

**Syllabus – STOR 755**  
**Fall 2020 (August 8 – April 24)**  
**TuTh 3:00PM - 4:15PM**  
**Carroll 0111**

**Instructor:** Jan Hannig

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**Office:** 330 Hanes

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**Office Hours:** MW 2:00-3:00pm  
and by appointment. Office hours will  
be on zoom!

**Course home page on**  
<https://hannig.cloudapps.unc.edu/STOR755>

**Zoom link for Office hours:**

<https://unc.zoom.us/j/95746619222?pwd=bkhzVmtTVkszbkZjMzZlZQjg2RVlaQT09>

**Zoom link for lectures (if needed)**

<https://unc.zoom.us/j/94843111592?pwd=SVdXeJQwbHU4ZlJ0eGN3bmg1MWE3QT09>

ID: 95746619222

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Pass: Hanes330

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**Required Text:** van der Vaart, A. W. (2000). *Asymptotic Statistics*. Cambridge University Press, ISBN 978-0-521-078450-4

**Optional Text:**

- Le Cam, L. (1986). *Asymptotic methods in statistical decision theory*. Springer
- Lehmann, E. L., & Romano, J. P. (2005). *Testing statistical hypotheses*. Springer.

**Course Objective:**

This is an advanced class in theoretical statistics for PhD students who have taken STOR655 and STOR635. The goal of the course is to develop technical skills by presenting results with full proofs in as much generality as possible,

**Covered Topics (in chronological order)**

- Introduction (see Chapters 2,3,4,5 not covered in detail)
- Contiguity (Chapter 6)
- Local Asymptotic Normality (Chapter 7)
- Efficiency (Chapter 8)
- Asymptotic for Bayes (Chapter 10)
- Likelihood Ratio Tests (Chapter 16)
- Empirical Processes (Chapter 18, 19)
- Functional Delta Method (Chapter 20)
- L-statistics (Chapter 22)
- Bootstrap (Chapter 23)

**Assessment:** Your grade will be based on homework (70%) and class presentations (30%).

**Important dates:**

Final Exam: There will be no final exam.

Homework: Weekly homework sets will be assigned on Sakai.

Class Presentations: During last week of the classes and if scheduled final exam time.

**Project:**

You will be asked to select a modern paper concerning theoretical statistics and study the results in the paper in detail. Then you will present the main ideas of the proof to the class.

**Presentation:**

You will be asked to give a seminar during the last week of the class. Each student is **required** to attend office hours at least once prior to September 18 to discuss the paper you selected.

**COVID 19**

Students are expected to follow UNC established community standards of behavior.

<https://carolinatogether.unc.edu/community-standards>

In particular, masks are to be worn and social distancing observed while in class!

If it becomes necessary, the class might be moved on-line, in which case it will be held live at the same time using the zoom link provided.

**Note:** The instructor reserves the right to make any changes he considers academically advisable. It is your responsibility to attend classes and keep track of the proceedings.