

# JENNIFER L. THOMPSON, MPH

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## EDUCATION

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**University of North Carolina at Chapel Hill, Department of Biostatistics, Chapel Hill, NC**  
*Master of Public Health in Biostatistics*, May 2005

Master's paper: "A Meta-Analytic Comparison of ACR 20 and ACR 50 as Criteria for Treatment Comparisons in Rheumatoid Arthritis Studies." Adviser: Gary G. Koch, PhD.

**Harding University, Searcy, AR**  
*Bachelor of Arts in Mathematics*, May 2002

## PRESENT POSITION

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**Department of Biostatistics, Vanderbilt University Medical Center, Nashville, TN**  
*Biostatistician III*, May 2008 - present

Collaborate as a member of several research teams on the implementation, analysis, and publication of various research projects.

- Provide input on database construction and statistical analysis for manuscripts, posters and presentations.
- Contribute statistical sections to grant applications.
- Implement planned analyses, primarily using the R programming language.
- Produce clearly written reports detailing analysis methods and results.
- Verbally explain analyses and results to clinicians.
- Edit manuscripts, presentations and posters for statistical accuracy and overall clarity.
- Produce graphics to display results of analysis, working with collaborators to present information clearly and concisely.
- Continuously learn about clinical aspects of data in order to provide better statistical input.
- Analysis methods used:
  - Nonparametric methods
  - Linear and logistic regression
  - Generalized estimating equations
  - Kaplan-Meier curves and Cox proportional hazards regression
  - Bootstrapping
  - Markov transition models
  - Marginal effects models

Specific collaborations:

- **Delirium & Cognitive Impairment Study Group, Vanderbilt University Center for Health Services Research**, November 2005 - present. Member of growing research group which focuses on understanding brain dysfunction in critically ill patients ([www.icudelirium.org](http://www.icudelirium.org)). Responsibilities include providing input on database design, statistical analysis plans, graphics, and content and format of presentations, posters and manuscripts.
  - Perform statistical analysis for various projects, using nonparametric methods, linear and logistic regression, restricted cubic splines, and generalized estimating equations.
  - Create analysis data sets, calculating variables for analysis from raw data.
  - Assist in data management, creating analysis data sets for use by supervising statistician.
  - Use R and Sweave to produce analysis data sets, reports, and graphics.
  - Wrote data cleaning program, using the R programming language and the Sweave function, as a basis for data cleaning in four studies. The program takes the raw data input by study staff and lists irregularities or missing data, producing a document used by staff to clean or add data. Using these programs has allowed study staff to do “real-time” data cleaning and to correct recurring problems during the data collection process, rather than waiting until the end of the study.
  - Learn clinical terms and concepts to provide better statistical input.

## PREVIOUS WORK EXPERIENCE

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- **Biostatistician II, Vanderbilt University**, Nashville, TN. June 2005-April 2008. Created analysis data sets, performed basic clinical trials analysis, edited protocols and reports. Focused on neurology data. Specific collaborations:
  - **Delirium & Cognitive Impairment Study Group**, as described above.
  - **Tuberculosis Elimination Program, State of Tennessee Department of Health**, September 2005 - November 2006.
    - Worked with clinician, epidemiologists and IT specialist to analyze compliance with and efficacy of Tennessee’s latent tuberculosis infection screening and treatment program, using large and messy data set.
    - Analysis examined rates of LTBI treatment initiation and completion and risk factors for failing to initiate and complete treatment, using logistic regression.
    - Work involved large amounts of descriptive statistics and basic analyses to clean data set.
    - Provided guidance to clinician on complex definitions of study population, treatment initiation and completion.
  - **Ted Pincus, MD, Vanderbilt University Department of Medicine, Division of Rheumatology & Immunology**, June - December 2005.
    - Continued work on master’s paper topic (see above), resulting in a publication in the *Annals of Rheumatic Diseases* which examined standard evaluation criteria in the field of rheumatology.
    - Performed exploratory analyses using several databases collected from Dr. Pincus’s clinic patients over about 25 years, looking at relationships between various clinical variables and outcomes.
- **Graduate student intern, GlaxoSmithKline**, Research Triangle Park, NC. May 2004-May 2005. Created analysis data sets, performed basic clinical trials analysis, edited protocols and reports. Focused on neurology data.
- **Graduate research assistant, Biometric Consulting Laboratory**, University of North Carolina, Chapel Hill, NC. August 2002-May 2005. Provided, under faculty supervision, statistical analysis support for several on-campus researchers. Project areas included otolaryngology, and health behavior. Provided administrative support for lab director.

