

# Substitution Courses Summary

August 24, 2015

## 1 PSYC 507A and B, Dr. A.J. Figueredo

- Meta-science, history of science, philosophy of science
- Linear regression and the general linear model
- Nested model comparisons
- Empirical variable selection
- Repeated Measures
- Random and fixed effects
- Variance components
- Experimental design
- Structural equations models
- Latent variable causal analysis
- Factor analysis
- Hierarchical linear models

## 2 RNR 614- Advanced applied biometrics for environmental research, Dr. Brian McGill

- Brief history / theory of science
- Cursory overview of probability theory
- Regression/ OLS
- General / Generalized Linear Models
- Bootstrapping and randomization
- Likelihood ratio tests
- Likelihood-based Information Criteria (AIC/BIC)
- Bayesian inference
- Experimental design (randomization, sampling designs, crossed vs nested, blocking etc.)

- Generalized Estimating equations
- Variance Components Analysis
- Mixed effects models
- Alternative regression (robust regression, quantile regression, splines, kernel smoothing, etc.)
- Multivariate statistics (PCA, MDS, Factor Analysis, clustering, etc.)
- Time-series and spatial models
- Meta-analyses