

UNIVERSITY OF WASHINGTON • DEPARTMENT OF STATISTICS
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Dear Colleagues:

Stat 391 "*Quantitative introduction to Data Science*" is the most advanced intro statistics and data science class at UW. It is fast-paced and rigorous, it has probability as a prerequisite. More specifically, the prerequisites are a sequence of two probability classes (MATH 394, MATH 395), the same sequence as for Statistics majors, or alternatively, for Computer Science majors, the Foundations of Computing II (CSE 312).

In Stat 391, we dive directly into Maximum Likelihood estimation, solve problems on ML with censored data on the homework, apply conditional probability to perform long chains of inferences (a la inference in graphical models, without calling it that), learn about kernel density estimation, classification and clustering. The students are required to do proofs, solve problems (not exercises), write and run code to solve estimation problems with real data.

In Spring 2023, the grade was calculated from 8% participation, 50% homework, 12% quizzes and 30% final exam. STAT 391 is a **rigorously graded class**. The final and quizzes are timed, and in class. We aimed to mimic an open book exam with a minimum of extra printing on paper. Therefore, printed solutions and a small number of note pages are allowed, but **no electronics of any kind are allowed**, not even watches or calculators. We are confident that the scores obtained fairly represent each student's ability to solve problems with statistics.

Finally, a word about the Data Science and Statistics (DSS) major option. I am very familiar with ACMS and with the DSS pathway, having been involved in the ACMS program admissions for several years. DSS is the most demanding pathway in ACMS, because of the extra statistics courses, that only STAT and MATH majors take, but nobody else at UW, not even in other ACMS options. This pathway is favored by the more mathematically oriented students with interest in statistics. In spite of its rigors, ACMS-DSS is the most competitive of the ACMS pathways, that admits only about 30 students/year. STAT 391 is not mandatory in any other major or ACMS pathway.

Sincerely,

Marina Meila

Professor of Statistics
Adjunct Professor of Computer Science
Adjunct Professor of Electrical Engineering
Senior Fellow of the e-Science Institute