

## PLAN STA402/MAT924 2017

Week	Rough description	Details	Reading
1	Introduction, Notation, R, ...	Formalities, syllabus, notation, R/Rstudio, parametric model	HSB 1, p 363
2	Statistical model and estimation	MoM, LS, similarities, comparing estimators, context of exponential family.	Various places in HSB
3	Likelihood	Definitions, numerical aspects, approximation	HSB 2.1 (w/o 2.1.4), 2.2, 2.3.1
4	Asymptotics and concepts	Asymptotic approximation, sufficiency, unbiasedness, consistency	HSB 2.4, 2.5, 3.1
5	Point and Interval estimates	Frequentist properties: estimates, estimator, standard error, confidence interval,	HSB 3.2, 4.1 (w/o 4.1.4), 4.2 (w/o 4.2.4)
6	Distribution of the MLE	Distribution of the MLE, Variance stabilizing functions	HSB 4.2, 4.3
7	Statistical tests	Neyman-Pearson, p-values, errors, significance tests, similarity tests confidence intervals	HSB 3.3, 4.1.4, 4.2.4,
8	LRT, special cases	LRT, uniform, Laplace and other odds and ends	HSB 4.4, 4.6, 2.1.4
9	Multiparameter models	Score function, Fisher information, standard error, profiling	HSB 5.1, 5.2, 5.3
10	Multivariate tests	Score and Wald statistic, LRT and GLRT	HSB 5.4 5.5
11	Model Selection	Linear regression, Occam's razor AIC, Kullback-Leibler	Various places in HSB, HSB 7.1
12	Predictions	Best predictor, plugin prediction, likelihood prediction, assessing prediction.	HSB 9.1, 9.2, 9.4
13	Bayesian Modeling	Bayes vs frequentist, prior/posterior, choice of prior,	HSB 6.1, 6.2, 6.3, 6.5.1
14	Statistical models	Linear model, projections Links to various other lectures	Various places in HSB