## COMPUTER SKILLS

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**Operating systems:** Linux, Windows, Macintosh

**Statistical software:** R, SAS

**Reporting software/tools:** L<sup>A</sup>T<sub>E</sub>X and Sweave (mixes text and R/S-Plus code for automatic document generation)

**Other software:** Microsoft Access, Word, Excel, and Powerpoint

**Other experience:** Some experience in C++

## PEER-REVIEWED PUBLICATIONS

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- Pandharipande P., Morandi A., Adams J., Girard T., Thompson J., Shintani A., Ely E.W. “Plasma tryptophan and tyrosine levels are independent risk factors for delirium in critically ill patients.” *Intensive Care Medicine*, epub ahead of print, 2009 July 9.
- Pandharipande P., Cotton B.A., Shintani A., Thompson J., Pun B.T., Morris J.A. Jr., Dittus R., Ely E.W. “Prevalence and risk factors for development of delirium in surgical and trauma intensive care unit patients.” *Journal of Trauma*, 2008 July; 65(1): 34-41.
- Girard T.D., Kress J.P., Fuchs B.D., Thomason J.W., Schweickert W.D., Pun B.T., Taichman D.B., Dunn J.G., Pohlman A.S., Kinniry P.A., Jackson J.C., Canonico A.E., Light R.W., Shintani A.K., Thompson J.L., Gordon S.M., Hall J.B., Dittus R.S., Bernard G.R., Ely E.W. “Efficacy and safety of a paired sedation and ventilator weaning protocol for mechanically ventilated patients in intensive care (Awakening and Breathing Controlled trial): a randomised controlled trial.” *Lancet*, 2008 January 12; 371(9607): 126-34. *This paper was recognized by the Faculty of 1000 Medicine in April 2009 as an “All Time Top Ten by F1000 Factor” paper in critical care and emergency medicine, based on the number and ratings of evaluations by the Faculty of 1000 Medicine.*
- Pandharipande P.P., Pun B.T., Herr D.L., Maze M., Girard T.D., Miller R.R., Shintani A.K., Thompson J.L., Jackson J.C., Deppen S.A., Stiles R.A., Dittus R.S., Bernard G.R., Ely E.W.. “Effect of sedation with dexmedetomidine vs lorazepam on acute brain dysfunction in mechanically ventilated patients: the MENDS randomized controlled trial.” *JAMA*, 2007 December 12; 298(22): 2644-53.
- Pandharipande P., Cotton B.A., Shintani A., Thompson J., Costabile S., Truman Pun B., Dittus R., Ely E.W. “Motoric subtypes of delirium in mechanically ventilated surgical and trauma intensive care unit patients.” *Intensive Care Medicine*, 2007 October; 33(10): 1726-31. **Featured** in *Intensive Care Medicine’s* Year in Review for 2007.
- Chung C., Thompson J., Koch G., Strand V., Amara I., and Pincus T. “Are American College of Rheumatology 50% Response Criteria (ACR 50) Superior to 20% Criteria (ACR20) to Distinguish Active Aggressive Treatment in Rheumatoid Arthritis Clinical Trials Reported Since 1997? A Meta-analysis of Discriminant Capacities.” *Annals of Rheumatic Diseases*, 2006 December; 65(12): 1206-7.

## POSTERS AND CONFERENCE PRESENTATIONS

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- McGrane S., Girard T., Thompson J., Ely E.W. “C-Reactive Protein and Procalcitonin Levels at Admission Predict Duration of Brain Dysfunction in Critically Ill Patients.” Society of Critical Care Medicine Annual Congress, Miami, FL, January 9-13, 2010. Chosen as a Research Citation Finalist poster.
- Adams J., Morandi A., Thompson J., Ely E.W., Pandharipande P. “Tryptophan Metabolites and Acute Brain Dysfunction in Critically Ill Patients.” Society of Critical Care Medicine Annual Congress, Miami, FL, January 9-13, 2010. Chosen to receive an Annual Scientific Award.

