

# Mathematical Statistics

*Program 2020*

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Venue: Online  
Dates: 23 & 30 October, 6 & 13 November 2020 (possibly also 20 November)  
Time: 9 - 11 am  
Literature: none (course slides)  
Credits: 1 EC (elective)  
Participants: Maximum of 10  
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## **Abstract**

Statistical inference deals with the development and application of models for phenomena of interest. Using observed data, inferences about the unknown reality are formed. In this course, we study the mathematical foundations of statistics. We will discuss various methods for estimation and testing, as well as statistical decision theory. At the end of the course, you will have learned about the famous theorems by Neyman-Pearson, Rao-Blackwell and Lehmann-Scheffe; learned concepts as UMP tests, UMVU estimators, consistency and sufficiency and decision rules. This will sharpen your understanding of the techniques you might have already been using for a number of years.

You are expected to have a good knowledge of common statistical techniques (multivariate regression, ANOVA, etc.) as well as some familiarity with, and an interest in, mathematics and algebra. You are not expected to have a degree in mathematics. For instance, any of the Dutch research master programmes in social sciences will provide you with a sufficient background to participate in this course.

In 2020, the course will take place in weekly two-hour sessions. In each session, a topic from mathematical statistics is discussed. After each session, some homework exercises are given.

## **Examination**

Virtual attendance & exercises