

Spring 2019    **MATH 979.01**                      Research Topics in Statistics:

## **R and R Studio for Data Analysis, Programming, and Publishing**

**Instructor:** Ernst Linder

**Office:** N321B Kingsbury Hall    [elinder@unh.edu](mailto:elinder@unh.edu)

**Time and Room:** MW                      9:40am - 11:00am                      KING W389

**Course Type:** The course is offered “in-class”. There might be the possibility of class meetings being recorded. But this is not an asynchronous on-line course.

**Activities:** The class will also serve as a lab. Students are expected to bring their laptops, and “play along” during class meetings.

**Homework:** Frequent practice of a “computer language” is essential for its mastery. There will be regular assignments, most often from each class to the next, including reading assignment and practice exercises. Some will be collected for grading, others will be discussed during class. Students are expected to participate in these discussions. If suitable, students may also work in teams. Students will be asked to take the lead in such “homework discussions”. Grade calculation (tentative) : HW: 50%, in class activities and discussion leading: 50%.

**Prerequisites:** Basic R, some experience in writing code and very basic computing. Basic statistics, because we will use examples from statistics, and some of the programming will be for statistics and data science applications. If you have never used R, please take MATH 859, the 1-credit introductory R course. It is offered fully on-line during J term, also during this term: try to complete it within the first 3 weeks concurrently while taking this course.

**Text:** (Required): **Advanced R** (Data Programming and the Cloud). By Matt Wiley and Joshua Wiley. Apress Publishing (owned by Springer Verlag). [www.apress.com](http://www.apress.com). Paperback or electronic version available.

### **Tentative List of Topics:**

Programming Basics  
Programming Utilities  
Programming Automation  
Introduction to Data Management Using `data.table`  
Data Munging with `data.table`  
Other Tools for Data Management  
Reading Big Data(bases)

Writing Functions  
Writing Classes and Methods  
Writing a Package  
Cloud Computing:  
    Getting a Cloud Ubuntu for Windows Users  
    Every Cloud has a Shiny Lining  
    Shiny Dashboard Sampler  
    Dynamic Reports and the Cloud