- Morandi A., Gunther M., Pandharipande P., Jackson J., Thompson J., Shintani A., Ely E.W., Girard T. "Serum Insulin-Like Growth Factor (IGF-1) and Acute Brain Dysfunction in the ICU." Society of Critical Care Medicine Annual Congress, Miami, FL, January 9-13, 2010.
- Adams J., Morandi A., Thompson J., Ely E.W., Pandharipande P. "Tryptophan Metabolites and the Risk of Development of Delirium in Intensive Care Unit Patients." American Society of Anesthesiologists Annual Meeting, New Orleans, LA, October 17-21, 2009.
- Geevarghese S., Gunther M., Pandharipande P., Thompson J., Anderson V., Jackson J., Shintani A., Wright J.K., Ely E.W. "Liver Transplant Recipients Experience Moderate to Severe Cognitive Impairment and Depression at Three Months Post-Transplant." American Transplant Congress, Boston, MA, May 30 - June 3, 2009. *Noted as ATC Poster of Distinction (top 10% of category).*
- Watson P.L., Howard P.A., Vigil K.C., Thompson J.L., King M.S., Strength C.L., Ely E.W., Malow B.A. "Benzodiazepines Are Associated with "Atypical" Sleep in Critically Ill Patients." American Thoracic Society International Conference, San Diego, CA, May 15-20, 2009.
- Schweickert W.D., Girard T.D., Taichman D.B., Kress J.P., Kinniry P.A., Pandharipande P., Pun B.T., Pohlman A.S., Shintani A.K., Thompson J.L., Bernard G.R., Hall J.B., Ely E.W., Fuchs B.D. "Risk Factors for Spontaneous Breathing Trial and Extubation Failure." American Thoracic Society International Conference, San Diego, CA, May 15-20, 2009.
- King M.S., Ely E.W., Girard T.D., Thompson J.L., Pandharipande P.P. "Sepsis Modifies the Beneficial Effects of Dexmedetomidine on Non-Brain Organ Dysfunction: An A Priori Subgroup Analysis of the MENDS Randomized Controlled Trial." American Thoracic Society International Conference, San Diego, CA, May 15-20, 2009.
- Girard T.D., Jackson J.C., Pandharipande P.P., Thompson J.L., Shintani A.K., Ely E.W. "Duration of Delirium as a Predictor of Long-Term Cognitive Impairment in Survivors of Critical Illness." American Thoracic Society International Conference, San Diego, CA, May 15-20, 2009.
- Hooper M.H., Girard T.G., Pandharipande P.P., Thompson J.L., Ely E.W. "Association Between Total Sedative Dose During Critical Illness and Long-Term Physical Function." American Thoracic Society International Conference, San Diego, CA, May 15-20, 2009.
- Adams J.R., Pandharipande P.P., Morandi A., Girard T.D., Thompson J.L., Shintani A.K., Ely E.W. "Plasma Tryptophan Levels Increase Risk of Transitioning to Delirium in the ICU." American Thoracic Society International Conference, San Diego, CA, May 15-20, 2009.
- Pandharipande P., Girard T.D., Sanders R.D., Thompson J.L., Maze M., Ely E.W. "Comparison of sedation with dexmedetomidine versus lorazepam in septic ICU patients." International Symposium on Intensive Care and Emergency Medicine, Brussels, Belgium, March 18-21, 2008.
- Jackson J., Gordon S., Girard T., Thomason J., Pun B., Shintani A., Dunn J., Canonico A., Light R., Thompson J., Dittus R., Bernard G., Ely E.W. "Delirium as a Risk Factor for Cognitive Impairment in Mechanically Ventilated ICU Survivors." 2007 Annual Meeting of the Paul B. Beeson Career Development Awards in Aging Research Program, Tarrytown, NY, June 21-24, 2007.
- Pandharipande P., Pun B., Herr D., Girard T., Miller R., Thompson J., Shintani A., Maze M., Bernard G., and Ely E. "Double blind randomized controlled trial comparing dexmedetomidine vs. lorazepam to reduce duration of delirium and coma in mechanically ventilated (MV) patients. American Thoracic Society International Conference, San Francisco, CA, May 18-23, 2007.
- Watson P.L., Pandharipande P., Shintani A., Thompson J., Ely E.W. "Presence of EEG Burst Suppression in ICU Patients Correlates with Duration of Delirium." American Thoracic Society International Conference, San Francisco, CA, May 18-23, 2007.
- Jackson J., Gordon S., Girard T., Thomason J., Pun B., Shintani A., Dunn J., Canonico A., Light R., Thompson J., Dittus R., Bernard G., Ely E.W. "Delirium as a Risk Factor for Cognitive Impairment in Mechanically Ventilated ICU Survivors." American Thoracic Society International Conference, San Francisco, CA, May 18-23, 2007.
- Girard T.D., Kress J.P., Fuchs B.D., Thomason J.W.W., Schweickert W.D., Pun B.T., Taichman D.B., Dunn J., Pohlman A.S., Jackson J.C., Canonico A.E., Light R.W., Shintani A.K., Thompson

