

## **Programmatic Competencies for the MS in Biostatistics**

MS in Biostatistics graduates should be able to:

- Demonstrate knowledge of the principles and philosophies of hypothesis testing and estimation, both point and interval, of population parameters from observed data;
- Demonstrate knowledge of the design of a study and determination of the most appropriate method of statistical analysis;
- Demonstrate knowledge of the advantages and disadvantages in the use of each of a basic set of statistical procedures;
- Demonstrate knowledge of the theoretical background of commonly used analytic procedures;
- Demonstrate knowledge of the ethical issues involved in research, specifically all issues pertaining to data;
- Critically review and summarize statistical analyses presented in the scientific literature;
- Train and supervise junior analysts as well as serve as a liaison between a senior statistical consultant and a junior analyst or aide;
- Become an integral team member, actively participating in the research design and analysis, as well as all aspects of data collection and management;
- Determine appropriate sample size necessary for a specific research hypothesis;
- Use computer software for data entry and database management and use computer programs for summarizing, analyzing, and displaying research results;
- Analyze and interpret data appropriate for nonparametric and parametric analysis of variance, regression, and categorical data techniques;
- Develop a database and establish quality controls, using computer software for database set-up and management;
- Communicate to others the assumptions of the procedures used and the limitations of the procedures;
- Present both oral and/or written reports of the methods and results of the statistical analysis.