

## **Syllabus Statistical Inference III, AA 2019-20**

**Asymptotic normality; Confidence interval; Frechet and Gateaux derivatives; Hoeffding decomposition; Influence function; Maximum likelihood estimator; Sample variance; U-statistics; von Mises Calculus.**

Lecture 1: Asymptotic theory in Parametric Inference. Asymptotic Efficiency and the Information Inequality. Consistency, Asymptotic Normality and Asymptotic Efficiency of MLEs

Lecture 2: U-Statistics. Unbiasedness. Martingale structure and Hoeffding decomposition. Asymptotic properties of U-Statistics. Large and Moderate deviations for U-Statistics.

Lecture 3: Working examples of U-statistics: sample variance; Kendall's tau.

Lecture 4: von Mises Calculus. Basic scheme for the analysis. Asymptotic properties of differentiable statistical functions. Examples.

Lecture 5: M and L-estimators. Asymptotic properties and connection with von Mises Calculus.