J.L., Dittus R.S., Bernard G.R., Ely E.W. "The Awakening and Breathing Controlled (ABC) Trial: A Randomized Controlled Trial of the Efficacy and Safety of Protocolized Spontaneous Breathing Trials (SBTs) with or without Daily Spontaneous Awakening Trials (SATs)." American Thoracic Society International Conference, San Francisco, CA, May 18-23, 2007.

- Girard T.D., Jackson J.C., Gordon S.M., Ware L.B., Pun B.T., Shintani A., Thompson J.L., Canonico A.E., Light R.W., Dittus R.S., Bernard G.R., Ely E.W. "Low protein C levels in critically ill patients predict cognitive impairment 3 months after discharge." American Geriatrics Society Annual Scientific Meeting, Seattle, WA, May 2-6, 2007.
- Haley C., Thompson J., Garman K., Holt E., Bowker V., Cain K., Wells C., Yu C., Laserson K. "Treatment of Adults with Latent Tuberculosis Infection in Tennessee." American Thoracic Society International Conference, San Diego, CA, May 20-24, 2006.

## SERVICE

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- **Chair, MS Search Committee**, April 2007 - present. Member, December 2005 - present. Coordinate recruiting for master's-level biostatisticians.
  - Work with Vanderbilt human resources to process applicants according to protocol and in a timely fashion.
  - Ensure candidates are promptly notified of their application status and keep lines of communication open during recruitment process.
  - Assist administrative team in coordinating candidate travel and itineraries.
  - Lead search committee meetings and coordinate committee member responsibilities.
  - Keep advertising current and work with administrative staff to place in appropriate publications.
  - Keep job openings web site current.
  - Recruit at conferences and universities as necessary.
- **Member, Allocation Committee**, May 2007 - present. Committee ensures that new and current employees are placed in collaborations which best benefit both the employee and the collaborators, and determines the need for new hires.
- **Member, Communication Committee**, July 2006 - present. Committee provides input on improving written and verbal communication within the department.

## PRESENTATIONS

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"**Sample Size: What You Need to Know**," Vanderbilt University Clinical Research Center Skills Workshop, June 19, 2009.

Discussed questions to answer and information to gather prior to calculating sample size, and how to calculate & include sample sizes in a successful grant application.

"**Bootstrapping a Confidence Interval for a Difference in Means**," Vanderbilt University MS Statisticians Meeting, October 18, 2007.

Explained rationale and methodology for using bootstrap methods to calculate a confidence interval for a difference in means.

