

## Detailed schedule (five two-hour lectures):

**Lecture 1 (Thursday, September 14):** Introduction to auction theory. Second-price auctions and dominant strategies. Myerson's theory of revenue-maximizing auctions. The Bulow-Klemperer theorem and approximation guarantees for simple auctions.

**Lecture 2 (Friday, September 15):** Introduction to learning theory. Statistical learning theory and the PAC model. Measuring hypothesis complexity (pseudodimension, etc.). Radamacher complexity. Examples.

**Lecture 3 (Tuesday, September 19):** Learning near-optimal auctions in the batch model. The pseudodimension of classes of simple auctions. Compression schemes. Computational considerations.

**Lecture 4 (Wednesday, September 20):** Learning near-optimal auctions online. Online models of learning. The "follow-the-regularized-leader" algorithm. Online-to-offline reductions.

**Lecture 5 (Thursday, September 21):** The cutting edge: Multi-item auctions; new concentration bounds for product distributions; strategic issues in data collection.