

Topical outline [based on 14 week course]:

1. Design of Biomedical Studies: Experimental vs. Observational studies; Cohort and Case-control studies
2. Brief introduction to computing software for the course, e.g., BUGS, R, Matlab, or SAS
3. Basic Statistical Inference: Review of Distribution, Estimation and Testing  
[3 weeks][sum=3]

4. Categorical Data: Contingency Tables and application to Cohort and Case-control studies
5. Nonparametric robust Methods, Goodnes-of-fit
6. Linear and logistic regression  
[4 weeks][sum=7]

7. Longitudinal and Functional Data Analysis: Generalized Linear Models
8. Survival Analysis: censoring, Kaplan-Meier estimator, Cox Model
9. Multiple Testing: False discovery rate
10. Application to Genetics, Genomics, Proteomics  
[4 weeks][sum=11]

11. Ethics of Biomedical Research
12. Sample Size Calculation  
[1 week][sum=12]

13. Overview, Feedback, Review, Project Presentation, or Exams  
[2 weeks spread over the semester][sum=14]

List of Possible Texts and Additional Readings:

1. Rosner, "Fundamentals of Biostatistics", 6<sup>th</sup> ed., Boston, Duxbury Press, 2005.
2. Van Belle, Heagerty, Fisher and Lumley, "Biostatistics: a methodology for the health sciences", 2<sup>nd</sup> ed., New York, Wiley, 2004
3. Norman and Streiner, "Biostatistics: The Bare Essentials", Hamilton, B.C., Decker, 2000
4. Motulsky, "Intuitive Biostatistics", Oxford University Press Inc, 1995.