## CONTINUING EDUCATION

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- **Analysis of Clinical Trials**, full-day course taught by Christy Chuang-Stein, Alex Dmitrienko and Geert Molenberghs, Joint Statistical Meetings 2007, Salt Lake City, UT.
- **Applied Longitudinal Analysis**, full-day course taught by Garrett Fitzmaurice, Joint Statistical Meetings 2007, Salt Lake City, UT.
- **Effective Scientific Writing**, full-day course taught by Judith Swan, Joint Statistical Meetings 2006, Seattle, WA.
- **Regression Modeling Strategies**, short course taught by Frank Harrell, Vanderbilt University, January 2006.
- Attended the following professional conferences:
  - International Biometric Society ENAR 2008 Spring Meeting, Arlington, VA.
  - Joint Statistical Meetings 2007, Salt Lake City, UT.
  - Joint Statistical Meetings 2006, Seattle, WA.
- Attended the following continuing education sessions sponsored by the MS statisticians in the Department of Biostatistics:
  - “Comparison of Explanatory and Confirmatory Approaches to Principal Components Analysis.” Irene Feurer, PhD, August 20, 2009.
  - “ROC Curve Basics.” Jeffrey Blume, PhD, June 18, 2009.
  - “A Discussion on Model Validation, Penalty and Shrinkage Analysis.” Frank Harrell, PhD, May 15, 2009.
  - “Beamer Me Up Scotty: An Introduction to Making Handouts, Posters and Presentations in L<sup>A</sup>T<sub>E</sub>X.” Nate Mercaldo, MS, April 30, 2009.
  - A discussion of the latest version of PS Software. Bill Dupont, PhD, March 19, 2009.
  - “A Discussion of State of the Art Statistical Methods and Why We Should Use Them.” Frank Harrell, PhD, February 19, 2009.
  - “R Graphics: An Introduction to GGPlot.” Dana Blakemore, MS, January 15, 2009.
  - “The 30 Most Commonly Used Statistical Methods.” Dan Byrne, MS, December 18, 2008.
  - “Poisson Regression: Let Me Count the Uses!” Lisa Kaltenbach, MS, November 20, 2008.
  - “Introduction to the Likelihood Measure of Statistical Evidence.” Dan Ayers, MS, October 16, 2008.
  - “A Software Toolset and Workflow Methodology (REDCap - Research Electronic Data Capture) to Manage Research Data for Research Studies.” Paul Harris, PhD, September 18, 2008.
  - “To Propensity Score or Not Propensity Score: That Is the Question.” Patrick Arbogast, PhD, August 14, 2008.
  - “How to Use Bayesian Methods in Clinical Research.” Leena Choi, PhD, July 15, 2008.
  - “How to Write a Grant.” Dan Byrne, MS, June 15, 2008.
  - “The Proportional Odds Model.” Ayumi Shintani, PhD, May 15, 2008.
  - “Linear Mixed Effects Analysis in R.” Bryan Shepherd, PhD, April 17 & May 15, 2008.
  - “Analysis of Longitudinal Data.” Jonathan Schildcrout, PhD, March 13 & 20, 2008.
  - “R Graphics.” Terri Scott, MS, February 21, 2008.
- Regularly attend Department of Biostatistics R clinics, biostatistics clinics, and seminars in the Department and on campus, including the following in 2009 (presented by the Department unless otherwise noted):
  - “An EM Algorithm for Mixed Type, Multiple Outcome Regressions with Applications to a Prostate Cancer Study.” JoAnn Rudd, Vanderbilt University, October 7.

