

Course Objective (OEHS EO 6.2.6):

This graduate level course was designed to familiarize students with the statistical methods for the design and analysis of applied research in the biological sciences wherein the data are qualitative with particular application to epidemiology, occupational health, and clinical and toxicological trials.

Course Content:

Review of probability concepts with application to screening tests; inference for a single population; crude and adjusted rates; comparing two populations – with and without matching of subjects; sample size determination; comparing more than two populations – with and without matching; stratified analysis; measuring agreement

Prerequisite:

Introductory course in statistical methods (e.g., EH/ST307 or ST301)

Text:

(Optional) *Statistical Methods for Rates and Proportions, Third Edition*, Joseph L. Fleiss et al., Wiley & Sons, Inc.: NY. [at Reserve Desk in CSU Library]

Course Website: www.cvmb.colostate.edu/enhealth/eh542

Due dates; copies of handouts; assignments; project; old exams; solutions to exams

Instructor:

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 145 Environmental Health
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Office Hours:
 9:30 -10:30 a.m. M W F
 2:10 - 3:00 p.m. M W F

Course Details:

<u>Basis for Grade</u>	<u>Points</u>	<u>Tentative Dates</u>
Exam 1	100	Wednesday/Friday, October 12/14, 2005
Exam 2	120	Monday, December 12, 2005, 1:30-3:30 p.m.
Project	20	Week of December 5, 2005
Assignments (~11)	110	~Weekly+

Exams: Open-notes, open-book

Grading: The total points on assignments (~230+20) will be scaled to the 110 point-value. Final grades will be assigned on the basis of the following minimum overall percentage (%) of the combined points from exams, project, and assignments:

Grade -	A	B	C
% -	90	80	70

EH 542: BIOSTATISTICAL METHODS FOR QUALITATIVE DATA

Instructor: Thomas J. Keefe

Text: Statistical Methods for Rates and Proportions, 3rd ed., Fleiss et al.

		Sections in Text	
		2 nd ed.	3 rd ed.
I.	Review of introductory biostatistics		
A.	Applied probability	1.1-1.3	1.1-1.4
B.	Statistical inference		
1.	Hypothesis testing: principles; chi-square tests		
2.	Estimation of population parameters: point estimates; confidence intervals		
II.	Inference for a single population		
A.	Dichotomous outcome	1.4	2.4-2.5.2
B.	Polychotomous outcome (goodness of fit χ^2)		
III.	Standardization of rates	14.1-14.6	19.1-19.7
IV.	Comparing two populations		
A.	Dichotomous outcome		
1.	Without matching (χ^2 for 2x2 table)	2.1-2.6	3.1-3.6
a.	Cross-sectional study	5.1-5.7	6.1-6.3, 6.6-6.8
b.	Retrospective/Prospective studies	6.1-6.5	7.1-7.4
c.	Clinical trials	7.1(7.2)-7.3	8.1, (8.2), 8.3
d.	Study design		
(i)	Sample size determination	3.1-3.3(-3.5)	4.1-4.5, (4.6)
(ii)	Randomization	4.1-4.3	5.1-5.3
2.	With matching		
a.	One-to-one matching (McNemar's χ^2)	8.1	13.1
b.	One-to-many matching (Miettinen's χ^2)	8.3	13.3
B.	Polychotomous outcome		
1.	Without matching (χ^2 for 2 x k table)		
2.	With matching (Stuart's χ^2)	8.2	13.2
V.	Comparing m populations (m > 2)		
A.	Dichotomous outcome		
1.	Without matching (χ^2 for m x 2 table)	9.1-9.3	9.1(-9.3)
2.	With matching (Cochran's Q)	8.4	13.4
B.	Polychotomous outcome		
1.	Without matching (χ^2 for m x k table)		
2.	With matching		
VI.	Combining evidence from several 2 x 2 tables	10.1-10.7	10.1-10.2, 10.4-10.8
VII.	Measuring agreement	13.1	18.1-18.2