Immersion Biostatistics Course:
Introductory Applied Biostatistics

March 1 to 12, 2010
IITA Conference Center
Ibadan, Nigeria

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Curriculum:
This will be a two-week intensive seminar course on biostatistics and epidemiology with didactic lectures (3 hours) each morning for 10 days and study design and statistical methods seminar (2-3 hours) each afternoon.

The curriculum will include lectures and homework assignments on study design, subject selection, sample size estimations, limiting various forms of study biases, basic statistical analyses, regression analyses, and causal inference.

The course textbooks will be Essential Medical Statistics, 2nd Edition, by Kirkwood and Sterne and Epidemiology: An Introduction, by Rothman. Textbooks and STATA statistical software will be provided for assignments.

Trainees are encouraged to bring and present their current or proposed research projects (at any stage of development or completion) for discussion and recommendations. Trainees are also encouraged to bring their databases for analyses.

Learning Objectives:
At the completion of the course, the trainee will be able to:
1. Describe concepts of causation of diseases from statistical and epidemiologic perspectives.
2. Define means, standard errors, and standard deviations.
3. Describe normal, binomial, and Poisson probability distributions.
4. Describe risk, rate, and odds ratios as measures of association.
5. Describe randomized controlled trials.
6. Describe observational epidemiologic study designs.
7. Select the most appropriate study design and statistical analyses for specific research question.
8. Define exposure variables, outcome variables, and covariates.
9. Describe sensitivity, specificity, positive and negative predictive values.
10. Evaluate accuracy of exposure and outcome measurement instruments.
11. Define appropriate target, source, and study populations for observational studies.
12. Compute and interpret risk, rate, and odds ratios, their confidence intervals and tests of significance.
13. Calculate sample size estimates for univariate statistical analyses.
14. Describe the concepts of selection, misclassification, and confounding biases.
15. Describe the differences between confounding and effect modification.
16. Describe and utilize appropriate statistical methods for stratified analyses to account for the effects of confounding or effect modification.
17. Recognize sources and types of bias from each type of epidemiologic study design and discuss their potential effects on the strength of observed associations.
18. Define simple linear regression and different forms of multivariate regression models.
19. Evaluate associations based on causal and statistical inference.
**Trainee Requirements:**

The course is ideal for data managers and other medical professionals, including doctors, with a background in statistics who are currently doing research, evaluating outcomes data, or planning to conduct statistical analyses for research projects at their sites.

One student who successfully completes the course will be eligible to apply for the one-year Masters of Science in Epidemiology and Biostatistics degree program at Northwestern University.

The NU AITRP will provide support for immersion course tuition and accommodations.

Students wishing to participate should send a statement of interest briefly explaining their motivations to attend together with a short resume to Baiba Berzins at baiba@northwestern.edu. The deadline for applications is February 1, 2010.

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**Sponsored by the**

*Northwestern University AIDS International Training and Research Program (NU AITRP) - NIH/ Fogarty International Center*

*Robert Murphy, MD, Principal Investigator*
*Babafemi Taiwo, MBBS, Academic Director*
*Baiba Berzins, MPH, Program Administrator*

**Collaborating Organizations: Harvard PEPFAR, APIN**