- “Mixed Effects Models with Variance Heterogeneity.” David Afshartous, Division of Clinical Pharmacology, University of Miami School of Medicine, September 30.
- “Where Are You Going?: Markov Models to Predict Changes in Organ Failure in ICU Patients.” Linda Peelen, Julius Center for Health Sciences and Primary Care, University Medical Center Utrecht, Netherlands, September 23.
- “Prognosis and Prognostic Research: What, Why, and How?” Karel G.M. Moons, PhD, Julius Center for Health Sciences and Primary Care, University Medical Center Utrecht, Netherlands, September 23.
- “Linux Graphics Seminar.” Jeff Horner, Vanderbilt University, July 29.
- “Examining Accumulating Evidence: A Likelihood Approach.” Jeffrey Blume, PhD, Vanderbilt University, July 22.
- “Statistical Methods to Account for Data Errors Discovered from an Audit.” Bryan Shepherd, PhD, Vanderbilt University, July 15.
- “Longitudinal Studies of Binary Response Data Following Case-Control and Stratified Case-Control Sampling.” Jonathan Schildcrout PhD, Vanderbilt University, July 8.
- “Testing Variance Components in Multilevel Linear Models Using Approximate Bayes Factors.” Ben Saville, PhD, Vanderbilt University, July 1.
- “Ethics in Biostatistics Case Conference: Promoting Ethical Relationships in the Research Community: Life with Students, Teachers, Mentors and Collaborators.” Elizabeth Heitman, PhD, Vanderbilt University, June 10.
- “Sample Size Adjustments: It’s About More Than a Formula.” Rafe Donahue, PhD, BioMimetic Therapeutics & Vanderbilt University, May 20.
- “What Did/Does/Will ‘Statistical’ Mean in the Diagnostic and Statistical Manual (DSM-V)?” Helena Chmura Kraemer, PhD, Stanford University, May 13.
- “Multivariate Reference Regions for ECG Parameters.” Kimberly Crimin, PhD, Wyeth Pharmaceuticals, May 12.
- “Poisson Regression: Let Me Count the Uses.” Lisa Kaltenbach, MS, Vanderbilt University, May 6.
- “Likelihood Ratios and Misleading Evidence Part II.” Jeffrey Blume, PhD, Vanderbilt University, April 29.
- “Shedding Light on StarBRITE Resources Including the Synthetic Derivative.” Melissa Basford, MBA, and Tara Helmer, Vanderbilt University, April 22.
- “Ethics in Biostatistics Case Conference: All In a Day’s Work: The Ethics and Mathematics of Effort Reporting.” Elizabeth Heitman, PhD, Vanderbilt University, April 15.
- “Test of Association Between Two Ordinal Variables While Adjusting for Covariates.” Chun Li, PhD, Vanderbilt University, April 8.
- “How to Begin Using Stata.” Lisa Kaltenbach, MS, Vanderbilt University, March 27. Part of the Vanderbilt Clinical Research Center Workshops.
- “Likelihood Ratios and Misleading Evidence.” Jeffrey Blume, PhD, Vanderbilt University, March 11.
- “The Role of Education in Biostatistical Consulting with medical and Health Science Researchers.” Robert Oster, PhD, University of Alabama at Birmingham, March 4.
- “Linux Workshop: KDE4 and Programming Tips.” Jeremy Stephens, Vanderbilt University, February 25.
- “Complications in Survival Analysis.” Elizabeth Koehler, MS, Vanderbilt University, February 18. Part of the Cancer Biostatistics Workshop series presented by the Division of Cancer Biostatistics.
- “Ethics in Biostatistics Case Conference: Assigning Authorship: Accountability, Credit and Collegiality.” Elizabeth Heitman, PhD, Vanderbilt University, February 18.
- “Bayesian Approaches to Model Robust and Model Discrimination Designs.” Vincent Agbotto, PhD, Meharry Medical College, February 11.

- “Case Study of a Maximally Flexible Bayesian Design in Pancreatic Cancer Therapeutics.” Frank Harrell, PhD, Vanderbilt University, February 4.
- “Linux Workshop: Twiki Walkthrough.” Cole Beck, Vanderbilt University, January 28.
- “BioVU: What Are the Issues?” Ellen Wright Clayton, MD, JD, Vanderbilt University, January 21.
- “Design, Biostatistics, and Research Ethics Program of the Vanderbilt Institute for Clinical and Translational Research (VICTR/CTSA).” Frank Harrell, PhD, Vanderbilt University, January 14.
- “Bayesian Inference on Changes in Response Densities Over Predictor Clusters.” Amy Herring, ScD, University of North Carolina at Chapel Hill, January 7.

## MEMBERSHIPS

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American Statistical Association, September 2002 - present  
 International Biometric Society, September 2005 - present

## GRADUATE COURSEWORK

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Probability and Statistical Inference I  
 Elements of Probability and Statistical Inference II  
 Statistical Considerations for Confirmatory Clinical Trials with Regulatory Objectives  
 Intermediate Statistical Methods  
 Analysis of Categorical Data  
 Intermediate Linear Models  
 Sample Survey Methodology  
 Principles of Statistical Consulting  
 Introduction to Statistical Computing  
 Field Observations in Biostatistics  
 Principles of Epidemiology  
 Introduction to Health Policy and Administration  
 Social and Behavioral Sciences in Public Health  
 Environmental Health  
 Introductory Survival Analysis (audit only)