

Course Outline STA453H1

from the private notebook
of
David Brenner

Jan. 12, 2022

contact info:

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office: Fri. 11-12

lectures:

Wed 10-12, Fri 10-11

ref./text:

Brenner, D. :

FROM THE PRIVATE NOTE BOOK:

Illustrated adventures in very (very) mathematical
probability & statistics, 2004-22

Fraser, D.A.S. :

PROB & STATS: THRY & APPS (1976/2002/8)

Knight, K. :

MATH STATS (2000)

Lehmann, E.L. :

TESTING STAT HYPs (1957/86) & THRY of PT EST (1986)

Silvey, D.F. :

STAT INF (1976)

– **caution*: all contents subject to shuffling, merging, expansion
& (really serious) modification

- the general statistical model & the structure of inference
frequentist & bayesian
confidence & testing
- confidence/credibility, optimality & likelihood
both small sample & asymptotic
- sufficiency & the likelihood statistic
 - the rao-blackwell & lehman-scheffe theorems
 - the neymann factorization criterion (halmos & savage)
 - estimation theory: consistency, unbiasedness, minimum variance & relative efficiency
- exponential models & sufficiency in the finite dimensional case
 - cramer-rao theorem & cauchy-schwartz
 - the mathematics of moment generating functions
- the general linear model & orthogonal projection
 - correlation, regression & conditional expectation
- G -models, fiducial structure & invariance/symmetry
 - location-scale models
- hypothesis testing
 - testing means, variances: differences & ratios
 - neymann-pearson theory & the likelihood ratio test
- bayesian theory - frequentist theory
a tale of two magisteria; uneasy alliance

grading (G) :

test (T) = 40 – Wed. Mar.2 (10:00-12:00)
 final (F) = 60 – Apr.11-29
 final grade $G = T + F$