

Statistical Learning in Ecology and Evolution

E222 Winter 2022

Course Outline

The material for the class will be supported by an excellent textbook, “An Introduction to Statistical Learning” by G. James, D. Witten, T. Hastie, and R. Tibshirani (2021), 2nd edition <https://www.statlearning.com/>

Meeting Time: Tue/Th 1-2:50

Place: SH 351

Month	Dates	Reading	Topic
January	4, 6		Review of probability, random variables, linear algebra
	11, 13	chpt 2-3	Supervised/unsupervised learning, bias/variance trade-off, linear regression
	18, 20	chpt 4	Classification, logistic regression, linear discriminant analysis, quadratic discriminant analysis
	25, 27	chpt 5	Resampling, cross-validation, jackknife, bootstrap
February	1, 3	chpt 6	Linear model selection stepwise selection, ridge regression, lasso
	8, 10	chpt 6	FLAM, principal component regression, partial least squares
	15, 17	chpt 7	Non-linear modeling, regression splines, smoothing splines, general additive models
	22, 24	chpt 8	Tree based methods, classification trees, bagging, random forests
March	1, 3	chpt 10	Neural networks
	8, 10	chpt 12,13	Unsupervised learning, principal components, clustering multiple testing