____ Recommend disapproval _____
Signature of Assistant Dean, Intellectual Foundations

3. Action of the College Senate Curriculum Committee

Recommend approval and forward to College Senate
11/17/2009 Nancy A. Licola
Date Signature of Chair, College Senate Curriculum Committee

____ Recommend disapproval and return to Department _____
Date Signature of Chair, College Senate Curriculum Committee

ACTION OF THE OFFICE OF ACADEMIC AFFAIRS

Approved and forwarded to President (Signature) 11/17/09
Signature Date

____ Disapproved and returned to Department _____
Signature Date

Prefix, Number and Name of Course: PSM 660 Logistic Regression

Credit Hours: 1

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

Catalogue Description:

Prerequisite: PSM 640 or instructor permission

Comparison of linear and logistic regression, multiple logistic regression, regression diagnostics, indicator variables, multicollinearity, confounding and interaction, model selection, maximum likelihood techniques, polychotomous logistic regression.

Reasons for addition:

To create a one-semester-hour module for the graduate Professional Applied and Computational Mathematics program where students will formulate and solve real life problems in various settings using logistic regression analysis, a popular statistical tool which replaces the ordinary least squares regression as the data analytic tool of choice when the dependent variable is dichotomous or polychotomous.

Student Learning Outcomes: Students will	Course Content References:	Assessments:
1. construct and analyze dichotomous and polychotomous logistic regression models for real-life data and test for the appropriateness of the models.	I, II.A-B, II.E, II.G	Individual homework assignments, group work, examinations and computer projects.
2. compare and contrast confounders and effect modifiers.	II.C-D	Individual homework assignments, group work, examinations and computer projects.
3. analyze the maximum likelihood techniques and their use in statistical inferences.	II.F	Individual homework assignments, group work, examinations and computer projects.
4. detect the problem of multicollinearity and implement sequential methods for model selection.	II.A-G	Individual homework assignments, group work, examinations and computer projects.
5. use appropriate statistical software to analyze real world problems.	I-II	Individual homework assignments, group work, and computer projects.

Course Content:

I. Introduction to logistic regression

- A. Linear regression and the logistic regression model
- B. The logic of logistic regression
- C. Interpreting the logistic regression coefficients
- D. Estimation and model fit - evaluating the logistic regression model

II. Multiple logistic regression

- A. Categorical or indicator variables
- B. Logistic regression diagnostics - analysis of residuals, collinearity
- C. Confounders and effect modifiers
- D. Assessing multiplicative interaction
- E. Modeling strategy guidelines
- F. Maximum likelihood techniques
- G. Polychotomous logistic regression
- H. Analysis of matched data

Resources

Scholarship:

Allison, P. D., *Logistic Regression Using the SAS System: Theory and Application*, SAS Institute, 1999.

Christensen, R., *Log-linear Models and Logistic Regression*, Springer, 1997.

Clogg, C. C., and Shihadeh, E. S., *Statistical Models for Ordinal Variables*, Sage, 2001.

Cox, D. R., and Snell, E. J., *The Analysis of Binary Data*, 2nd ed., Sage, 1994.

Hosmer, D. W., and Lemeshow, S., *Applied Logistic Regression*, 2nd ed., Wiley, 2000.

Jaccard, J., *Interaction Effects in Logistic Regression*, Sage, 2001.

Kleinbaum, D. G., *Logistic Regression: A Self-Learning Text*, 2nd ed., Springer, 2002.

Kutner, M. H., *Logistic Regression Modeling*, Department of Biostatistics and Epidemiology, Cleveland Clinic, 1998.

Long, J. S., *Regression Models for Categorical and Limited Dependent Variables*, CA: Sage, 1997.

Menard, S. W., *Applied Logistic Regression Analysis*, 2nd ed., Sage, 2002.

O'Connell, A. A., *Logistic Regression Models for Ordinal Response Variables*, Sage, 2006.

Pampel, F. C., *Logistic Regression: A Primer*, Sage, 2000.

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 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:

DTREG, "Software for Predictive Modeling and Forecasting," www.dtregr.com.

Hilbe, J., "Logistic Regression," www.statistics.com/ourcourses/logistic/.

UCLA: Academic Technology Services, Statistical Consulting Group., "SPSS Topics Logistic Regression," www.ats.ucla.edu/stat/Spss/topics/logistic_regression.htm.